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1 What's New

New Features in SDAC 11.2

- Added support for RAD Studio 12 Athens Release 1
- Added support for Lazarus 3.2
- Microsoft Entra Service Principal authentication (auADServicePrincipal) in the prMSOLEDB provider is supported

New Features in SDAC 11.1

- Lazarus 3.0 is supported

New Features in SDAC 11.0

- Added support for RAD Studio 12
- Added support for macOS Sonoma
- Added support for iOS 17
- Added support for Android 13
- Added support for SQL Server 2022
- Added AddDateTimeFormat option for the Dump component
- Added support for nested Macros in SQL queries
- Added support Display Format for Aggregate fields
- Added SHA-2(SHA-256, SHA-512) in hash algorithm for encryption
- LastInsertId property for TMSQL and TMSQuery is added

New Features in SDAC 10.3

- Added support for RAD Studio 11 Alexandria Release 3
- Added support for iOS Simulator ARM 64-bit target platform
- Added support for Lazarus 2.2.6
- Added support for the YEAR, MONTH, DAY, HOUR, MINUTE, SECOND, GETDATE, DATE, TIME, TRIM, TRIMLEFT, TRIMRIGHT statements in TDADataset.Filter

- Added support for the mathematical operations in TDADataset.Filter
- Added support for Aggregate Fields and InternalCalc Fields
- Added ability to restore from file with TEncoding via the Dump component
- Improved compatibility with Linked Server in MSSMS
- Improved the GetOrderBy method behavior
- Now the SetRange will function according to the case sensitivity of keywords in IndexFieldNames

New Features in SDAC 10.2

- Added support for RAD Studio 11 Alexandria Release 2
- Added support for Lazarus 2.2.2
- Added support for iOS 15
- Added support for Android 12
- Added support for Microsoft OLE DB Driver 19 for SQL Server
- Added support for Azure AD authentication support for the Microsoft OLE DB provider
- Added support for the Always On availability group in the Direct mode
- Added support for connection to the Azure database by using the "Redirect" connection policy in the Direct mode
- Added the CloneCursor method for Query and Table components that allows sharing data between datasets
- Improved the performance of exporting to XML
- Fixed bug with committing transaction on SQL Server 2000 in Direct mode
- Fixed bug with restricting the list of procedures using PROCEDURE_TYPE condition in Metadata component
- Fixed bug when a connection string parameter value contains a single quote

New Features in SDAC 10.1

- RAD Studio 11 Alexandria Release 1 is supported
- Lazarus 2.2.0 is supported

- Windows 11 is supported
- macOS Monterey is supported
- Passing the "client_interface_name" parameter to the server in the Direct mode is added

New Features in SDAC 10.0

- RAD Studio 11 Alexandria is supported
- macOS ARM is supported
- Added demo project for FastReport FMX

New Features in SDAC 9.4

- RAD Studio 10.4.2 Sydney is supported
- macOS 11 Big Sur is supported
- iOS 14 is supported
- Android 11 is supported
- LOB read/write performance in the Direct mode is improved
- Performance of batch operations is improved
- Performance of the FindFirst, FindNext, FindLast, and FindPrior methods is improved

New Features in SDAC 9.3

- SQL Server 2019 is supported
- Lazarus 2.0.10 and FPC 3.2.0 are supported
- Performance of Batch Insert, Update, and Delete operations is improved

New Features in SDAC 9.2

- RAD Studio 10.4 Sydney is supported
- Lazarus 2.0.8 is supported
- macOS 64-bit in Lazarus is supported

New Features in SDAC 9.1

- Android 64-bit is supported

- Lazarus 2.0.6 is supported
- TLS 1.2 support in the Direct mode is added
- Now Trial edition for macOS and Linux is fully functional
- The connection option MultiSubnetFailover for the MSOLEDB provider is added
- Use of the Server property that contains Port in the Direct mode is added
- Updating data after invoking the Refresh method is fixed

New Features in SDAC 9.0

- macOS 64-bit is supported
- Release 2 for RAD Studio 10.3 Rio, Delphi 10.3 Rio, and C++Builder 10.3 Rio is now required

New Features in SDAC 8.3

- Lazarus 2.0.2 is supported
- Working with multiple threads sharing a single connection is supported
- The DefaultSortType property for TVirtualTable is added
- Performance of the SaveToFile/LoadFromFile methods of TVirtualTable is significantly increased

New Features in SDAC 8.2

- RAD Studio 10.3 Rio is supported
- TfrxSDACDatabase.DefaultLockTimeout property is added
- QuoteNames option in TMSLoader to escape field names is added
- Support of UPPER and LOWER functions for Unified SQL is added

New Features in SDAC 8.1

- Lazarus 1.8.4 is supported
- MARS in TDS is supported
- NonBlocking mode in TDS is supported

- Query notifications in TDS are supported
- TCustomMSDataSet.CommandTimeout property in TDS is supported
- Performance of batch operations is improved
- Demo projects for IntraWeb 14 are added

New Features in SDAC 8.0

- RAD Studio 10.2 Tokyo is supported
- Linux in RAD Studio 10.2 Tokyo is supported
- Lazarus 1.6.4 and Free Pascal 3.0.2 is supported

New Features in SDAC 7.3

- RAD Studio 10.1 Berlin is supported
- Lazarus 1.6 and FPC 3.0.0 is supported
- Support for the BETWEEN statement in TDADataset.Filter is added
- The TMSLoaderOptions.FireTrigger property is added
- SmartFetch mode in Disconnected mode is supported
- Data Type Mapping performance is improved
- Performance of TDALoader on loading data from TDataSet is improved

New Features in SDAC 7.2

- RAD Studio 10 Seattle is supported
- Now Trial for Win64 is a fully functional Professional Edition
- INSERT, UPDATE and DELETE batch operations are supported

New Features in SDAC 7.1

- RAD Studio XE8 is supported
- AppMethod is supported
- Direct mode in Lazarus is supported
- Now the Direct mode is supplied as source code

- Performance of connection establishing in the Direct mode is improved

New Features in SDAC 7.01

- Direct Mode is supported
- Mac OS X is supported
- iOS is supported
- Android is supported

New Features in SDAC 6.11

- RAD Studio XE7 is supported
- Lazarus 1.2.4 is supported
- The TCustomDADataset.GetKeyFieldNames method is added
- The ConstraintColumns metadata kind for the TMSMetadata component is added

New Features in SDAC 6.10

- RAD Studio XE6 is supported
- Lazarus 1.2.2 and FPC 2.6.4 is supported
- SQL Server 2014 is supported
- SmartFetch mode for TDataSet descendants is added
- The TMSDataSetOptions.MasterFieldsNullable property is added
- Now update queries inside TDataSet descendants have correct owner

New Features in SDAC 6.9

- RAD Studio XE5 Update 2 is now required
- Now .obj and .o files are supplied for C++Builder
- Compatibility of migrating floating-point fields from other components is improved
- The TMSConnection.AutoCommit property is added
- Default values of UNIQUEIDENTIFIER fields without curly brackets are supported

New Features in SDAC 6.8

- RAD Studio XE5 is supported
- Lazarus 1.0.12 is supported
- Performance is improved
- Automatic checking for new versions is added
- Flexible management of conditions in the WHERE clause is added
- The possibility to use conditions is added
- Support of the IN keyword in the TDataSet.Filter property is added
- Like operator behaviour when used in the Filter property is now similar to TClientDataSet
- The possibility to use ranges is added
- The Ping method for the TMSConnection component is added
- The AllowImplicitConnect option for the TMSConnection component is added
- The ForceCreateDatabase option for the TMSConnection is added
- The ApplicationIntent option for the TMSConnection is added
- The SQLRecCount property for the TMSQuery and TMSStoredProc components is added
- The ScanParams property for the TMSScript component is added
- The RowsAffected property for the TMSScript component is added

New Features in SDAC 6.7

- Rad Studio XE4 is supported
- FPC 2.6.2 and Lazarus 1.0.8 are supported
- Connection string support is added
- Now the TCustomMSDataSet.Options.UniqueRecords property is set to True by default
- The TCustomMSDataSet.Options.HideSystemUniqueFields property is added
- Possibility to encrypt entire tables and datasets is added
- Possibility to determine if data in a field is encrypted is added
- Support for TimeStamp, Single and Extended fields in VirtualTable is added

New Features in SDAC 6.6

- Rad Studio XE3 Update 1 is now required
- C++Builder 64-bit for Windows is supported
- TMSConnection.Port property that allows specifying the port number for connection is added

New Features in SDAC 6.5

- Rad Studio XE3 is supported
- Windows 8 is supported

New Features in SDAC 6.2

- Update 4 Hotfix 1 for RAD Studio XE2, Delphi XE2, and C++Builder XE2 is now required
- Data Type Mapping support is added
- Data encryption in a client application is added
- The TMSEncryptor component for data encryption is added
- Calling of the TCustomDASQL.BeforeExecute event is added

New Features in SDAC 6.1

- Update 4 for RAD Studio XE2, Delphi XE2, and C++Builder XE2 is now required
- FireMonkey support is improved
- Lazarus 0.9.30.4 and FPC 2.6.0 are supported

New Features in SQL Server Data Access Components 6.00

- Embarcadero RAD Studio XE2 is supported
- Application development for 64-bit Windows is supported
- FireMonkey application development platform is supported
- Support of master/detail relationship for TVirtualTable is added
- OnProgress event in TVirtualTable is added
- TDADatasetOptions.SetEmptyStrToNull property that allows inserting NULL value instead

of empty string is added

New Features in SQL Server Data Access Components 5.10

- Lazarus 0.9.30 and FPC 2.4.2 is supported
- Support for Table-Valued Parameters is added
- TMSTableData component for storing data of Table-Valued Parameter type is added
- Support for SQL Server Compact Edition 4.0 is added
- Support of API interface for managing FILESTREAM data is added

New Features in SQL Server Data Access Components 5.00

- Embarcadero RAD Studio XE supported

New Features in SQL Server Data Access Components 4.80

- Embarcadero RAD Studio 2010 supported

New Features in SQL Server Data Access Components 4.70

- Delphi 2009 and C++Builder 2009 supported
- Extended Unicode support for Delphi 2007 added (special Unicode build)
- Free Pascal 2.2 supported
- Powerful design-time editors implemented in Lazarus
- Completed with more comprehensive structured Help

New Features in SQL Server Data Access Components 4.50

- Added compatibility with UniDAC
- Improved support of default field values

- Added ability to specify key fields for a dataset
- Added support of automatic records locking
- Added an option for setting lock wait timeout

New Features in SQL Server Data Access Components 4.35

- SQL Server Compact Edition 3.5 supported
- Tested with SQL Server 2008 CTP 4

New Features in SQL Server Data Access Components 4.30

- CodeGear RAD Studio 2007 supported
- Added [enhanced support](#) for [User-defined Types of SQL Server](#)
- Added support for [distributed transactions](#) with the new [TMSTransaction](#) component
- Added support for [Query Notifications](#) with the new [TMSChangeNotification](#) component
- Improved support with [SQL Server Compact Edition](#) with the new [TMSCompactConnection](#) component
- Added support for [getting results](#) from queries with the [FOR XML](#) clause in readable view
- Added ability to lock [records](#) and [tables](#)
- TMSMetaData is enhanced with [more schema row sets](#)
- Added support for [connection encryption without certificate validation](#)
- Added ability to force record fetch for datasets open in [FetchAll=False](#) mode
- Added support for detailed error messages output to DBMonitor
- Added ability to use the [default login database](#) if no database is assigned on connect
- Added the [OnProgress](#) event in [TMSLoader](#)

New Features in SQL Server Data Access Components 4.10

- C++Builder 2007 supported

New Features in SQL Server Data Access Components 4.00

New functionality:

- Delphi 2007 for Win32 supported
- Implemented [Disconnected Model](#) for working offline and automatically connecting and disconnecting
- Implemented [Local Failover](#) for detecting connection loss and implicitly re-executing some operations
- Added [DataSet Manager](#) to control project datasets
- New [TMSScript](#) component for easy execution of multistatement scripts with the following features added:
 - Support for executing [individual statements](#) in scripts
 - Support for [executing huge scripts stored in files](#) with dynamic loading
 - Support for using standard SQL Server client tool syntax
- New [TMSServiceBroker](#) component for SQL Server 2005 queuing and reliable messaging added
- New [TCRBatchMove](#) component for transferring data between all types of TDataSet descendants added
- New [TMSDump](#) component for loading data to and from the server added
- Support for data [export](#) and
`M:Devart.Dac.TVirtualTable.LoadFromFile(System.String,System.Boolean)` to/from XML
- WideMemo field type in Delphi 2006 supported
- Support for [sending messages](#) to DBMonitor from any point in your program added
- Added asynchronous [execute](#) and [fetch](#) modes
- [Compressed BLOB](#) support

Support for more SQL Server functionality:

- [SQL Server Compact Edition](#) supported

- [Multiple Active Result Sets \(MARS\)](#) supported
- Support for new data types, including [XML](#), varchar(MAX), nvarchar(MAX), varbinary(MAX) added
- Improved record insertion performance with new [TMSLoader](#) component
- Added support for a new level of [transaction isolation](#) added
- Support for more server objects in [TMSMetaData](#) added
- Stored procedure parameters with default values supported

Extensions and improvements to existing functionality:

- General performance improved
- [Master/detail](#) functionality extensions:
- [Local master/detail](#) relationships support added
- Master/detail relationships in [CachedUpdates](#) mode support added
- Working with [calculated and lookup fields](#) improvements:
- Local [sorting](#) and filtering added
- Record location speed increased
- Improved working with lookup fields
- Greatly increased performance of applying updates in [CachedUpdates](#) mode
- [Connection pool](#) functionality improvements:
- Efficiency significantly improved
- API for [draining the connection pool](#) added
- Ability to customize update commands by attaching external components to [TMSUpdateSQL](#) objects added
- Support for DefaultValue on record insertion added
- Some performance improvements achieved:
- NUMERIC fields fetching
- Improved performance of executing Update commands while editing a dataset
- DataSet [refreshing](#)

- Record refreshing after updates and inserts
- Support for selecting database name in [TMSConnectDialog](#) component

Usability improvements:

- [Syntax highlighting](#) in design-time editors added
- Completely restructured and clearer [demo projects](#)
- Added [FAQ](#) section

New Features in SQL Server Data Access Components 3.80

- Professional editions of Turbo Delphi, Turbo Delphi for .NET, Turbo C++ supported

New Features in SQL Server Data Access Components 3.70

- Support for Delphi 2006 added
- Support for SQL Server 2005 added

New Features in SQL Server Data Access Components 3.55

- Ability of automatic preparing query with TCustomDADataset.Options.AutoPrepare property added
- Ability to synchronize position at different DataSets with TCustomDADataset.GotoCurrent method added
- Optimized MSSQLMonitor BLOB parameters processing
- Improved behavior on editing master key on Master/Detail relation

New Features in SQL Server Data Access Components 3.50

- Support for Delphi 2005 added
- Support for SQL Server 2005 beta 2 added

- Guid fields support for VirtualTable added

New Features in SQL Server Data Access Components 3.00

- Support for Delphi 8 added
- Local sorting ability with TMemDataSet.IndexFieldNames added
- Connection pooling support
- TCRDBGrid sources in Standard edition
- MSDataAdapter component added
- .NET Windows Forms demo project added
- ASP.NET demo project added
- TMSConnection.GetStoredProcNames, GetTableNames, GetDatabaseNames added
- TMSConnection.ClientVersion, ServerVersion added
- Milliseconds support added

New Features in SQL Server Data Access Components 2.45.2

- Methods TMSSQL.BreakExec and TCustomMSDataSet.BreakExec added
- Property TMSConnection.Options.AutoTranslate added
- Method ExecSQL in TMSConnection added
- Methods GetTableNames and GetDatabaseNames in TMSConnection added
- Unicode support for Locate on Win9x added

New Features in SQL Server Data Access Components 2.45

- Property MSConnection.Options.WorkstationID added
- Performance to insert large BLOBs improved
- Performance significantly improved
- Event TMSConnection.OnInfoMessage added

- Multiple Errors support added
- Property `MSConnection.Options.ApplicationName` added
- Property `TBlob.AsWideString` added
- Parameters parsing improved. Symbol ':' in string literals is ignored
- Network error processing improved
- Performance demo added

New Features in SQL Server Data Access Components 2.40

- `WideString` support added
- Property `MSDataSet.Options.QuoteNames` added
- Property `MSConnection.Options.KeepDesignConnected` added
- Property `MSConnectDialog.StoreLogInfo` published

New Features in SQL Server Data Access Components 2.35

- Speed optimization for opening small queries
- `MSConnection.Options` added
- Limited `MSConnection.ConnectionString` support added
- Output string and (var)bytes parameters are now obtained from the server with the maximum length not depending on set `Param.Size`
- `DBMonitor` client implementation moved to COM server

New Features in SQL Server Data Access Components 2.30

- Delphi 7 supported
- New memory management model for `ftString` and `ftVarBytes` types added
- Support for blob fields in `CachedUpdates` mode added

New Features in SQL Server Data Access Components

2.05

- DBMonitor support

New Features in SQL Server Data Access Components 2.00

- Server cursors supported
- Queries with Multiple Result Sets supported
- Performance improved
- Opening queries without fetching all rows to client (FetchAll = False) supported
- UniDirectional support added
- Quick getting Identity value
- Refresh supported for StoredProc
- FullRefresh supported
- Check for old row values while executing Update and Delete added
- Changed behavior on close connection with open transaction from Commit to Rollback

New Features in SQL Server Data Access Components 1.30

- C++Builder 6 supported

New Features in SQL Server Data Access Components 1.20

- Added TMSPParam class to represent parameters
- Query Analyzer and Enterprise Manager integration added
- Accelerated getting identity value on refresh

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2 General Information

This section contains general information about SQL Server Data Access Components

- [Overview](#)
- [Features](#)
- [Requirements](#)
- [Compatibility](#)
- [Using Several DAC Products in One IDE](#)
- [Component List](#)
- [Hierarchy Chart](#)
- [Editions](#)
- [Licensing and Subscriptions](#)
- [Getting Support](#)

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2.1 Overview

SQL Server Data Access Components (SDAC) is a library of components that provides access to Microsoft SQL Server databases. SDAC connects to SQL Server directly through OLE DB. The SDAC library is designed to help programmers develop faster and cleaner SQL Server database applications. SDAC is a complete replacement for standard SQL Server connectivity solutions and presents an efficient alternative to the Borland Database Engine for access to SQL Server.

The SDAC library is actively developed and supported by the Devart Team. If you have questions about SDAC, email the developers at sdac@devart.com or visit SDAC online at <https://www.devart.com/sdac/>.

Advantages of SDAC Technology

SDAC is a direct database connectivity wrapper built specifically for the SQL Server. SDAC offers wide coverage of the SQL Server feature set, and emphasizes optimized data access

strategies.

Wide Coverage of SQL Server Features

By providing access to the most advanced database functionality, SDAC allows developers to harness the full capabilities of the SQL Server and optimize their database applications.

SDAC provides complete support for working with SQL Server Compact Edition, SQL Server queuing and reliable messaging, IRowsetFastLoad interface, working with metadata information, MARS. Get a full list of supported SQL Server features in [Features](#).

Optimized Code

The goal of SDAC is to enable developers to write efficient and flexible database applications. The SDAC library is implemented using optimized code and advanced data access algorithms. Component interfaces undergo comprehensive performance tests and are designed to help you write efficient product data access layers. Find out more about using SDAC to optimize your database applications in [Increasing Performance](#).

Compatibility with other Connectivity Methods

The SDAC interface retains compatibility with standard VCL data access components like BDE. Existing BDE-based applications can be easily migrated to SDAC and enhanced to take advantage of SQL Server-specific features. Project migration can be automated with the BDE/ADO Migration Wizard. Find out more about Migration Wizard in [Using Migration Wizard](#).

Development and Support

SDAC is an SQL Server connectivity solution that is actively developed and supported. SDAC comes with full documentation, demo projects, and fast (usually within one business day) technical support by the SDAC development team. Find out more about getting help or submitting feedback and suggestions to the SDAC Development Team in [Getting Support](#).

A description of the SDAC components is provided in [Component List](#).

Key Features

- Direct access to server data. Does not require installation of other data provider layers (such as BDE and ODBC)
- VCL, LCL and FMX versions of library available

- Full support of the latest [Microsoft SQL Server versions, including Express and Compact editions](#)
- Support for all SQL Server data types
- [Disconnected Model](#) with automatic connection control for working with data offline
- [Local Failover](#) for detecting connection loss and implicitly reexecuting certain operations
- All types of local [sorting](#) and [filtering](#), including by calculated and lookup fields
- [Automatic data updating](#) with [TMSQuery](#), [TMSTable](#), and [TMSSStoredProc](#) components
- Unicode support
- Support for many SQL Server-specific features, such as [messaging](#) and [bulk copy operations](#)
- Advanced script execution with [TMSScript](#) component
- Support for [using macros](#) in SQL
- Easy migration from [BDE](#) and [ADO](#) with [Migration Wizard](#)
- Lets you use Professional Edition of [Delphi and C++Builder](#) to develop client/server applications
- Included annual [SDAC Subscription](#) with [Priority Support](#)
- Licensed royalty-free per developer, per team, or per site

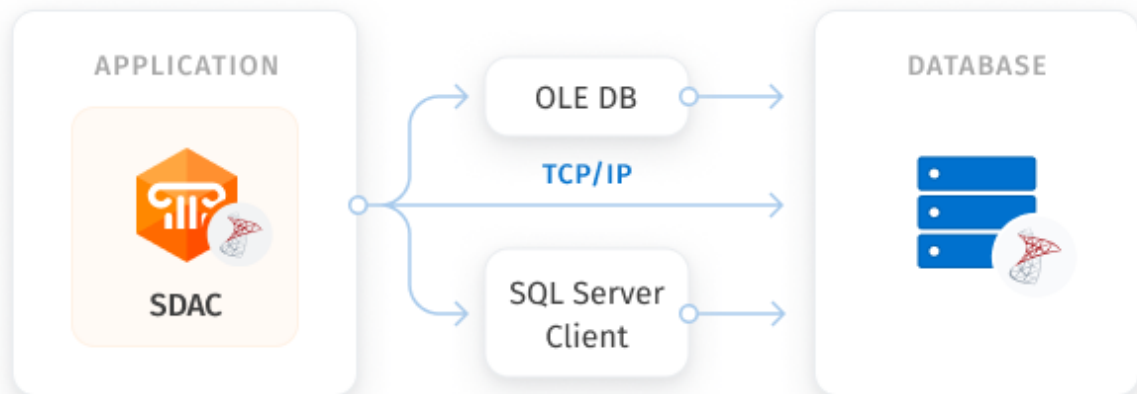
The full list of SDAC features are available in [Features](#).

How does SDAC work?

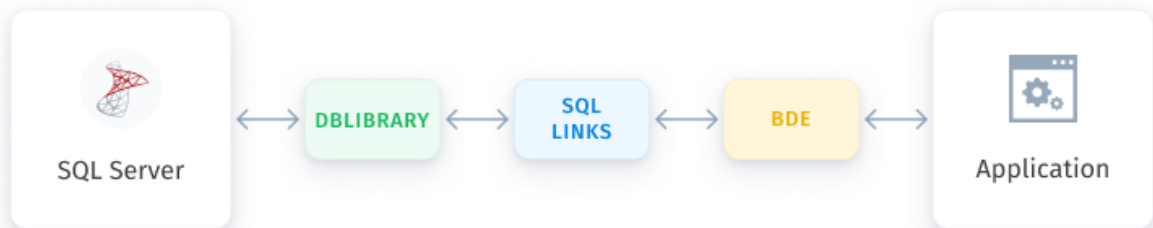
SDAC uses OLE DB, which is a native SQL Server interface, directly through a set of COM-based interfaces to connect to the server. SDAC is designed to be lightweight and consists of a thin layer between your code and SQL Server databases.

In contrast, the Borland Database Engine (BDE) uses several layers to access SQL Server and requires additional data access software to be installed on client machines.

SDAC Connection



BDE Connection



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2.2 Features

In this topic you will find the complete SDAC feature list sorted by categories.

Supported target platforms

- Windows 32-bit and 64-bit
- macOS 64-bit
- Mac ARM
- iOS 64-bit
- iOS Simulator ARM 64-bit
- Android 32-bit and 64-bit

- Linux 32-bit (only in Lazarus and Free Pascal) and 64-bit

General usability:

- Direct access to server data. Does not require installation of other data provider layers (such as BDE and ODBC)
- Interface compatible with standard data access methods, such as BDE and ADO
- VCL, LCL, and FMX versions of library available
- [Separated run-time and GUI specific parts](#) allow you to create pure console applications such as CGI
- Unicode support

Network and connectivity:

- [Disconnected Model](#) with automatic connection control for working with data offline
- [Local Failover](#) for detecting connection loss and implicitly reexecuting certain operations
- P:Devart.Sdac.TCustomMSConnection.ConnectionString support
- Ability to search for installed SQL Server databases in a local network
- Support for [connection encryption without certificate validation](#)

Compatibility:

- [Full support of the latest Microsoft SQL Server versions, including Express and Compact editions](#)
- Support for all SQL Server data types
- [Compatible with all IDE versions starting with Delphi 6, C++Builder 6 and Lazarus \(Free Pascal\)](#)
- Includes provider for UniDAC Standard Edition
- [Wide reporting component support](#), including support for InfoPower, ReportBuilder, and FastReport
- Wide support of all standard Borland and third-party visual data-aware controls
- Allows you to use Professional Edition of Delphi and C++Builder to develop client/server

applications

SQL Server technology support:

- [TMSLoader](#) component for improving record insertion performance
- [TMSServiceBroker](#) component for SQL Server queuing and reliable messaging
- [Enhanced support](#) for [User-defined Types of SQL Server](#)
- Enhanced support for [SQL Server Compact Edition](#) with the [TMSCompactConnection](#) component
- Possibility to change [application name](#) for a connection
- Possibility to change [workstation identifier](#) for a connection
- Configuration of [OEM/ANSI character translation](#)
- Ability to lock [records](#) and [tables](#)

Performance:

- High overall [performance](#)
- Fast controlled fetch of large data blocks
- Optimized [string data storing](#)
- Advanced [connection pooling](#)
- Incredible [performance of applying updates](#) in CachedUpdates mode
- [Caching of calculated and lookup fields](#)
- [Fast Locate](#) in a sorted DataSet
- [Preparing of user-defined update statements](#)

Local data storage operations:

- Database-independent data storage with [TVirtualTable](#) component
- [CachedUpdates](#) operation mode
- Local [sorting](#) and filtering, including by calculated and lookup fields
- [TMSMetaData](#) Local [master/detail relationship](#)
- Master/detail relationship in CachedUpdates mode

Data access and data management automation:

- [Automatic data updating](#) with [TMSQuery](#) , [TMSTable](#) and [TMSStoredProc](#) components
- Support for [Query Notifications](#) with the [TMSChangeNotification](#) component
- [Automatic record refreshing](#)
- [Automatic query preparing](#)
- Support for [getting results](#) from queries with the [FOR XML](#) clause in readable view
- Support for ftWideMemo field type in Delphi 2006 and higher

Extended data access functionality:

- [Separate component](#) for executing SQL statements
- Simplified access to table data with [TMSTable](#) component
- Ability to retrieve metadata information with [TMSMetaData](#) component
- [BLOB compression](#) support
- Support for [using macros](#) in SQL
- [FmtBCD fields support](#)
- NonBlocking mode allows background [executing](#) and [fetching data](#) in separate threads
- [Ability to customize update commands](#) by attaching external components to [TMSUpdateSQL](#) objects.
- [Deferred detail DataSet refresh](#) in master/detail relationships
- [MIDAS](#) technology support
- [Distributed transactions](#) are supported with the [TMSTransaction](#) component

Data exchange:

- Transferring data between all types of TDataSet descendants with [TCRBatchMove](#) component
- Data [export](#) and [import](#) to/from XML (ADO format)
- Ability to [synchronize positions](#) in different DataSets

Script execution:

- Advanced script execution features with [TMSScript](#) component
- Support for executing [individual statements](#) in scripts
- Support for [executing huge scripts stored in files](#) with dynamic loading
- [Optimized multi-statement script execution](#)

SQL execution monitoring:

- Extended SQL tracing capabilities provided by [TMSSQLMonitor](#) component and [DBMonitor](#)
- Borland SQL Monitor support
- Ability to [send messages to DBMonitor](#) from any point in your program

Visual extensions:

- Includes source code of enhanced TCRDBGrid data-aware grid control
- Customizable [connection dialog](#)
- Cursor changes during non-blocking execution

Design-time enhancements:

- [DataSet Manager tool](#) to control DataSet instances in the project
- Advanced design-time component and property editors
- Automatic design-time component linking
- Easy migration from [BDE](#) and [ADO](#) with [Migration Wizard](#)
- More convenient data source setup with the [TMSDataSource](#) component
- Syntax highlighting in design-time editors

Resources:

- Code documentation and guides in the CHM, PDF, and HXS formats
- Many helpful [demo](#) projects

Error handling:

- [Multiple error processing](#) support
- [Unicode error messages](#) support

Licensing and support:

- Included annual [SDAC Subscription](#) with [Priority Support](#)
- Licensed royalty-free per developer, per team, or per site

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2.3 Requirements

SDAC requires OLE DB installed on the workstation.

Note: In current versions of Microsoft Windows, as Windows 2000, OLE DB is already included as standard package. But it's highly recommended to download latest version (newer than 2.5) of [Microsoft Data Access Components \(MDAC\)](#).

If you are working with SQL Server Compact Edition, you should have it installed. You can download SQL Server Compact Edition from <http://www.microsoft.com/sql/editions/compact/default.mspx>. For more information visit [Working with SQL Server Compact Edition](#).

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2.4 Compatibility

SQL Server Compatibility

SDAC supports the following versions of SQL Server:

- SQL Server 2022 (including Express edition)
- SQL Server 2019 (including Express edition)
- SQL Server 2017 (including Express edition)
- SQL Server 2016 (including Express edition)
- SQL Server 2014 (including Express edition)

- SQL Server 2012 (including Express edition)
- SQL Server 2008 R2 (including Express edition)
- SQL Server 2008 (including Express edition)
- SQL Server 2005 (including Express edition)
- SQL Server 2000 (including MSDE)
- SQL Server 7
- SQL Server Compact 4.0, 3.5, 3.1
- SQL Azure

IDE Compatibility

SDAC is compatible with the following IDEs:

Embarcadero RAD Studio 12.1 Athens

- Embarcadero Delphi 12.1 Athens for Windows
- Embarcadero Delphi 12.1 Athens for macOS
- Embarcadero Delphi 12.1 Athens for Linux
- Embarcadero Delphi 12.1 Athens for iOS
- Embarcadero Delphi 12.1 Athens for Android
- Embarcadero C++Builder 12.1 Athens for Windows
- Embarcadero C++Builder 12.1 Athens for iOS
- Embarcadero C++Builder 12.1 Athens for Android

Embarcadero RAD Studio 12 Athens

- Embarcadero Delphi 12 Athens for Windows
- Embarcadero Delphi 12 Athens for macOS
- Embarcadero Delphi 12 Athens for Linux
- Embarcadero Delphi 12 Athens for iOS
- Embarcadero Delphi 12 Athens for Android
- Embarcadero C++Builder 12 Athens for Windows
- Embarcadero C++Builder 12 Athens for iOS

- Embarcadero C++Builder 12 Athens for Android

Embarcadero RAD Studio 11.1 Alexandria

- Embarcadero Delphi 11.1 Alexandria for Windows
- Embarcadero Delphi 11.1 Alexandria for macOS
- Embarcadero Delphi 11.1 Alexandria for Linux
- Embarcadero Delphi 11.1 Alexandria for iOS
- Embarcadero Delphi 11.1 Alexandria for Android
- Embarcadero C++Builder 11.1 Alexandria for Windows
- Embarcadero C++Builder 11.1 Alexandria for iOS
- Embarcadero C++Builder 11.1 Alexandria for Android

Embarcadero RAD Studio 10.4 Sydney (Requires Release 1 or Release 2)

- Embarcadero Delphi 10.4 Sydney for Windows
- Embarcadero Delphi 10.4 Sydney for macOS
- Embarcadero Delphi 10.4 Sydney for Linux
- Embarcadero Delphi 10.4 Sydney for iOS
- Embarcadero Delphi 10.4 Sydney for Android
- Embarcadero C++Builder 10.4 Sydney for Windows
- Embarcadero C++Builder 10.4 Sydney for iOS
- Embarcadero C++Builder 10.4 Sydney for Android

Embarcadero RAD Studio 10.3 Rio (Requires [Release 2](#) or [Release 3](#))

- Embarcadero Delphi 10.3 Rio for Windows
- Embarcadero Delphi 10.3 Rio for macOS
- Embarcadero Delphi 10.3 Rio for Linux
- Embarcadero Delphi 10.3 Rio for iOS
- Embarcadero Delphi 10.3 Rio for Android
- Embarcadero C++Builder 10.3 Rio for Windows
- Embarcadero C++Builder 10.3 Rio for macOS
- Embarcadero C++Builder 10.3 Rio for iOS

- Embarcadero C++Builder 10.3 Rio for Android

Embarcadero RAD Studio 10.2 Tokyo (Incompatible with Release 1)

- Embarcadero Delphi 10.2 Tokyo for Windows
- Embarcadero Delphi 10.2 Tokyo for macOS
- Embarcadero Delphi 10.2 Tokyo for Linux
- Embarcadero Delphi 10.2 Tokyo for iOS
- Embarcadero Delphi 10.2 Tokyo for Android
- Embarcadero C++Builder 10.2 Tokyo for Windows
- Embarcadero C++Builder 10.2 Tokyo for macOS
- Embarcadero C++Builder 10.2 Tokyo for iOS
- Embarcadero C++Builder 10.2 Tokyo for Android

Embarcadero RAD Studio 10.1 Berlin

- Embarcadero Delphi 10.1 Berlin for Windows
- Embarcadero Delphi 10.1 Berlin for macOS
- Embarcadero Delphi 10.1 Berlin for iOS
- Embarcadero Delphi 10.1 Berlin for Android
- Embarcadero C++Builder 10.1 Berlin for Windows
- Embarcadero C++Builder 10.1 Berlin for macOS
- Embarcadero C++Builder 10.1 Berlin for iOS
- Embarcadero C++Builder 10.1 Berlin for Android

Embarcadero RAD Studio 10 Seattle

- Embarcadero Delphi 10 Seattle for Windows
- Embarcadero Delphi 10 Seattle for macOS
- Embarcadero Delphi 10 Seattle for iOS
- Embarcadero Delphi 10 Seattle for Android
- Embarcadero C++Builder 10 Seattle for Windows
- Embarcadero C++Builder 10 Seattle for macOS
- Embarcadero C++Builder 10 Seattle for iOS

- Embarcadero C++Builder 10 Seattle for Android

Embarcadero RAD Studio XE8

- Embarcadero Delphi XE8 for Windows
- Embarcadero Delphi XE8 for macOS
- Embarcadero Delphi XE8 for iOS
- Embarcadero Delphi XE8 for Android
- Embarcadero C++Builder XE8 for Windows
- Embarcadero C++Builder XE8 for macOS
- Embarcadero C++Builder XE8 for iOS
- Embarcadero C++Builder XE8 for Android

Embarcadero RAD Studio XE7

- Embarcadero Delphi XE7 for Windows
- Embarcadero Delphi XE7 for macOS
- Embarcadero Delphi XE7 for iOS
- Embarcadero Delphi XE7 for Android
- Embarcadero C++Builder XE7 for Windows
- Embarcadero C++Builder XE7 for macOS
- Embarcadero C++Builder XE7 for iOS
- Embarcadero C++Builder XE7 for Android

Embarcadero RAD Studio XE6

- Embarcadero Delphi XE6 for Windows
- Embarcadero Delphi XE6 for macOS
- Embarcadero Delphi XE6 for iOS
- Embarcadero Delphi XE6 for Android
- Embarcadero C++Builder XE6 for Windows
- Embarcadero C++Builder XE6 for macOS
- Embarcadero C++Builder XE6 for iOS
- Embarcadero C++Builder XE6 for Android

Embarcadero RAD Studio XE5 (Requires [Update 2](#))

- Embarcadero Delphi XE5 for Windows
- Embarcadero Delphi XE5 for macOS
- Embarcadero Delphi XE5 for iOS
- Embarcadero Delphi XE5 for Android
- Embarcadero C++Builder XE5 for Windows
- Embarcadero C++Builder XE5 for macOS
- Embarcadero C++Builder XE5 for iOS

Embarcadero RAD Studio XE4

- Embarcadero Delphi XE4 for Windows
- Embarcadero Delphi XE4 for macOS
- Embarcadero Delphi XE4 for iOS
- Embarcadero C++Builder XE4 for Windows
- Embarcadero C++Builder XE4 for macOS

Embarcadero RAD Studio XE3 (Requires [Update 2](#))

- Embarcadero Delphi XE3 for Windows
- Embarcadero Delphi XE3 for macOS
- Embarcadero C++Builder XE3 for Windows
- Embarcadero C++Builder XE3 for macOS

Embarcadero RAD Studio XE2 (Requires [Update 4 Hotfix 1](#))

- Embarcadero Delphi XE2 for Windows
- Embarcadero Delphi XE2 for macOS
- Embarcadero C++Builder XE2 for Windows
- Embarcadero C++Builder XE2 for macOS

Embarcadero RAD Studio XE

- Embarcadero Delphi XE
- Embarcadero C++Builder XE

Embarcadero RAD Studio 2010

- Embarcadero Delphi 2010

- Embarcadero C++Builder 2010

CodeGear RAD Studio 2009 (Requires [Update 3](#))

- CodeGear Delphi 2009

- CodeGear C++Builder 2009

CodeGear RAD Studio 2007

- CodeGear Delphi 2007

- CodeGear C++Builder 2007

Borland Developer Studio 2006

- Borland Delphi 2006

- Borland C++Builder 2006

Borland Delphi 7

Borland Delphi 6 (Requires [Update Pack 2](#) – Delphi 6 Build 6.240)

Borland C++Builder 6 (Requires [Update Pack 4](#) – C++Builder 6 Build 10.166)

[Lazarus](#) 3.2.0 and [Free Pascal](#) 3.2.2 for Windows, macOS, and Linux.

All the existing Delphi and C++Builder editions are supported: Architect, Enterprise, Professional, Community, and Starter.

Lazarus and Free Pascal are supported only in Trial Edition and Professional Edition with source code.

Supported Target Platforms

- Windows 32-bit and 64-bit
- macOS 64-bit and ARM (Apple Silicon M1)
- Linux 32-bit (only in Lazarus and Free Pascal) and 64-bit
- iOS 64-bit
- iOS Simulator ARM 64-bit
- Android 32-bit and 64-bit

Support for Windows 64-bit is available since RAD Studio XE2. Support for iOS 64-bit is available since RAD Studio XE8. Support for Android 32-bit is available since RAD Studio XE5. Support for Linux 64-bit is available since RAD Studio 10.2 Tokyo. Support for macOS 64-bit is available since RAD Studio 10.3 Rio. Support for Android 64-bit is available since

RAD Studio 10.3.3 Rio.

Supported GUI Frameworks

- FireMonkey (FMX)
- Visual Component Library (VCL)
- Lazarus Component Library (LCL)

Devart Data Access Components Compatibility

All DAC products are compatible with each other.

But, to install several DAC products to the same IDE, it is necessary to make sure that all DAC products have the same common engine (BPL files) version. The latest versions of DAC products or versions with the same release date always have the same version of the common engine and can be installed to the same IDE.

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2.5 Using Several DAC Products in One IDE

UniDAC, ODAC, SDAC, MyDAC, IBDAC, PgDAC, LiteDAC and VirtualDAC components use common base packages listed below:

Packages:

- dacXX.bpl
- dacvclXX.bpl
- dcldacXX.bpl

Note that product compatibility is provided for the current build only. In other words, if you upgrade one of the installed products, it may conflict with older builds of other products. In order to continue using the products simultaneously, you should upgrade all of them at the same time.

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









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2.6 Component List










This topic presents a brief description of the components included in the SQL Server Data Access Components library. Click on the name of each component for more information. These components are added to the SDAC page of the Component palette except for [TCRBatchMove](#) and [TVirtualTable](#) components. [TCRBatchMove](#) and [TVirtualTable](#) components are added to the Data Access page of the Component palette. Basic SDAC components are included in all SDAC editions. SDAC Professional Edition components are not included in SDAC Standard Edition.

Basic SDAC components

	TMSConnection	Lets you set up and control connections to SQL Server.
	TMSQuery	Uses SQL statements to retrieve data from SQL Server table or tables and supply it to one or more data-aware components through a TDataSource component. Provides flexible update of data.
	TMSTable	Lets you retrieve and update data in a single table without writing SQL statements.
	TMSStoredProc	Executes stored procedures and functions.
	TMSSQL	Executes SQL statements and stored procedures that do not return rowsets.
	TMSScript	Executes sequences of SQL statements.
	TMSUpdateSQL	Lets you tune update operations for DataSet component.
	TMSDataSource	Provides an interface between a SDAC dataset components and data-aware controls on a form.
	TMSSQLMonitor	Interface for monitoring dynamic SQL execution in SDAC-based applications.
	TMSConnectDialog	Is used on client side to supply username, password, database and server name.
	TMSTableData	Is used for working with user-defined table types in SQL Server 2008.

	TVirtualTable	Dataset that stores data in memory. This component is placed on the Data Access page of the Component palette.
	TVirtualDataSet	Dataset that processes arbitrary non-tabular data.

SDAC Professional Edition components

	TMSEncryptor	Represents data encryption and decryption in client application.
	TMSLoader	Provides quick data loading to SQL Server database.
	TMSDump	Serves to store a database or its parts as a script and also to restore database from received script.
	TMSServiceBroker	Lets you send and receive messages using the SQL Server Service Broker system.
	TMSMetaData	Retrieves embracing metadata on specified SQL object.
	TMSChangeNotification	Lets you react on different server side changes on-the-fly. Based on the Query Notifications mechanism of SQL Server.
	TMSTransaction	Lets you control distributed transactions via Microsoft Distributed Transaction Coordinator.
	TMSCompactConnection	Lets you set up and control connections to SQL Server Compact Edition .
	TCRBatchMove	Transfers data between all types of TDataSets descendants. This component is placed on the Data Access page of the Component palette.

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2.7 Hierarchy Chart

Many SDAC classes are inherited from standard VCL/LCL classes. The inheritance hierarchy chart for SDAC is shown below. The SDAC classes are represented by hyperlinks that point to their description in this documentation. A description of the standard classes can be found in the documentation of your IDE.

TObject

|-TPersistent

|-TComponent

|-TCustomConnection

| | -[TCustomDAConnection](#)| | -[TCustomMSConnection](#)| | -[TMSConnection](#)| | -[TMSCompactConnection](#)

|-TDataSet

| | -[TMemDataSet](#)| | -[TCustomDADataSet](#)| | | -[TCustomMSDataSet](#)| | | | -[TMSQuery](#)| | | | -[TCustomMSTable](#)| | | | | -[TMSTable](#)| | | | -[TCustomMSStoredProc](#)| | | | | -[TMSStoredProc](#)| | | | -[TMSMetaData](#)| | -[TVirtualTable](#)| | -[TMSTableData](#)

|-TDataSource

| | -[TCRDataSource](#)| | -[TMSDataSource](#)|-[TCustomDASQL](#)| | -[TMSSQL](#)|-[TCustomDASQLMonitor](#)| | -[TMSSQLMonitor](#)|-[TCustomConnectDialog](#)| | -[TMSConnectDialog](#)|-[TDALoader](#)| | -[TMSLoader](#)

- | [-TDADump](#)
- | | [-TMSDump](#)
- | [-TDAScript](#)
- | | [-TMSScript](#)
- | [-DADataAdapter](#)
- | | [-MSDataAdapter](#)
- | [-TDATransaction](#)
- | | [TMSTransaction](#)
- | [-TCRBatchMove](#)
- | [-TMSChangeNotification](#)
- | [-TMSServiceBroker](#)
- | [-TField](#)
- | | [-TMSUDTField](#)
- | | [-TMSXMLField](#)
- | [-TCREncryptor](#)
- | | [-TMSEncryptor](#)

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2.8 Editions

SQL Server Data Access Components comes in two editions: Standard and Professional.

The **Standard** edition includes the SDAC basic connectivity components and SDAC Migration Wizard. SDAC Standard Edition is a cost-effective solution for database application developers who are looking for high-performance connectivity to SQL Server for secure, reliable, and high-speed data transmission.

The **Professional** edition shows off the full power of SDAC, enhancing SDAC Standard Edition with support for SQL Server-specific functionality, access to the Direct mode for connecting to the SQL Server directly via TCP/IP, and advanced dataset management features.

You can get **Source Access** to the implementation of all the component classes in SDAC by purchasing a special SDAC Professional Edition with Source Code, which includes the source code of all component classes. The source code of DataSet Manager and Migration

Wizard is not distributed. The source code of the Direct mode for SQL Server is distributed obfuscated.

The matrix below compares features of SDAC editions. See [Features](#) for the detailed list of SDAC features.

SDAC Edition Matrix

Feature	Standard	Professional
Direct connectivity		
Connection without SQL Server client	×	✓
Desktop Application Development		
Windows	✓	✓
macOS	×	✓
Linux	×	✓
Mobile Application Development		
iOS	×	✓
Android	×	✓
Data Access Components		
TMSConnection TMSQuery TMSSQL TMSTable TMSStoredProc TMSUpdateSQL TMSDataSource	✓	✓
Script executing TMSScript	✓	✓
Transactions managing TMSTransaction	✓	✓
Fast data loading into the server TMSLoader	×	✓

SQL Server Specific Components		
Working with user-defined table types in SQL Server 2008 TMSTableData	✓	✓
Connection to SQL Server Compact Edition TMSCompactConnection	✗	✓
Reaction on server side changes on-the-fly TMSChangeNotification	✗	✓
Sending messages with Service Broker system TMSServiceBroker	✗	✓
Obtaining metadata about database objects TMSMetadata	✗	✓
Storing a database as a script TMSDump	✗	✓
DataBase Activity Monitoring		
Monitoring of per-component SQL execution TMSSQLMonitor	✓	✓
Additional components		
Advanced connection dialog TMSConnectDialog	✓	✓
Data encryption and decryption TMSEncryptor	✗	✓
Data storing in memory table TVirtualTable	✓	✓
Dataset that wraps arbitrary non-tabular data TVirtualDataSet	✓	✓
Advanced DBGrid with extended functionality TCRDBGrid	✓	✓
Records transferring between datasets TCRBatchMove	✗	✓
Design-Time Features		
Enhanced component and property editors	✓	✓
Migration Wizard	✓	✓
DataSet Manager	✗	✓
Cross IDE Support		

Lazarus and Free Pascal Support

SRC¹¹ Available only in Professional Edition with Source Code.

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INTRODUCTION

This Devart end-user license agreement ("Agreement") is a legal agreement between you (either an individual person or a single legal entity) and Devart, for the use of SDAC software application, source code, demos, intermediate files, printed materials, and online or electronic documentation contained in this installation file. For the purpose of this Agreement, the software program(s) and supporting documentation will be referred to as the "Software".

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2.10 Getting Support

This page lists several ways you can find help with using SDAC and describes the SDAC Priority Support program.

Support Options

There are a number of resources for finding help on installing and using SDAC.

- You can find out more about SDAC installation or licensing by consulting the [Licensing](#) and [FAQ](#) sections.
- You can get community assistance and technical support on the [SDAC Community Forum](#).
- You can get advanced technical assistance by SDAC developers through the **SDAC Priority Support** program.

If you have a question about ordering SDAC or any other Devart product, please contact sales@devart.com.

SDAC Priority Support

SDAC Priority Support is an advanced product support service for getting expedited individual assistance with SDAC-related questions from the SDAC developers themselves. Priority Support is carried out over email and has two business days response policy. Priority Support is available for users with an active [SDAC Subscription](#).

To get help through the SDAC Priority Support program, please send an email to support@devart.com describing the problem you are having. Make sure to include the following information in your message:

- The version of Delphi or C++Builder you are using.
- Your SDAC Registration number.
- Full SDAC edition name and version number. You can find both of these from the SDAC | SDAC About menu in the IDE.
- Versions of the SQL Server server and client you are using.
- A detailed problem description.
- If possible, a small test project that reproduces the problem. It is recommended to use

Northwind objects only. Please include definitions for all and avoid using third-party components.

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2.11 Frequently Asked Questions

This page contains a list of Frequently Asked Questions for SQL Server Data Access Components.

If you have encounter a question with using SDAC, please browse through this list first. If this page does not answer your question, refer to the Getting Support topic in SDAC help.

Installation and Deployment

1. I am having a problem installing SDAC or compiling SDAC-based projects...

You may be having a compatibility issue that shows up in one or more of the following forms:

- Get a "Setup has detected already installed DAC packages which are incompatible with current version" message during SDAC installation.
- Get a "Procedure entry point ... not found in ..." message when starting IDE.
- Get a "Unit ... was compiled with a different version of ..." message on compilation.

You can have such problems if you installed incompatible SDAC, ODAC, MyDAC or IBDAC versions. All these products use common base packages. The easiest way to avoid the problem is to uninstall all installed DAC products and then download from our site and install the last builds.

2. What software should be installed on the client computer so that my applications that use SDAC can run?

SDAC requires OLE DB installed on the workstation. In current versions of Microsoft Windows, such as Windows 2000, OLE DB is already included as part of the standard installation. But it is highly recommended to download the latest version (newer than 2.5) of [Microsoft Data Access Components](#) (MDAC).

Many features of SQL Server like Query Notifications, MARS require [Microsoft SQL Server](#)

[Native Client](#). If you need to use these features, you should download and install Microsoft SQL Server Native Client.

For applications that use [SQL Server Compact Edition](#), the server itself is required to be installed on the client computer.

For more information, please refer to the Deployment topic of the SDAC help.

Licensing and Subscriptions

1. Am I entitled to distribute applications written with SDAC?

If you have purchased a full version of SDAC, you are entitled to distribute pre-compiled programs created with its use. You are not entitled to propagate any components inherited from SDAC or using SDAC source code. For more information see the *License.rtf* file in your SDAC installation directory.

2. Can I create components using SDAC?

You can create your own components that are inherited from SDAC or that use the SDAC source code. You are entitled to sell and distribute compiled application executables that use such components, but not their source code and not the components themselves.

3. What licensing changes can I expect with SDAC 4.00?

The basic SDAC license agreement will remain the same. With SDAC 4.00, the [SDAC Edition Matrix](#) will be reorganized and a new [SDAC Subscription Program](#) will be introduced.

4. What do the SDAC 4.00 Edition Levels correspond to?

SDAC 4.00 will come in four editions: Trial, Standard, Professional, and Professional with Sources.

When you upgrade to the new version, your edition level will be automatically updated using the following Edition Correspondence Table.

Edition Correspondence Table for Upgrading to SDAC 4.00

Old Edition Level	New Edition Level
- No Correspondence -	SDAC Standard Edition

SDAC Standard Edition	SDAC Professional Edition
SDAC Professional Edition	SDAC Professional Edition with Sources
SDAC Trial Edition	SDAC Trial Edition

The feature list for each edition can be found in the SDAC documentation and on the [SDAC website](#).

5. I have a registered version of SDAC. Will I need to pay to upgrade to future versions?

After SDAC 4.00, all upgrades to future versions are free to users with an active SDAC Subscription.

Users that have a registration for versions of SDAC prior to SDAC 4.00 will have to first upgrade to SDAC 4.00 to jump in on the Subscription program.

6. What are the benefits of the SDAC Subscription program?

The **SDAC Subscription Program** is an annual maintenance and support service for SDAC users.

Users with a valid SDAC Subscription get the following benefits:

- Access to new versions of SDAC when they are released
- Access to all SDAC updates and bug fixes
- Product support through the SDAC Priority Support program
- Notification of new product versions

Priority Support is an advanced product support program which offers you expedited individual assistance with SDAC-related questions from the SDAC developers themselves. Priority Support is carried out over email and has a two business day response policy.

The SDAC Subscription Program is available for registered users of SDAC 4.00 and higher.

7. Can I use my version of SDAC after my Subscription expires?

Yes, you can. SDAC version licenses are perpetual.

8. I want a SDAC Subscription! How can I get one?

An annual SDAC Subscription is included when ordering or upgrading to any registered (non-Trial) edition of SDAC 4.00 or higher.

You can renew your SDAC Subscription on the [SDAC Ordering Page](#). For more information, please contact sales@devart.com.

9. Does this mean that if I upgrade to SDAC 4 from SDAC 3, I'll get an annual SDAC Subscription for free?

Yes.

10. How do I upgrade to SDAC 4.00?

To upgrade to SDAC 4.00, you can get a Version Update from the [SDAC Ordering Page](#). For more information, please contact sales@devart.com.

Performance

1. How productive is SDAC?

SDAC uses the lowest documented protocol level (OLE DB) to access the database server. This allows SDAC to achieve high performance. From time to time we compare SDAC with other products, and SDAC always takes first place.

2. Why does the Locate function work so slowly the first time I use it?

Locate is performed on the client. So if you had set FetchAll to False when opening your dataset, cached only some of the rows on the client, and then invoked Locate, SDAC will have to fetch all the remaining rows from the server before performing the operation. On subsequent calls, Locate should work much faster.

If the Locate method keeps working slowly on subsequent calls or you are working with FetchAll=True, try the following. Perform local sorting by a field that is used in the Locate method. Just assign corresponding field name to the IndexFieldNames property.

How To

1. How can I enable syntax highlighting in SDAC component editors at design time?

To enable syntax highlighting for SDAC, you should download and install the freeware [SynEdit](#)

[component set.](#)

2. How can I determine which version of SDAC am I using?

You can determine your SDAC version number in several ways:

- During installation of SDAC, consult the SDAC Installer screen.
- After installation, see the *history.html* file in your SDAC installation directory.
- At design-time, select SQL Server | About SDAC from the main menu of your IDE.
- At run-time, check the value of the `SdacVersion` and `DACVersion` constants.

3. How can I stop the cursor from changing to an hour glass during query execution?

Just set the `DBAccess.ChangeCursor` variable to `False` anywhere in your program. The cursor will stop changing after this command is executed.

4. How can I execute a query saved in the `SQLInsert`, `SQLUpdate`, `SQLDelete`, or `SQLRefresh` properties of a SDAC dataset?

The values of these properties are templates for query statements, and they cannot be manually executed. Usually there is no need to fill these properties because the text of the query is generated automatically.

In special cases, you can set these properties to perform more complicated processing during a query. These properties are automatically processed by SDAC during the execution of the `Post`, `Delete`, or `RefreshRecord` methods, and are used to construct the query to the server. Their values can contain parameters with names of fields in the underlying data source, which will be later replaced by appropriate data values.

For example, you can use the `SQLInsert` template to insert a row into a query instance as follows.

- Fill the `SQLInsert` property with the parametrized query template you want to use.
- Call `Insert`.
- Initialize field values of the row to insert.
- Call `Post`.

The value of the `SQLInsert` property will then be used by SDAC to perform the last step.

Setting these properties is optional and allows you to automatically execute additional SQL statements, add calls to stored procedures and functions, check input parameters, and/or store comments during query execution. If these properties are not set, the SDAC dataset object will generate the query itself using the appropriate insert, update, delete, or refresh record syntax.

5. How can I get a list of the databases on the server?

Use the `TCustomDAConnection.GetDatabaseNames` method.

6. How can I get a list of the tables list in a database?

Use the `TCustomDAConnection.GetTableNames` method.

7. Some questions about the visual part of SDAC

The following questions usually arise from the same problem:

- I set the Debug property to True but nothing happens!
- While executing a query, the screen cursor does not change to an hour-glass.
- Even if I have LoginPromp set to True, the connect dialog does not appear.

To fix this problem, you should add the `SdacVcl` unit to the uses clause of your project.

General Questions

1. I would like to develop an application that works with SQL Server. Should I use SDAC or DbxSda?

[DbxSda](#) is our dbExpress driver for SQL Server. dbExpress technology serves for providing a more or less uniform way to access different servers (SQL Server, MySQL, Oracle and so on). It is based on drivers that include server-specific features. Like any universal tool, in many specialized cases dbExpress providers lose some functionality. For example, the dbExpress design-time is quite poor and cannot be expanded.

SDAC is a specialized set of components for SQL Server, which has advanced server-specific design-time and a component interface similar to that of BDE.

We tried to include maximal support of SQL Server-specific features in both `DbxSda` and `SDAC`. However, the nature of dbExpress technology has some insurmountable restrictions. For example, Unicode fields cannot be passed from a driver to dbExpress.

SDAC and DbxSda use the same kernel and thus have similar performance. In some cases dbExpress is slower because data undergoes additional conversion to correspond to dbExpress standards.

To summarise, if it is important for you to be able to quickly adapt your application to a database server other than SQL Server, it is probably better to use DbxSda. In other cases, especially when migrating from BDE or ADO, you should use SDAC.

2. What are the advantages of SDAC over Delphi ADO components for accessing SQL Server?

ADO is a universal components while SDAC is specialized in SQL Server, so SDAC takes into account lots of server specific features. SDAC has great benefit in performance (5-10 times in different tests) because it works directly through OLE DB, which is a native SQL Server interface. Moreover, SDAC provides advanced design-time editors.

3. Behaviour of my application has changed when I upgraded SDAC. How can I restore the old behaviour with the new version?

We always try to keep SDAC compatible with previous versions, but sometimes we have to change behaviour of SDAC in order to enhance its functionality, or avoid bugs. If either of changes is undesirable for your application, and you want to save the old behaviour, please refer to the "Compatibility with previous versions" topic in SDAC help. This topic describes such changes, and how to revert to the old SDAC behaviour.

4. On connect, I get an "OLE DB error occurred. Code 800401F0h. ColInitialize has not been called" error. What can I do?

As SDAC uses OLE DB, it is necessary to initialize OLE by calling ColInitialize before a new connection is established. Usually VCL does this automatically. SDAC does not call to the ColInitialize and CoUninitialize functions itself, as this may cause unexpected problems if OLE is used in the program by someone else.

5. Are the SDAC connection components thread-safe?

Yes, SDAC is thread-safe but there is a restriction. But the same TCustomMSConnection object descendant cannot be used in several threads. So if you have a multithreaded application, you should have a TCustomMSConnection object descendant for each thread

that uses SDAC.

6. When editing a DataSet, I get an exception with the message 'Update failed. Found %d records.' or 'Refresh failed. Found %d records.'

This error occurs when the database server is unable to determine which record to modify or delete. In other words, there are either more than one record or no records that suit the UPDATE criteria. Such situation can happen when you omit the unique field in a SELECT statement (TCustomDADataset.SQL) or when another user modifies the table simultaneously. This exception can be suppressed. Refer to TCustomDADataset.Options topic in SDAC help for more information.

7. Some questions with using TCustomDADataset.FetchAll=False mode

Common issues when using FetchAll=False:

- I have problems working with temporary tables.
- I have problems working with transactions.
- Sometimes my application hangs on applying changes to database.

Usage of FetchAll=False mode has many advantages; however, it also has some restrictions since it requires an additional connection to server to be created for data fetching. The additional connection is created to prevent the main connection from blocking.

These problems can be avoided by setting the FetchAll property to True. Please see description of the FetchAll property and the CreateConnection option in SDAC help for more information.

One more way to solve these problems is to use the Multiple Active Result Sets (MARS) feature. This feature lets you keep more than one unfetched record set within a single connection. To enable MARS, set the MultipleActiveResultSets option of TMSConnection to True. Note: To use MARS, you will need to have SQL Server and SQL Native Client installed.

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3 Getting Started

This section introduces SQL Server Data Access Components. It contains the information on how to install SQL Server Data Access Components, quick walkthroughs to get started developing applications with it, information on technical licensing and deployment, and brief description of SDAC documentation and samples.

- [Installation](#)
- [Migration Wizard](#)
- [Migration from BDE](#)
- [Migration from ADO](#)
- [Logging on to SQL Server](#)
- [Logging on to SQL Server Compact](#)
- [Creating Database Objects](#)
- [Deleting Data From Tables](#)
- [Inserting Data Into Tables](#)
- [Retrieving Data](#)
- [Modifying Data](#)
- [Stored Procedures](#)
- [Working With Result Sets Using Stored Procedures](#)

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3.1 Installation

This topic contains the environment changes made by the SDAC installer. If you are having problems with using SDAC or compiling SDAC-based products, check this list to make sure your system is properly configured.

Compiled versions of SDAC are installed automatically by the SDAC Installer for all supported IDEs except for Lazarus. Versions of SDAC with Source Code must be installed manually. Installation of SDAC from sources is described in the supplied *ReadmeSrc.html* file.

Before installing SDAC ...

Two versions of SDAC cannot be installed in parallel for the same IDE, and, since the Devart Data Access Components products have some shared bpl files, newer versions of SDAC may be incompatible with older versions of MyDAC, IBDAC, and ODAC.

So before installing a new version of SDAC, uninstall any previous version of SDAC you may have, and check if your new install is compatible with other Devart Data Access Components products you have installed. For more information please see [Using several products in one IDE](#). If you run into problems or have any compatibility questions, please email sdac@devart.com

Note: You can avoid performing SDAC uninstallation manually when upgrading to a new version by directing the SDAC installation program to overwrite previous versions. To do this, execute the installation program from the command line with a */force* parameter (Start | Run and type *sdacXX.exe /force*, specifying the full path to the appropriate version of the installation program).

Installed packages

Note: %SDAC% denotes the path to your SDAC installation directory.

Delphi/C++Builder Win32 project packages

<i>Name</i>	<i>Description</i>	<i>Location</i>
dacXX.bpl	DAC run-time package	Windows\System32
dcldacXX.bpl	DAC design-time package	Delphi\Bin
dacvclXX.bpl*	DAC VCL support package	Delphi\Bin
sdacXX.bpl	SDAC run-time package	Windows\System32
dcclsdacXX.bpl	SDAC design-time package	Delphi\Bin
sdacvclXX.bpl*	VCL support package	Delphi\Bin
crcontrolsXX.bpl	TCRDBGrid component	Delphi\Bin

Additional packages for using SDAC managers and wizards

<i>Name</i>	<i>Description</i>	<i>Location</i>
-------------	--------------------	-----------------

datasetmanagerXX.bpl	DataSet Manager package	Delphi\Bin
oramigwizardXX.dll	SDAC BDE Migration wizard	%SDAC%\Bin

Environment Changes

To compile SDAC-based applications, your environment must be configured to have access to the SDAC libraries. Environment changes are IDE-dependent.

For all instructions, replace *%SDAC%* with the path to your SDAC installation directory

Delphi

- *%SDAC%\Lib* should be included in the Library Path accessible from Tools | Environment options | Library.

The SDAC Installer performs Delphi environment changes automatically for compiled versions of SDAC.

C++Builder

C++Builder 6:

- *\$(BCB)\SDAC\Lib* should be included in the Library Path of the Default Project Options accessible from Project | Options | Directories/Conditionals.
- *\$(BCB)\SDAC\Include* should be included in the Include Path of the Default Project Options accessible from Project | Options | Directories/Conditionals.

C++Builder 2006, 2007:

- *\$(BCB)\SDAC\Lib* should be included in the Library search path of the Default Project Options accessible from Project | Default Options | C++Builder | Linker | Paths and Defines.
- *\$(BCB)\SDAC\Include* should be included in the Include search path of the Default Project Options accessible from Project | Default Options | C++Builder | C++ Compiler | Paths and Defines.

The SDAC Installer performs C++Builder environment changes automatically for compiled versions of SDAC.

Lazarus

The SDAC installation program only copies SDAC files. You need to install SDAC packages to Lazarus IDE manually. Open %SDAC%\Source\Lazarus1\dclsdac10.lpk (for Trial version %SDAC%\Packages\dclsdac10.lpk) file in Lazarus and press the Install button. After that Lazarus IDE will be rebuilt with SDAC packages.

Do not press the Compile button for the package. Compiling will fail because there are no SDAC sources.

To check that your environment has been properly configured, try to compile one of the demo projects included with SDAC. The SDAC demo projects are located in %SDAC%\Demos.

Installation of Additional Components and Add-ins

DBMonitor

DBMonitor is an easy-to-use tool to provide visual monitoring of your database applications. It is provided as an alternative to Borland SQL Monitor which is also supported by SDAC. DBMonitor is intended to hamper application being monitored as little as possible. For more information, visit the [DBMonitor page online](#).

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3.2 Migration Wizard

Note: Migration Wizard is only available for Delphi.

Migration Wizard allows you to convert your BDE or ADO projects to SDAC. This wizard replaces BDE or ADO components in a specified project (.dfm and .pas files) with SDAC components.

To convert a project, perform the following steps.

- Select **Migration Wizard** from the **SDAC** menu
- Select **Replace BDE components** or **Replace ADO components** to replace corresponding components with SDAC and press the Next button.
- Select the location of the files to search - current open project or disc folder.

- If you have selected Disc folder on the previous step, specify the required folder and specify whether to process subfolders. Press the Next button.
- Select whether to make backup (it is highly recommended to make a backup), backup location, and log parameters, and press the Next button. Default backup location is RBackup folder in your project folder.
- Check your settings and press the Finish button to start the conversion operation.
- The project should be saved before conversion. You will be asked before saving it. Click Yes to continue project conversion.

After the project conversion it will be reopened.

The Wizard just replaces all standard BDE/ADO components. Probably you will need to make some changes manually to compile your application successfully.

If some problems occur while making changes, you can restore your project from backup file. To do this perform the following steps.

- Select **Migration Wizard** from the **SDAC** menu
- Select Restore original files from backup and press the Next button.
- Select the backup file. By default it is RExpert.reu file in RBackup folder of your converted project. Press the Next button.
- Check your settings and press the Finish button to start the conversion operation.
- Press **Yes** in the dialog that appeared.

Your project will be restored to its previous state.

See Also

- [Migration from BDE](#)
- [Migration from ADO](#)

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3.3 Migration from BDE

In SDAC the interests of BDE application developers were taken into consideration. So starting to use SDAC after working with BDE would be easy even for developing complex projects. Moreover, SDAC does not have problems like ones with LiveQuery and compatibility of applications developed using different versions in BDE. On SDAC developing BDE users interests were taken in consideration so conversion from using BDE into SDAC can be passed without difficulties even for complex projects. Moreover, SDAC does not have problems appropriated BDE with LiveQuery and compatibility of different programs that were developed using different BDE version and so on.

Abandoning BDE gives one more important advantage - positive effect on performance. Instead of complex BDE-ODBC drivers system it uses the fastest access - directly to Microsoft SQL Server.

SDAC provides special Wizard to simplify the conversion of already existing projects. This Wizard replaces BDE-components in the specified project (dfm-and pas-files) to SDAC. BDE-components that will be replaced:

- TDatabase -> TMSConnection
- TQuery -> TMSQuery
- TTable -> TMSTable
- TStoredProc -> TMSStoredProc
- TUpdateSQL -> TMSUpdateSQL

To run the Wizard select BDE/ADO Migration Wizard item in SDAC menu and follow the instructions. This Wizard is available only for Delphi IDE.

Note: Wizard serves only to simplify routine operations and after the conversion project might be uncompiled.

Below is a list of properties and methods that cannot be converted automatically. Here you can find hints for users to simplify manual replacement.

TDatabase

- AliasName - specific BDE property. Not supported by SDAC.
- DatabaseName - has a different meaning in BDE and SDAC. In SDAC it means SQL

Server database name. See [TCustomMSConnection](#) for details.

- Locale - not supported by SDAC.
- KeepConnection - not supported by SDAC.
- Params - see [TCustomMSConnection](#) properties.
- Session, SessionAlias, SessionName - SDAC does not need global management of a group of database connections in an application. So these properties are not supported.
- Temporary - has no meaning in SDAC. Additional connections are created but they are not available for the user. See [FetchAll](#) = False for details.
- TraceFlags - see [TCustomDASQLMonitor.TraceFlags](#).
- TransIsolation - see [IsolationLevel](#).
- Execute - use [ExecSQL](#) instead of this method.
- FlushSchemaCache - not supported by SDAC.
- GetFieldNames - not supported by SDAC.
- IsSQLBased - not supported by SDAC. For SQL Server must be always True.
- ApplyUpdates - parameters are not supported. To update only specified DataSets, use [ApplyUpdates](#). Update is performed within a transaction.

TBDEDataSet

- BlockReadSize - see [FetchRows](#).
- CacheBlobs - SQL Server does not provide service of suspended BLOB loading.
- KeySize - specific BDE property. Not supported by SDAC.

TDBDataSet

- AutoRefresh - supported through [TCustomDADataset.RefreshOptions](#).
- DBFlags, DBHandle, DBLocate, DBSession, Handle - specific BDE property. Not supported by SDAC.
- SessionName - not supported by SDAC.
- UpdateMode - not supported by SDAC. By default, the behaviour corresponds upWhereKeyOnly. To change this behaviour see [TCustomDADataset.SQLUpdate](#),

[TCustomDADataset.SQLDelete](#), [TCustomDADataset.SQLRefresh](#), and
[TCustomMSDataSet.Options.CheckRowVersion](#).

TQuery

- Constrained - specific BDE property. Not supported by SDAC.
- DataSource - see [TCustomDADataset.MasterSource](#).
- Local - specific BDE property. Not supported by SDAC.
- RequestLive - almost all query result sets can be updated. See [TMSQuery.UpdatingTable](#), [TCustomDADataset.ReadOnly](#), CanModify, [TCustomDADataset.SQLInsert](#), [TCustomDADataset.SQLUpdate](#), [TCustomDADataset.SQLDelete](#).
- Text - specific BDE property. Not supported by SDAC.

TTable

- DefaultIndex - not used in SDAC. If you need to sort a table by any field see [TCustomMSTable.OrderFields](#), [TMemDataSet.IndexFieldNames](#).
- Exists, CreateTable, AddIndex, DeleteIndex, StoreDefs, Deletetable, TableType - SDAC does not allow to create tables using TTable. If you need to create a table execute 'CREATE TABLE ...' query or use any special third-party tools.
- IndexFieldNames - a list of fields for local sorting. See [TMemDataSet.IndexFieldNames](#).
- IndexDefs, IndexFieldCount, IndexFields, IndexFiles, IndexName, GetIndexNames, GetIndexInfo - Not supported by SDAC.
- KeyExclusive - not supported by SDAC. Use SELECT ... FROM .. WHERE ... to get requested result .
- KeyFieldCount - not supported by SDAC as key fields are not used for searching on client side.
- TableLevel - BDE-specific property. Not supported by SDAC.
- ApplyRange, CancelRange, EditRangeStart, EditRangeEnd, SetRange - SDAC does not support Range.
- BatchMove - has no meaning in SQL Server. Use SELECT ... INTO ... syntax to copy records to server side.

- FindKey, FindNearest, GotoCurrent, GotoKey, GotoNearest, EditKey, SetKey - use [TMemDataSet.Locate](#) and [TMemDataSet.LocateEx](#).
- GetDetailLinkFields - use [TCustomDADataset.DetailFields](#), [TCustomDADataset.MasterFields](#).
- RenameTable - use 'RENAME TABLE ...' script.
- ConstraintCallBack, ConstraintsDisabled, DisableConstraints, EnableConstraints - has no meaning in SQL Server.
- FlushBuffers - not supported by SDAC.
- Translate - use AnsiToNative and similar functions.

TSession

SDAC does not need global management of a group of database connections in an application.

TUpdateSQL

A complete analogue to [TMSUpdateSQL](#).

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3.4 Migration from ADO

SDAC behaviour resembles the one of ADO as much as possible, so migration from ADO to SDAC should not cause much difficulties. **As far as possible, SDAC behaviour approaches to the behaviour of ADO, so this migration should not cause any serious difficulties.**

It is necessary to note that ADO provides universal data access and, as many universal tools do, does not specialize on any. **loses any specialized one.** First of all, it affects performance. You can see Performance project from SDAC\Demos\Performance to find out yourself - ADO loses SDAC at different tests from 1.5 to 20 times. Besides, SDAC interface (run-time and design-time) is focused on working with specific features of SQL Server.

SDAC offers special Wizard to simplify the conversion of already existing projects. This

Wizard replaces ADO-components in the specified project (dfm- and pas-files) to SDAC.

ADO-components that will be replaced:

- TADOConnection -> TMSConnection
- TADOCommand -> TMSSQL
- TADOTable -> TMSTable
- TADOQuery -> TMSQuery
- TADOStoredProc -> TMSStoredProc

To run the Wizard select BDE/ADO Migration Wizard item in SDAC menu and follow the instructions. This Wizard is available only for Delphi IDE.

Note: Wizard serves only to simplify routine operations and after the conversion project might be uncompiled.

Below is a list of properties and methods which cannot be converted automatically. Here you can find hints for users to simplify manual replacement.

TADOConnection

- Attributes - not supported by SDAC. After execution [TCustomDAConnection.Commit](#) or [TCustomDAConnection.Rollback](#), Connection is valid.
- CommandCount, Commands - not supported by SDAC.
- CommandTimeout - must be set separately for each TMSSQL and TCustomMSDataSet. See [TMSSQL.CommandTimeout](#) and [TCustomMSDataSet.CommandTimeout](#).
- ConnectionObject - not supported by SDAC.
- ConnectionString - SDAC has similar
P:Devart.Sdac.TCustomMSConnection.ConnectionString property.
- ConnectOptions - not supported by SQL OLE DB provider. Connection is always settled synchronously.
- CursorLocation - must be set separately for each TCustomMSDataSet. See [CursorType](#).
- DefaultDatabase - SDAC has similar Database property. The value of Database is always the same as ConnectionString.

- Errors not supported by SDAC. Use [TMSConnection.OnInfoMessage](#) and [EOLEDBError](#) handling to obtain the requested information.
- KeepConnection - not supported by SDAC. Behaviour is similar to TADOConnection.KeepConnection = True.
- Mode not supported by SDAC.
- Properties not supported by SDAC.
- Provider has no meaning for SDAC, as only SQL Server is supported.
- State not supported by SDAC.
- Version to determine SDAC version use global variable SDACVersion. To get version of the server and client use [TCustomMSConnection.ServerVersion](#) and [TCustomMSConnection.ClientVersion](#).
- BeginTrans use [TCustomDAConnection.StartTransaction](#) instead.
- Cancel not supported by SDAC, as SQL OLE DB provider does not support asynchronous setting of connections.
- CommitTrans - use [TCustomDAConnection.Commit](#) instead.
- Execute use [TCustomDAConnection.ExecSQL](#) instead.
- GetProcedureNames - use [TCustomDAConnection.GetStoredProcNames](#) instead.
- GetFieldNames - not supported by SDAC, use [TMSMetaData](#) instead.
- OpenSchema - not supported by SDAC, use [TMSMetaData](#) instead.
- RollbackTrans - use [TCustomDAConnection.Rollback](#) instead.
- OnBeginTransComplete, OnCommitTransComplete, OnConnectComplete, OnDisconnect, OnExecuteComplete, OnRollbackTransComplete, OnWillConnect, OnWillExecute - not supported by SDAC.

TADOCommand

- CommandObject - not supported by SDAC.
- CommandText - use [TCustomDASQL.SQL](#).Text.
- CommandType - not supported by SDAC, the behaviour is similar to cmdText.
- ConnectionString - use P:Devart.Sdac.TCustomMSConnection.ConnectionString instead.

- ExecuteOptions - SQL OLE DB provider does not support asynchronous execution of the commands. If you need to break execution of a query from another thread, use `M:Devart.Sdac.TMSSQL.BreakExec()`.
- Parameters use [TCustomDASQL.Params](#).
- Prepared use [TCustomDASQL.Prepare/TCustomDASQL.Unprepare](#).
- Properties, States - not supported by SDAC.
- Cancel use `M:Devart.Sdac.TMSSQL.BreakExec()` call from another thread.

TADOQuery, TADODataSet

- BlockReadSize, CacheSize - use [FetchRows](#) instead.
- ConnectionString - use `P:Devart.Sdac.TCustomMSConnection.ConnectionString` instead.
- DesignerData - not supported by SDAC.
- EnableBCD use [TCustomMSDataSet.Options.EnableBCD](#).
- ExecuteOptions - SQL OLE DB provider does not support asynchronous execution of the commands. If you need to break execution of a query from another thread, use `M:Devart.Sdac.TMSSQL.BreakExec()`.
- FilterGroup not supported by SDAC.
- Indexname a list of fields for local sorting. See [TMemDataSet.IndexFieldNames](#).
- IndexFieldCount, IndexFields - not supported by SDAC.
- LockType not supported by SQL Server.
- MarshalOptions - not supported by SQL Server.
- MaxRecords - not supported by SQL Server.
- Parameters use [TCustomDADataset.Params](#).
- Prepared use [TCustomDADataset.Prepare/TMemDataSet.UnPrepare](#).
- Properties not supported by SDAC.
- RecordSet, RecordSetState - not supported by SDAC.
- RecordSize not supported by SDAC.
- RecordStatus - use [TMemDataSet.UpdateStatus](#).

- Sort use [TMemDataSet.IndexFieldNames](#).
- ExecSQL use [TCustomDADataset.Execute](#) instead.
- CancelBatch - not supported by SDAC.
- Clone not supported by SDAC.
- DeleteRecords - not supported by SDAC.
- FilterOnBookmark - use Filter, [FilterSQL](#) instead.
- GetBlobFieldData - not supported by SDAC.
- GetDetailLinkFields - use [TCustomDADataset.DetailFields](#).
- IsSequenced - not supported by SDAC.
- LoadFromFile, SaveToFile - not supported by SDAC.
- NextRecordset - use [TCustomMSDataSet.OpenNext](#).
- Requery TDataSet.Refresh.
- Seek not supported by SQL OLE DB provider.
- Supports not supported by SDAC.
- UpdateBatch - not supported by SDAC.
- OnEndOfRecordset, OnFetchComplete, OnFetchProgress, OnFieldChangeComplete, OnMoveComplete, OnRecordChangeComplete, OnRecordsetChangeComplete, OnRecordsetCreate, OnWillChangeField, OnWillChangeRecord, OnWillChangeRecordset, OnWillMove - specific ADO properties, not supported by SDAC.

TADOStoredProc

- ProcedureName - use [TCustomMSStoredProc.StoredProc](#).

TADOTable

- TableDirect - not supported by MS OLE DB provider.

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3.5 Connecting to SQL Server

This tutorial describes how to connect to SQL Server.

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Requirements

In order to connect to SQL Server, you need the server itself running, SDAC installed, and IDE running. Also, you need to know the server name (if the server is run on the remote computer), the port that the server listens to (if you use not the 1433 standard port), the authentication mode, and the database name. If SQL Server Authentication is used, you also need to know the user name and the password.

General information

To establish connection to the server, you have to provide some connection parameters to SDAC. This information is used by the TMSConnection component to establish connection to the server. The parameters are represented by the properties of the TMSConnection component (Server, Database, Authentication, Username, Password). If Windows Authentication is used, the Username and Password properties are ignored.

Note: All these options can be specified at once using the `ConnectionString` property.

There are two ways to connect to SQL Server: using the OLE DB provider and using the SQL Server Native Client provider. This is controlled by the `TMSConnection.Options.Provider` property. It indicates the provider that is used for connection to SQL Server. By default, the `Provider` property is set to `prAuto`, which means that an available provider with the most recent version is used. In this case, SDAC looks for an available provider in the following sequence: Native Client 11, Native Client 10, Native Client 9, OLEDB. If `Provider` is set to `prNativeClient`, SDAC looks for an available provider in the following sequence: Native Client 11, Native Client 10, Native Client 9. The first found provider from the sequence is used. If `Provider` is set to `prSQL`, SDAC uses the OLEDB provider.

If `Provider` is set to `prCompact`, SDAC uses the SQL Server Compact provider. For more information about connecting to SQL Server Compact, please refer to the ["Connecting To SQL Server Compact"](#) topic.

Note: If SDAC cannot find the chosen provider, the "Required provider is not installed" error is generated.

Creating Connection

Design time creation

The following assumes that you have the IDE running, and you are currently focused on the form designer.

1. Open the Component palette and find the `TMSConnection` component in the SQL Server Access category.
2. Double-click on the component. Note that the new object appears on the form. If this is the first time you create `TMSConnection` in this application, it is named `MSConnection1`.

After you have done these steps, you should set up the newly created `MSConnection1` component. You can do this in two ways:

Using TMSConnection Editor

1. Double-click on the `MSConnection1` object.

2. In the **Server** edit box specify a DNS name or IP address of the computer, where SQL Server resides. If not the 1433 standard port must be used, it can be specified in the Server edit box in the following format: server,port (for example, **localhost,1433**).
3. Choose the authentication mode, SQL Server or Windows.
4. If SQL Server Authentication is chosen, specify a login (for example, **sa**) in the **Username** edit box.
5. If SQL Server Authentication is chosen, specify a password (for example, **password**) in the **Password** edit box. If a login does not have a password, leave the **Password** edit box blank.
6. In the Database edit box specify the database name (for example, **master**). If **Database** is not specified, the **master** system database is used.

Note: If SQL Server Authentication is chosen and **Username** and **Password** are not specified, the **sa** user name and the blank password are used.

Using Object Inspector

1. Click on the MSConnection1 object and press **F11** to focus on object's properties.
2. Set the **Server** property to a DNS name or IP address of the computer, where SQL Server resides. If not the 1433 standard port must be used, it can be specified in the Server property in the following format: server,port (for example, **localhost,1433**).
3. In the **Authentication** property choose the authentication mode, SQL Server or Windows.
4. If SQL Server Authentication is chosen, specify a login in the **Username** property (for example, **sa**).
5. If SQL Server Authentication is chosen, specify a password in the **Password** property (for example, **password**). If a login does not have a password, leave the **Password** property blank.
6. In the **Database** property specify the database name (for example, **master**). If **Database** is not specified, the **master** system database is used.

Note: If SQL Server Authentication is chosen and **Username** and **Password** are not specified, the **sa** user name and the blank password are used.

Run time creation

The same operations performed in runtime look as follows:

[Delphi]

```
var
  con: TMSConnection;
begin
  con := TMSConnection.Create(nil);
  try
    con.Server := 'server';
    con.Authentication := auServer;
    con.Username := 'username';
    con.Password := 'password';
    con.Database := 'database';
    con.LoginPrompt := False; // to prevent showing of the connection dialog
    con.Open;
  finally
    con.Free;
  end;
end;
```

Note: To run this code, you have to add the MSAccess and OLEDBAccess units to the USES clause of your unit.

[C++Builder]

```
{
  TMSConnection* con = new TMSConnection(NULL);
  try
  {
    con->Server = "server";
    con->Authentication = auServer;
    con->Username = "username";
    con->Password = "password";
    con->Database = "database";
    con->LoginPrompt = False; // to prevent showing of the connection dialog
    con->Open();
  }
  __finally
  {
    con->Free();
  }
}
```

Note: To run this code, you have to include the MSAccess.hpp header file to your unit.

And using the ConnectString property:

[Delphi]

```

var
  con: TMSConnection;
begin
  con := TMSConnection.Create(nil);
  try
    con.ConnectionString := 'Data Source=server;User ID=username;Password=password';
    con.LoginPrompt := False; // to prevent showing of the connection dialog
    con.Open;
  finally
    con.Free;
  end;
end;

```

Note: To run this code, you have to add the MSAccess units to the USES clause of your unit.

[C++ Builder]

```

{
  TMSConnection* con = new TMSConnection(NULL);
  try
  {
    con->ConnectionString = "Data Source=server;User ID=username;Password=password";
    con->LoginPrompt = False; // to prevent showing of the connection dialog
    con->Open();
  }
  finally
  {
    con->Free();
  }
}

```

Note: To run this code, you have to include the MSAccess.hpp header file to your unit.

Opening connection

As you can see above, opening a connection at run-time is as simple as calling of the Open method:

[Delphi]

```
con.Open;
```

[C++ Builder]

```
con->Open();
```

Another way to open a connection at run-time is to set the Connected property to True:

[Delphi]

```
con.Connected := True;
```

[C++ Builder]

```
con->Connected = True;
```

This way can be used at design-time as well. Of course, MSConnection1 must have valid connection options assigned earlier. When you call Open, SDAC tries to find the host and connect to the server. If any problem occurs, it raises an exception with brief explanation on what is wrong. If no problem is encountered, SDAC tries to establish connection. Finally, when connection is established, the Open method returns and the Connected property is changed to True.

Closing connection

To close a connection, call its Close method, or set its Connected property to False:

[Delphi]

```
con.Close;
```

[C++ Builder]

```
con.Close();
```

or:

[Delphi]

```
con.Connected := False;
```

[C++ Builder]

```
con.Connected = False;
```

Modifying connection

You can modify connection by changing properties of the TMSConnection object. Keep in mind that while some of the properties can be altered freely, most of them close connection when the a value is assigned. For example, if you change Server property, it is closed immediately, and you have to reopen it manually.

Additional information

SDAC has a wide set of features you can take advantage of. The following list enumerates some of them, so you can explore the advanced techniques to achieve better performance, balance network load or enable additional capabilities:

- Local Failover
- Connection Pooling
- Disconnected Mode
- Data Type Mapping
- Notifications
- Table-Valued Parameters
- FILESTREAM
- User-Defined Functions

See Also

- [TMSCConnection](#)
- [Server](#)
- [Authentication](#)
- [Database](#)
- [Username](#)
- [Password](#)
- [LoginPrompt](#)

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3.6 Connecting to SQL Server Compact

This tutorial describes how to connect to SQL Server Compact.

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Requirements

In order to connect to SQL Server Compact, you need the server itself installed, SDAC installed, and IDE running. In addition, you need to know the full path to the database file (.SDF). If a database is password-protected, you also need to know the password.



General information

It is possible to connect to SQL Server Compact using both TMSCompactConnection and TMSConnection components. To establish connection to the server, you have to provide some connection parameters to SDAC. This information is used by the TMSCompactConnection or TMSConnection component to establish connection to the server. The parameters are represented by the properties of the TMSCompactConnection or TMSConnection component (Database, Password). If TMSConnection is used, the TMSConnection.Options.Provider property must be set to prCompact.

To choose a version of SQL Server Compact you want to work with using `TMSCompactConnection`, you can use the `TMSCompactConnection.Options.CompactVersion` property. Here is a list of possible values:

- **cvAuto** - an available SQL Server Compact provider with the most recent version is used.
In this case, SDAC looks for an available provider in the following sequence: SQL Server Compact 4.0 , SQL Server Compact 3.5 , SQL Server Compact 3.1. The first found provider from the sequence is used.
- **cv40** - SQL Server Compact 4.0 is used.
- **cv35** - SQL Server Compact 3.5 is used.
- **cv30** - SQL Server Compact 3.1 is used.

To choose a version of SQL Server Compact you want to work with using `TMSConnection`, you can use the Provider connection string option in the `TMSConnection.ConnectionString` property. Here is a list of possible values:

- **Provider=MICROSOFT.SQLSERVER.MOBILE.OLEDB.4.0** - SQL Server Compact 4.0 is used
- **Provider=MICROSOFT.SQLSERVER.MOBILE.OLEDB.3.5** - SQL Server Compact 3.5 is used
- **Provider=MICROSOFT.SQLSERVER.MOBILE.OLEDB.3.0** - SQL Server Compact 3.1 is used

Note: If a database exists before a connection attempt, SDAC tries to determine the correct version of SQL Server Compact to use by reading it from the database itself. If SDAC obtains the version of SQL Server Compact from the database, an appropriate provider is used.

Note: If SDAC cannot find the chosen provider, the "Required provider is not installed" error is generated.

Creating Connection

Design time creation

The following assumes that you have IDE running, and you are currently focused on the form designer.

TMSCompactConnection:

1. Open the Component palette and find the TMSCompactConnection component in the SQL Server Access category.
2. Double-click on the component. Note that a new object appears on the form. If this is the first time you create TMSCompactConnection in this application, it is named MSCompactConnection1.

TMSConnection:

1. Open the Component palette and find the TMSConnection component in the SQL Server Access category.
2. Double-click on the component. Note that a new object appears on the form. If this is the first time you create TMSConnection in this application, it is named MSConnection1.

After you have done these steps, you should set up the newly created MSCompactConnection1 or MSConnection1 component. You can do this in two ways:

Using Connection Editor

TMSCompactConnection:

1. Double-click on the TMSCompactConnection object.
2. In the **Database** edit box specify the database name (for example, **C:\test.sdf**). If the specified database does not exist, it will be created on a connection attempt.
3. If the specified database is password-protected, specify the password in the **Password** edit box.

Using Object Inspector

TMSCompactConnection:

1. Click on the MSCompactConnection1 object and press **F11** to focus on the object properties.
2. In the **Database** property specify the database name (for example, **C:\test.sdf**). If the

specified database does not exist, it will be created on connection attempt.

3. If the specified database is password-protected, specify the password in the **Password** property.

TMSConnection:

1. Click on the MSConnection1 object and press **F11** to focus on the object properties.
2. Set the **Options.Provider** property to prCompact.
3. In the **Database** property specify the database name (for example, **C:\test.sdf**). If the specified database does not exist, it will be created on connection attempt.
4. If the specified database is password-protected, specify the password in the **Password** property.

Run time creation

The same operations performed in runtime look as follows:

TMSCompactConnection:

[Delphi]

```
procedure TMainForm.ButtonConnectClick(Sender: TObject);
var
  con: TMSCompactConnection;
begin
  con := TMSCompactConnection.Create(nil);
  try
    con.Options.CompactVersion := cv40;
    con.Database := 'database'; // if the database does not exist, it will b
    con.Password := 'password'; // if the database is password-protected
    con.LoginPrompt := False; // to prevent showing of the connection dialog
    con.Open;
  finally
    con.Free;
  end;
end;
```

Note: To run this code, you have to add the MSCompactConnection and OLEDBAccess units to the USES clause of your unit.

[C++Builder]

```
void __fastcall TMainForm::ButtonConnectClick(TObject *Sender)
{
```



```

TMSCompactConnection* con = new TMSCompactConnection(NULL);
try
{
    con->Options->CompactVersion = cv40;
    con->Database = "database"; // if the database does not exist, it will b
    con->Password = "password"; // if the database is password-protected
    con->LoginPrompt = False; // to prevent showing of the connection dialog
    con->Open();
}
finally
{
    con->Free();
}
}

```

Note: To run this code, you have to include the MSCompactConnection.hpp header file to your unit.

TMSConnection:

[Delphi]

```

procedure TMainForm.ButtonConnectClick(Sender: TObject);
var
    con: TMSConnection;
begin
    con := TMSConnection.Create(nil);
    try
        con.ConnectionString := 'Provider=MICROSOFT.SQLSERVER.MOBILE.OLEDB.4.0';
        con.Database := 'database'; // if the database does not exist, it will b
        con.Password := 'password'; // if the database is password-protected
        con.LoginPrompt := False; // to prevent showing of the connection dialog
        con.Open;
    finally
        con.Free;
    end;
end;

```

Note: To run this code, you have to add the MSAccess unit to the USES clause of your unit.

[C++ Builder]

```

void __fastcall TMainForm::ButtonConnectClick(TObject *Sender)
{
    TMSConnection* con = new TMSConnection(NULL);
    try
    {
        con->ConnectionString = "Provider=MICROSOFT.SQLSERVER.MOBILE.OLEDB.4.0";
        con->Database = "database"; // if the database does not exist, it will b
        con->Password = "password"; // if the database is password-protected
        con->LoginPrompt = False; // to prevent showing of the connection dialog
    }
    finally
    {
        con->Free();
    }
}

```

```
    con->Open();  
}  
__finally  
{  
    con->Free();  
}
```

Note: To run this code, you have to include the MSAccess.hpp header file to your unit.

Opening connection

As you can see above, opening connection at run-time is as simple as calling of the Open method:

[Delphi]

```
con.Open;
```

[C++ Builder]

```
con->Open();
```

Another way to open connection at run-time is to set the Connected property to True:

[Delphi]

```
con.Connected := True;
```

[C++ Builder]

```
con->Connected = True;
```

This way can be used at design-time as well. Of course, connection (TMSCompactConnection or TMSConnection) must have valid connection options assigned earlier. When you call Open, SDAC tries to open the database. If any problem occurs, it raises an exception with brief explanation on what is wrong. If no problem is encountered and the database is opened, the Open method returns and the Connected property is changed to True.

Closing connection

To close connection, call its Close method, or set its Connected property to False:

[Delphi]

```
con.Close;
```

[C++ Builder]

```
con.Close();
```

or:

[Delphi]

```
con.Connected := False;
```

[C++ Builder]

```
con.Connected = False;
```

Modifying connection

You can modify connection by changing the properties of the TMSCompactConnection or TMSConnection component. Keep in mind that while some of the properties can be altered freely, most of them close connection when a new value is assigned. For example, if you change the Server property, it is closed immediately, and you have to reopen it manually.

Additional information

SDAC has a wide set of features you can take advantage of. The following list enumerates some of them, so you can explore the advanced techniques to achieve better performance, balance network load or enable additional capabilities:

- Connection Pooling
- Disconnected Mode
- Data Type Mapping

See Also

- [TMSCompactConnection](#)
- [TMSConnection](#)
- [Server](#)
- [Authentication](#)
- [Database](#)
- [Username](#)

- [Password](#)
- [LoginPrompt](#)
- [TMSCompactConnectionOptions.CompactVersion](#)
- [TCustomMSConnection.ConnectString](#)

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3.7 Creating Database Objects

This tutorial describes how to create tables, stored procedures and other objects on SQL Server.

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Requirements

In order to create database objects you have to connect to SQL Server. This process is described in details in the tutorials ["Connecting To SQL Server"](#) and ["Connecting To SQL Server Compact"](#).

General information

Database objects are created using Data Definition Language (DDL), which is a part of SQL. The DDL statements can be executed on server by an account that has the necessary privileges. There are two ways to create database objects. You can build DDL statements manually and execute them using a component like TMSSQL. Another way is to use visual

database tools like [dbForge Studio for SQL Server](#) or Microsoft SQL Server Management Studio. This topic covers the first way - using components.

There are two ways to execute DDL statements in components like TMSSQL: in design-time and in run-time. Both these ways are described below.

Note: The following assumes that you have the IDE running, you are currently focused on the form designer, and you have already set up the TMSConnection or TMSCompactConnection component on the form.

Creating tables

To create tables, the TMSSQL component is used here.

Design-time creation

- Open the Component palette and find the TMSSQL component in the SQL Server Access category.
- Double-click on the component. Note that a new object appears on the form. If this is the first time you create TMSSQL in this application, it is named MSSQL1. Note that the MSSQL1.Connection property is already set to an existent (on the form) connection.
- Double-click on the MSSQL1 object.
- Type the following lines:

```
CREATE TABLE dept (  
    deptno INT PRIMARY KEY,  
    dname VARCHAR(14),  
    loc VARCHAR(13)  
);  
CREATE TABLE emp (  
    empno INT IDENTITY(1,1) PRIMARY KEY,  
    ename VARCHAR(10),  
    job VARCHAR(9),  
    mgr INT,  
    hiredate DATE,  
    sal FLOAT,
```

```

comm FLOAT,
deptno INT
);

```

- Click on the Execute button. This will create two tables that we will use for tutorial purposes.

Run-time creation

Same operations performed in runtime look as follows:

[Delphi]

```

var
  sql: TMSSQL;
begin
  sql := TMSSQL.Create(nil);
  try
    sql.Connection := con; // con is either TMSConnection or TMSCompactConne
    sql.SQL.Clear;
    sql.SQL.Add('CREATE TABLE dept (');
    sql.SQL.Add('  deptno INT PRIMARY KEY,');
    sql.SQL.Add('  dname VARCHAR(14),');
    sql.SQL.Add('  loc VARCHAR(13)');
    sql.SQL.Add(');');
    sql.SQL.Add('CREATE TABLE emp (');
    sql.SQL.Add('  empno INT IDENTITY(1,1) PRIMARY KEY,');
    sql.SQL.Add('  ename VARCHAR(10),');
    sql.SQL.Add('  job VARCHAR(9),');
    sql.SQL.Add('  mgr INT,');
    sql.SQL.Add('  hiredate DATE,');
    sql.SQL.Add('  sal FLOAT,');
    sql.SQL.Add('  comm FLOAT,');
    sql.SQL.Add('  deptno INT');
    sql.SQL.Add(');');
    sql.Execute;
  finally
    sql.Free;
  end;
end;

```

[C++Builder]

```

{
  TMSQL* sql = new TMSQL(NULL);
  try
  {
    sql->Connection = con; // con is either TMSConnection or TMSCompactConne
    sql->SQL->Clear();
    sql->SQL->Add("CREATE TABLE dept (");
    sql->SQL->Add("  deptno INT PRIMARY KEY,");
    sql->SQL->Add("  dname VARCHAR(14),");
    sql->SQL->Add("  loc VARCHAR(13)");
    sql->SQL->Add(");");
  }
}

```

```
sql->SQL->Add("CREATE TABLE emp (");
sql->SQL->Add("  empno INT IDENTITY(1,1) PRIMARY KEY,");
sql->SQL->Add("  ename VARCHAR(10),");
sql->SQL->Add("  job VARCHAR(9),");
sql->SQL->Add("  mgr INT,");
sql->SQL->Add("  hiredate DATE,");
sql->SQL->Add("  sal FLOAT,");
sql->SQL->Add("  comm FLOAT,");
sql->SQL->Add("  deptno INT");
sql->SQL->Add(");");
sql->Execute();
}
finally
{
  sql->Free();
}
```

Creating Stored Procedures

To create tables, the TMSScript component is used here.

Design-time creation

- Open the Component palette and find the TMSScript component in the SQL Server Access category.
- Double-click on the component. Note that a new object appears on the form. If this is the first time you create TMSScript in this application, it is named MSScript1. Note that the MSScript1.Connection property is already set to existent (on the form) connection.
- Double-click on the MSScript1 object.
- Type the following lines:

```
CREATE PROCEDURE [Ten Most High-Paid Employees]
AS
BEGIN
  SET ROWCOUNT 10
  SELECT emp.ename AS TenMostHighPaidEmployees, emp.sal FROM emp ORDER BY em
  SET ROWCOUNT 0
END;
/
CREATE PROCEDURE GetEmpNumberInDept
  @deptno INT,
```

```

    @empnumb INT OUT
AS
BEGIN
    SELECT @empnumb = count(*) FROM emp WHERE deptno = @deptno;
END
/

```

- Click on the Execute button. This will create five stored procedures that we will use for tutorial purposes.

Run-time creation

The same operations performed in runtime look as follows:

[Delphi]

```

var
  script: TMSScript;
begin
  script := TMSScript.Create(nil);
  try
    script.Connection := con; // con is either TMSConnection or TMSCompactCo
    script.SQL.Clear;
    script.SQL.Add('CREATE PROCEDURE [Ten Most High-Paid Employees]');
    script.SQL.Add('AS');
    script.SQL.Add('BEGIN');
    script.SQL.Add('  SET ROWCOUNT 10');
    script.SQL.Add('  SELECT emp.ename AS TenMostHighPaidEmployees, emp.sal');
    script.SQL.Add('  SET ROWCOUNT 0');
    script.SQL.Add('END');
    script.SQL.Add('/');
    script.SQL.Add('CREATE PROCEDURE GetEmpNumberInDept');
    script.SQL.Add('@deptno INT,');
    script.SQL.Add('@empnumb INT OUT');
    script.SQL.Add('AS');
    script.SQL.Add('BEGIN');
    script.SQL.Add('  SELECT @empnumb = count(*) FROM emp WHERE deptno = @de');
    script.SQL.Add('END');
    script.SQL.Add('/');
    script.Execute;
  finally
    script.Free;
  end;
end;

```

Note: To run this code, you have to add the MSScript unit to the USES clause of your unit.

[C++Builder]

```
{
```



```
TMSScript* script = new TMSScript(NULL);
try
{
    script->Connection = con; // con is either TMSConnection or TMSCompactCo
    script->SQL->Clear();
    script->SQL->Add("CREATE PROCEDURE [Ten Most High-Paid Employees]");
    script->SQL->Add("AS");
    script->SQL->Add("BEGIN");
    script->SQL->Add("    SET ROWCOUNT 10");
    script->SQL->Add("    SELECT emp.ename AS TenMostHighPaidEmployees, emp.sa
    script->SQL->Add("    SET ROWCOUNT 0");
    script->SQL->Add("END");
    script->SQL->Add("/");
    script->SQL->Add("CREATE PROCEDURE GetEmpNumberInDept");
    script->SQL->Add("@deptno INT,");
    script->SQL->Add("@empnumb INT OUT");
    script->SQL->Add("AS");
    script->SQL->Add("BEGIN");
    script->SQL->Add("    SELECT @empnumb = count(*) FROM emp WHERE deptno = @
    script->SQL->Add("END");
    script->SQL->Add("/");
    script->Execute();
}
finally
{
    script->Free();
}
}
```

Note: To run this code, you have to include the MSScript.hpp header file to your unit.

Additional information

Actually, there are lots of ways to create database objects on server. Any tool or component that is capable of running a SQL query, can be used to manage database objects. For example, TMSSQL suits fine for creating objects one by one, while TMSScript is designed for executing series of DDL/DML statements. For information on DDL statements syntax refer to the SQL Server documentation.

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3.8 Deleting Data From Tables

This tutorial describes how to delete data from tables using the [TMSQuery](#) and [TMSTable](#) components.

1. [Requirements](#)

2. [General information](#)
3. [Using DataSet Functionality](#)
4. [Building DML Statements Manually](#)
 - 4.1 [DML Statements With Parameters](#)
 - 4.2 [DML Statements As Plain Text](#)
5. [Additional Information](#)

Requirements

This walkthrough supposes that you know how to connect to server (tutorials ["Connecting To SQL Server"](#) and ["Connecting To SQL Server Compact"](#)), how to create necessary objects on the server (tutorial ["Creating Database Objects"](#)), and how to insert data to created tables (tutorial ["Inserting Data Into Tables"](#)).

General information

Data on server can be deleted using Data Manipulation Language (DML), which is a part of SQL. DML statements can be executed on server by an account that has necessary privileges. There are two ways to manipulate a database. You can build DML statements manually and run them within some component like TMSQuery. Another way is to use the dataset functionality (the Delete method) of the TMSQuery and TMSTable components. We will discuss both ways. The goal of this tutorial is to delete a record in the table [dept](#).

Using DataSet Functionality

The Delete method of the TMSQuery and TMSTable components allows deleting data without using DML statements. DML statements are generated by SDAC components internally. The code below demonstrates using this method:

[Delphi]

```
var
  q: TMSQuery;
begin
  q := TMSQuery.Create(nil);
  try
    // con is either TMSConnection or TMSCompactConnection already set up
    q.Connection := con;
    // retrieve data
```

```
    q.SQL.Text := 'SELECT * FROM dept';
    q.Open;
    // delete the current record
    q.Delete;
  finally
    q.Free;
  end;
end;
```

[C++Builder]

```
{
  TMSQuery* q = new TMSQuery(NULL);
  try
  {
    // con is either TMSConnection or TMSCompactConnection already set up
    q->Connection = con;
    // retrieve data
    q->SQL->Text = "SELECT * FROM dept";
    q->Open();
    // delete the current record
    q->Delete();
  }
  finally
  {
    q->Free();
  }
}
```

Building DML Statements Manually

DML Statements can contain plain text and text with parameters. This section describes both ways.

DML Statements With Parameters

[Delphi]

```
var
  q: TMSQuery;
begin
  q := TMSQuery.Create(nil);
  try
    // con is either TMSConnection or TMSCompactConnection already set up
    q.Connection := con;
    // set SQL query for delete record
    q.SQL.Clear;
    q.SQL.Add('DELETE FROM dept WHERE deptno = :deptno;');
    // set parameters
    q.ParamByName('deptno').AsInteger := 10;
    // execute query
    q.Execute;
  finally
```

```

    q.Free;
end;
end;

```

[C++Builder]

```

{
    TMSQuery* q = new TMSQuery(NULL);
    try
    {
        // con is either TMSConnection or TMSCompactConnection already set up
        q->Connection = con;
        // set SQL query for delete record
        q->SQL->Clear();
        q->SQL->Add("DELETE FROM dept WHERE deptno = :deptno;");
        // set parameters
        q->ParamByName("deptno")->AsInteger = 10;
        // execute query
        q->Execute();
    }
    __finally
    {
        q->Free();
    }
}

```

DML Statements As Plain Text

[Delphi]

```

var
    q: TMSQuery;
begin
    q := TMSQuery.Create(nil);
    try
        // con is either TMSConnection or TMSCompactConnection already set up
        q.Connection := con;
        // set SQL query for delete record
        q.SQL.Clear;
        q.SQL.Add('DELETE FROM dept WHERE deptno = 10;');
        // execute query
        q.Execute;
    finally
        q.Free;
    end;
end;

```

[C++Builder]

```

{
    TMSQuery* q = new TMSQuery(NULL);
    try
    {
        // con is either TMSConnection or TMSCompactConnection already set up
        q->Connection = con;
    }
}

```

```
// set SQL query for delete record
q->SQL->Clear();
q->SQL->Add("DELETE FROM dept WHERE deptno = 10;");
// execute query
q->Execute();
}
finally
{
    q->Free();
}
}
```

Additional Information

It is also possible to use stored procedures for deleting data. In this case, all data manipulation logic is defined on server. You can find more about using stored procedures in the tutorial ["Stored Procedures"](#).

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3.9 Inserting Data Into Tables

This tutorial describes how to insert data into tables using the [TMSQuery](#) and [TMSTable](#) components.

1. [Requirements](#)
2. [General information](#)
3. [Design Time](#)
4. [Run Time](#)
 - 4.1 [Using DataSet Functionality](#)
 - 4.2 [Building DML Statements Manually](#)
 - 4.2.1 [DML Statements With Parameters](#)
 - 4.2.2 [DML Statements As Plain Text](#)
5. [Additional Information](#)

Requirements

This walkthrough supposes that you know how to connect to server (tutorials ["Connecting To SQL Server"](#) and ["Connecting To SQL Server Compact"](#)) and that necessary objects are

already created on the server (tutorial ["Creating Database Objects"](#)).

General information

Data on server can be inserted using Data Manipulation Language (DML), which is a part of SQL. DML statements can be executed on server by an account that has necessary privileges. There are two ways to manipulate a database. You can build DML statements manually and run them within some component like [TMSQuery](#). Another way is to use the dataset functionality (the Insert, Append, and Post methods) of the [TMSQuery](#) and [TMSTable](#) components. We will discuss both ways.

The goal of this tutorial is to insert the following data into tables [dept](#) and [emp](#):

Table dept

deptno	dname	loc
10	ACCOUNTING	NEW YORK
20	RESEARCH	DALLAS
30	SALLES	CHICAGO
40	OPERATIONS	BOSTON

Table emp

ename	job	mgr	hiredate	sal	comm	deptno
SMITH	CLERK	7902	17.12.1980	800	NULL	20
ALLEN	SALSMAN	7698	20.02.1981	1600	300	30
WARD	SALSMAN	7698	22.02.1981	1250	500	30
JONES	MANAGER	7839	02.04.1981	2975	NULL	20
MARTIN	SALSMAN	7698	28.09.1981	1250	1400	30

BLAKE	MANAGER	7839	01.05.1981	2850	NULL	30
CLARK	MANAGER	7839	09.06.1981	2450	NULL	10
SCOTT	ANALYST	7566	13.07.1987	3000	NULL	20
KING	PRESIDENT	NULL	17.11.1981	5000	NULL	10
TURNER	SALESMAN	7698	08.09.1981	1500	0	30
ADAMS	CLERK	7788	13.07.1987	1100	NULL	20
JAMES	CLERK	7698	03.12.1981	950	NULL	30
FORD	ANALYST	7566	03.12.1981	3000	NULL	20
MILLER	CLERK	7782	23.01.1982	1300	NULL	10

Note: The empno field of the emp table is an IDENTITY(1,1) (i.e. autoincrement) field, so its value is filled automatically by the server.

Design time

- Open the Component palette and find the [TMSQuery](#) component in the SQL Server Access category.
- Double-click on the component. Note that a new object appears on the form. If this is the first time you create [TMSQuery](#) in this application, it is named MSQuery1. Note that the MSQuery1.Connection property is already set to an existent (on the form) connection.
- Double-click on the MSQuery1 object.
- Type the following lines:

```
INSERT INTO dept VALUES (10, 'ACCOUNTING', 'NEW YORK');
```

- Press the Execute button.

Performing these steps adds a new record to the dept table.

Run time

Using DataSet Functionality

The Insert, Append, and Post methods of the [TMSQuery](#) and [TMSTable](#) components allow inserting data not using DML statements. DML statements are generated by SDAC components internally. The difference between the Append and Insert methods is that Append creates a new empty record in the end of a dataset, when Insert creates it in the position of the current record of a dataset. The code below demonstrates using these methods:

[Delphi]

```
var
  q: TMSQuery;
begin
  q := TMSQuery.Create(nil);
  try
    q.Connection := con; // con is either TMSConnection or TMSCompactConnect
    q.SQL.Text := 'SELECT * FROM dept';
    q.Open;
    q.Append;
    q.FieldByName('deptno').AsInteger := 10;
    q.FieldByName('dname').AsString := 'ACCOUNTING';
    q.FieldByName('loc').AsString := 'NEW YORK';
    q.Post;
  finally
    q.Free;
  end;
end;
```

[C++Builder]

```
{
  TMSQuery* q = new TMSQuery(NULL);
  try
  {
    q->Connection = con; // con is either TMSConnection or TMSCompactConnect
    q->SQL->Text = "SELECT * FROM dept";
    q->Open();
    q->Append();
    q->FieldByName("deptno")->AsInteger = 10;
    q->FieldByName("dname")->AsString = "ACCOUNTING";
    q->FieldByName("loc")->AsString = "NEW YORK";
    q->Post();
  }
  __finally
  {
    q->Free();
  }
}
```


Building DML Statements Manually

DML Statements can contain plain text and text with parameters. This section describes both ways.

DML Statements With Parameters

[Delphi]

```
var
  q: TMSQuery;
begin
  q := TMSQuery.Create(nil);
  try
    q.Connection := con; // con is either TMSConnection or TMSCompactConnect
    q.SQL.Clear;
    q.SQL.Add('INSERT INTO dept(deptno, dname, loc) VALUES (:deptno, :dname,
    q.ParamByName('deptno').AsInteger := 10;
    q.ParamByName('dname').AsString := 'ACCOUNTING';
    q.ParamByName('loc').AsString := 'NEW YORK';
    q.Execute;
  finally
    q.Free;
  end;
end;
```

[C++Builder]

```
{
  TMSQuery* q = new TMSQuery(NULL);
  try
  {
    q->Connection = con; // con is either TMSConnection or TMSCompactConnect
    q->SQL->Clear();
    q->SQL->Add("INSERT INTO dept(deptno, dname, loc) VALUES (:deptno, :dnam
    q->ParamByName("deptno")->AsInteger = 10;
    q->ParamByName("dname")->AsString = "ACCOUNTING";
    q->ParamByName("loc")->AsString = "NEW YORK";
    q->Execute();
  }
  __finally
  {
    q->Free();
  }
}
```

DML Statements As Plain Text

[Delphi]

```
var
```

```
q: TMSQuery;  
begin  
  q := TMSQuery.Create(nil);  
  try  
    q.Connection := con; // con is either TMSConnection or TMSCompactConnect  
    q.SQL.Clear;  
    q.SQL.Add('INSERT INTO dept(deptno, dname, loc) VALUES (10, 'ACCOUNTING'  
    q.Execute;  
  finally  
    q.Free;  
  end;  
end;
```

[C++Builder]

```
{  
  TMSQuery* q = new TMSQuery(NULL);  
  try  
  {  
    q->Connection = con; // con is either TMSConnection or TMSCompactConnect  
    q->SQL->Clear();  
    q->SQL->Add("INSERT INTO dept(deptno, dname, loc) VALUES (10, 'ACCOUNTING"  
    q->Execute();  
  }  
  finally  
  {  
    q->Free();  
  }  
}
```

Additional Information

Actually, there are lots of ways to insert data into tables. Any tool or component capable of running a SQL query can be used to manage data. Some components are better for performing certain tasks. For example, [TMSLoader](#) is the fastest way to insert data, [TMSScript](#) is designed for executing series of statements one by one.

It is also possible to use stored procedures for inserting data. In this case, all data manipulation logic is defined on the server. You can find more about using stored procedures in the tutorial ["Stored Procedures"](#).

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3.10 Retrieving Data

1. [Requirements](#)
2. [General Information](#)

3. [TMSQuery](#)
4. [TMSTable](#)
5. [Additional information](#)

Requirements

This walkthrough supposes that you know how to connect to server (tutorials ["Connecting To SQL Server"](#) and ["Connecting To SQL Server Compact"](#)), how to create necessary objects on the server (tutorial ["Creating Database Objects"](#)), and how to insert data to created tables (tutorial ["Inserting Data Into Tables"](#)).

General information

As we know, an original function of any database application is establishing connection to a data source and working with data contained in it. SDAC provides several components that can be used for data retrieving, such as TMSQuery and TMSTable. We will discuss data retrieving using these components.

The goal of this tutorial is to retrieve data from a table [dept](#).

TMSQuery

The following code demonstrates retrieving of data from the dept table using the TMSQuery component:

[Delphi]

```
var
  q: TMSQuery;
begin
  q := TMSQuery.Create(nil);
  try
    // con is either TMSConnection or TMSCompactConnection already set up
    q.Connection := con;
    // retrieve data
    q.SQL.Text := 'SELECT * FROM dept';
    q.Open;
    // shows the number of records obtained from the server
    ShowMessage(IntToStr(q.RecordCount));
  finally
    q.Free;
  end;
end;
```

[C++Builder]

```

{
    TMSQuery* q = new TMSQuery(NULL);
    try
    {
        // con is either TMSConnection or TMSCompactConnection already set up
        q->Connection = con;
        // retrieve data
        q->SQL->Text = "SELECT * FROM dept";
        q->Open();
        // shows the number of records obtained from the server
        ShowMessage(IntToStr(q->RecordCount));
    }
    __finally
    {
        q->Free();
    }
}

```

TMSTable

The following code demonstrates retrieving of data from the dept table using the TMSTable component:

[Delphi]

```

var
    tbl: TMSTable;
begin
    tbl := TMSTable.Create(nil);
    try
        // con is either TMSConnection or TMSCompactConnection already set up
        tbl.Connection := con;
        // retrieve data
        tbl.TableName := 'dept';
        tbl.Open;
        // shows the number of records obtained from the server
        ShowMessage(IntToStr(tbl.RecordCount));
    finally
        tbl.Free;
    end;
end;

```

[C++Builder]

```

{
    TMSTable* tbl = new TMSTable(NULL);
    try
    {
        // con is either TMSConnection or TMSCompactConnection already set up
        tbl->Connection = con;
        // retrieve data
    }
}

```

```
tbl->TableName = "dept";  
tbl->Open();  
// shows the number of records obtained from the server  
ShowMessage(IntToStr(tbl->RecordCount));  
}  
__finally  
{  
    tbl->Free();  
}  
}
```

Additional Information

It is also possible to use stored procedures for data retrieving. In this case, all data manipulation logic is defined on server. You can find more about using stored procedures in the tutorial ["Stored Procedures"](#).

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3.11 Modifying Data

This tutorial describes how to modify data into tables using the [TMSQuery](#) and [TMSTable](#) components.

1. [Requirements](#)
2. [General information](#)
3. [Using DataSet Functionality](#)
4. [Building DML Statements Manually](#)
 - 4.1 [DML Statements With Parameters](#)
 - 4.2 [DML Statements As Plain Text](#)
5. [Additional Information](#)

Requirements

This walkthrough supposes that you know how to connect to server (tutorials ["Connecting To SQL Server"](#) and ["Connecting To SQL Server Compact"](#)), how to create necessary objects on the server (tutorial ["Creating Database Objects"](#)), and how to insert data to created tables (tutorial ["Inserting Data Into Tables"](#)).

General information

Data on server can be modified using Data Manipulation Language (DML), which is a part of SQL. DML statements can be executed on server by an account that has necessary privileges. There are two ways to manipulate a database. You can build DML statements manually and run them within some component like TMSQuery. Another way is to use the dataset functionality (the Edit and Post methods) of the TMSQuery and TMSTable components. We will discuss both ways. The goal of this tutorial is to modify the following record of the table [dept](#):

10	ACCOUNTING	NEW YORK
----	------------	----------

to make it look as follows:

10	RESEARCH	LOS ANGELES
----	----------	-------------

Using DataSet Functionality

The Edit and Post methods of the TMSQuery and TMSTable components allow deleting data without using DML statements. DML statements are generated by SDAC components internally. The code below demonstrates using these methods:

[Delphi]

```
var
  q: TMSQuery;
begin
  q := TMSQuery.Create(nil);
  try
    // con is either TMSConnection or TMSCompactConnection already set up
    q.Connection := con;
    // retrieve data
    q.SQL.Text := 'SELECT * FROM dept';
    q.Open;
    // to make the record with deptno=10 the current record
    q.FindKey([10]);
    // modify record
    q.Edit;
    q.FieldName('dname').AsString := 'RESEARCH';
    q.FieldName('loc').AsString := 'LOS ANGELES';
    q.Post;
  finally
    q.Free;
  end;
end;
```

[C++Builder]

```
{
  TMSQuery* q = new TMSQuery(NULL);
  try
  {
    // con is either TMSConnection or TMSCompactConnection already set up
    q->Connection = con;
    // retrieve data
    q->SQL->Text = "SELECT * FROM dept";
    q->Open();
    // to make the record with deptno=10 the current record
    q->FindKey(ARRAYOFCONST((10)));
    // modify record
    q->Edit();
    q->FieldByName("dname")->AsString = "RESEARCH";
    q->FieldByName("loc")->AsString = "LOS ANGELES";
    q->Post();
  }
  finally
  {
    q->Free();
  }
}
```

Building DML Statements Manually

DML Statements can contain plain text and text with parameters. This section describes both ways.

DML Statements With Parameters

[Delphi]

```
var
  q: TMSQuery;
begin
  q := TMSQuery.Create(nil);
  try
    // con is either TMSConnection or TMSCompactConnection already set up
    q.Connection := con;
    // set SQL query for update record
    q.SQL.Clear;
    q.SQL.Add('UPDATE dept SET dname = :dname, loc = :loc WHERE deptno = :deptno');
    // set parameters
    q.ParamByName('deptno').AsInteger := 10;
    q.ParamByName('dname').AsString := 'RESEARCH';
    q.ParamByName('loc').AsString := 'LOS ANGELES';
    // execute query
    q.Execute;
  finally
    q.Free;
  end;
end;
```

[C++Builder]

```

{
    TMSQuery* q = new TMSQuery(NULL);
    try
    {
        // con is either TMSConnection or TMSCompactConnection already set up
        q->Connection = con;
        // set SQL query for update record
        q->SQL->Clear();
        q->SQL->Add("UPDATE dept SET dname = :dname, loc = :loc WHERE deptno = :deptno");
        // set parameters
        q->ParamByName("deptno")->AsInteger = 10;
        q->ParamByName("dname")->AsString = "RESEARCH";
        q->ParamByName("loc")->AsString = "LOS ANGELES";
        // execute query
        q->Execute();
    }
    finally
    {
        q->Free();
    }
}

```

DML Statements As Plain Text**[Delphi]**

```

var
    q: TMSQuery;
begin
    q := TMSQuery.Create(nil);
    try
        // con is either TMSConnection or TMSCompactConnection already set up
        q.Connection := con;
        // set SQL query for update record
        q.SQL.Clear;
        q.SQL.Add('UPDATE dept SET dname = ''RESEARCH'', loc = ''LOS ANGELES'' WHERE deptno = 10');
        // execute query
        q.Execute;
    finally
        q.Free;
    end;
end;

```

[C++Builder]

```

{
    TMSQuery* q = new TMSQuery(NULL);
    try
    {
        // con is either TMSConnection or TMSCompactConnection already set up
        q->Connection = con;
        // set SQL query for update record
    }
}

```



```
q->SQL->Clear();
q->SQL->Add("UPDATE dept SET dname = 'RESEARCH', loc = 'LOS ANGELES' WHE
// execute query
q->Execute();
}
finally
{
q->Free();
}
}
```

Additional Information

It is also possible to use stored procedures for modifying data. In this case, all data manipulation logic is defined on server. You can find more about using stored procedures in the tutorial ["Stored Procedures"](#).

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3.12 Stored Procedures

This tutorial describes how to insert data into tables using the components. This tutorial describes how to work with stored procedures using the [TMSStoredProc](#) component.

1. [Requirements](#)
2. [General information](#)
3. [Input parameters](#)
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Requirements

This walkthrough supposes that you know how to connect to server (tutorials ["Connecting To SQL Server"](#) and ["Connecting To SQL Server Compact"](#)), how to create necessary objects on the server (tutorial ["Creating Database Objects"](#)), and how to insert data to created tables (tutorial ["Inserting Data Into Tables"](#)).

General information

A **stored procedure** is a schema object that consists of a set of SQL statements, grouped together, stored in the database, and run as a unit to solve a specific problem or perform a set of related tasks. Procedures let you combine the ease and flexibility of SQL with the procedural functionality of a structured programming language. Large or complex processing that might require execution of several SQL statements is moved into stored procedures, and all applications call the procedures only.

Objects similar to stored procedures are **stored functions**. Almost everything that is true for procedures, holds for functions as well. The main difference between these objects is that function has a return value, and procedure has not. Stored procedures and functions may have input, output, and input/output parameters.

Input parameters

Input parameter is a parameter which value is passed into a stored procedure/function module. The value of an IN parameter is a constant; it can't be changed or reassigned within the module.

For example, the following procedure inserts a new row into the table [dept](#):

```
CREATE PROCEDURE InsertDept
    @deptno INT,
    @dname VARCHAR(14),
    @loc VARCHAR(13)
AS
BEGIN
    INSERT INTO dept(deptno, dname, loc) VALUES(@deptno, @dname, @loc);
END
```

It needs to receive the values to be inserted into the new record, and thus the procedure has three input parameters, corresponding to each field of the table. This procedure may be executed as follows:

```
EXECUTE InsertDept 10, 'ACCOUNTING', 'NEW YORK'
```

To execute the InsertDept stored procedure using the TMSStoredProc component, the following code can be used:

[Delphi]

```
var
    sp: TMSStoredProc;
```

```
begin
  sp := TMSStoredProc.Create(nil);
  try
    // con is either TMSConnection or TMSCompactConnection already set up
    sp.Connection := con;
    // choose a stored procedure name to execute
    sp.StoredProcName := 'InsertDept';
    // build a query for a chosen stored procedure based on the Params and S
    sp.PrepareSQL;
    // assign parameter values
    sp.ParamByName('deptno').AsInteger := 10;
    sp.ParamByName('dname').AsString := 'ACCOUNTING';
    sp.ParamByName('loc').AsString := 'NEW YORK';
    // execute the stored procedure
    sp.Execute;
  finally
    sp.Free;
  end;
end;
```

[C++Builder]

```
{
  TMSStoredProc* sp = new TMSStoredProc(NULL);
  try
  {
    // con is either TMSConnection or TMSCompactConnection already set up
    sp->Connection = con;
    // choose a stored procedure name to execute
    sp->StoredProcName = "InsertDept";
    // build a query for chosen stored procedure based on the Params and Sto
    sp->PrepareSQL();
    // assign parameter values
    sp->ParamByName("deptno")->AsInteger = 10;
    sp->ParamByName("dname")->AsString = "ACCOUNTING";
    sp->ParamByName("loc")->AsString = "NEW YORK";
    // execute the stored procedure
    sp->Execute();
  }
  __finally
  {
    sp->Free();
  }
}
```

Output parameters

Output parameter is a parameter which value is passed out of the stored procedure/function module. An OUT parameter must be a variable, not a constant. It can be found only on the left-hand side of an assignment in the module. You cannot assign a default value to an OUT parameter outside of the module's body. In other words, an OUT parameter behaves like an uninitialized variable.

For example, the following stored procedure returns the count of records in the table [dept](#):

```
CREATE PROCEDURE CountDept
    @cnt INT OUT
AS
BEGIN
    SELECT @cnt = count(*) FROM dept;
END
```

Note 1: SQL Server treats output parameters as input/output parameters.

Note 2: SQL Server stored functions do not support output parameters.

To execute the CountDept stored procedure using the TMSStoredProc component, the following code can be used:

[Delphi]

```
var
    sp: TMSStoredProc;
begin
    sp := TMSStoredProc.Create(nil);
    try
        // con is either TMSConnection or TMSCompactConnection already set up
        sp.Connection := con;
        // choose a stored procedure name to execute
        sp.StoredProcName := 'CountDept';
        // build a query for chosen stored procedure based on the Params and Sto
        sp.PrepareSQL;
        // execute the stored procedure
        sp.Execute;
        // show the value of the output parameter
        ShowMessage(IntToStr(sp.ParamByName('cnt').AsInteger));
    finally
        sp.Free;
    end;
end;
```

[C++Builder]

```
{
    TMSStoredProc* sp = new TMSStoredProc(NULL);
    try
    {
        // con is either TMSConnection or TMSCompactConnection already set up
        sp->Connection = con;
        // choose a stored procedure name to execute
        sp->StoredProcName = "CountDept";
        // build a query for chosen stored procedure based on the Params and Sto
        sp->PrepareSQL();
        // execute the stored procedure
        sp->Execute();
        // show the value of the output parameter
        ShowMessage(IntToStr(sp->ParamByName("cnt")->AsInteger));
    }
```

```
}  
_finally  
{  
    sp->Free();  
}  
}
```

Input/output parameters

An input/output parameter is a parameter that functions as an IN or an OUT parameter or both. The value of the IN/OUT parameter is passed into the stored procedure/function and a new value can be assigned to the parameter and passed out of the module. An IN/OUT parameter must be a variable, not a constant. It can be found on both sides of an assignment. In other words, an IN/OUT parameter behaves like an initialized variable.

For example, the following stored procedure returns the salary with five percents bonus:

```
CREATE PROCEDURE GiveBonus  
    @sal FLOAT OUT  
AS  
BEGIN  
    SET @sal = @sal * 1.05;  
END
```

Note 1: SQL Server does not have input/output parameters as such. SQL Server treats output parameters as input/output parameters.

Note 2: SQL Server stored functions do not support input/output parameters.

To execute the GiveBonus stored procedure using the TMSStoredProc component, the following code can be used:

[Delphi]

```
var  
    sp: TMSStoredProc;  
begin  
    sp := TMSStoredProc.Create(nil);  
    try  
        // con is either TMSConnection or TMSCompactConnection already set up  
        sp.Connection := con;  
        // choose a stored procedure name to execute  
        sp.StoredProcName := 'GiveBonus';  
        // build a query for chosen stored procedure based on the Params and Sto  
        sp.PrepareSQL;  
        // assign parameter values  
        sp.ParamByName('sal').AsFloat := 500.5;  
        // execute the stored procedure  
        sp.Execute;  
        // show the value of the input/output parameter
```

```

        ShowMessage(FloatToStr(sp.ParamByName('sal').AsFloat));
    finally
        sp.Free;
    end;
end;

```

[C++Builder]

```

{
    TMSStoredProc* sp = new TMSStoredProc(NULL);
    try
    {
        // con is either TMSConnection or TMSCompactConnection already set up
        sp->Connection = con;
        // choose a stored procedure name to execute
        sp->StoredProcName = "GiveBonus";
        // build a query for chosen stored procedure based on the Params and Sto
        sp->PrepareSQL();
        // assign parameter values
        sp->ParamByName("sal")->AsFloat = 500.5;
        // execute of the stored procedure
        sp->Execute();
        // show the value of the input/output parameter
        ShowMessage(FloatToStr(sp->ParamByName("sal")->AsFloat));
    }
    finally
    {
        sp->Free();
    }
}

```

Return values

In SQL Server, both stored procedures and stored functions can return values that indicate the result of the execution. For example, the GiveBonus stored procedure (that is described above) returns a value of 0. Usually, a zero value indicates success and a nonzero value indicates failure. The following modified version of the GiveBonus stored procedure returns a value of 1 if the value of the @sal parameter is null or negative, and 0 otherwise:

```

CREATE PROCEDURE GiveBonus
    @sal FLOAT OUT
AS
BEGIN
    IF (@sal IS NULL) OR (@sal < 0)
        RETURN 1;
    SET @sal = @sal * 1.05;
    RETURN 0;
END

```

Note 1: SQL Server stored procedures can return only integer values. When a stored procedure returns other values, for example, a string value, SQL Server converts it to the

integer value.

Note 2: Stored functions can return values of any type.

To execute the GiveBonus stored procedure using the TMSStoredProc component, the following code can be used:

[Delphi]

```
var
  sp: TMSStoredProc;
begin
  sp := TMSStoredProc.Create(nil);
  try
    // con is either TMSConnection or TMSCompactConnection already set up
    sp.Connection := con;
    // choosing a stored procedure name to execute
    sp.StoredProcName := 'GiveBonus';
    // building a query for chosen stored procedure based on the Params and
    sp.PrepareSQL;
    // assigning parameter values
    sp.ParamByName('sal').AsFloat := 500.5;
    // executing of the stored procedure
    sp.Execute;
    // showing the return value
    ShowMessage(IntToStr(sp.ParamByName('return_value').AsInteger));
    // showing the value of the input/output parameter
    ShowMessage(FloatToStr(sp.ParamByName('sal').AsFloat));
  finally
    sp.Free;
  end;
end;
```

[C++Builder]

```
{
  TMSStoredProc* sp = new TMSStoredProc(NULL);
  try
  {
    // con is either TMSConnection or TMSCompactConnection already set up
    sp->Connection = con;
    // choosing a stored procedure name to execute
    sp->StoredProcName = "GiveBonus";
    // building a query for chosen stored procedure based on the Params and
    sp->PrepareSQL();
    // assigning parameter values
    sp->ParamByName("sal")->AsFloat = 500.5;
    // executing of the stored procedure
    sp->Execute();
    // showing the return value
    ShowMessage(IntToStr(sp->ParamByName("return_value")->AsInteger));
    // showing the value of the input/output parameter
    ShowMessage(FloatToStr(sp->ParamByName("sal")->AsFloat));
  }
}
```

```

    _finally
    {
        sp->Free();
    }
}

```

The same task can be resolved by using stored functions as well. For example, the following stored functions returns a value of 0 if the value of the @sal parameter is null or negative, and the correct bonus otherwise:

```

CREATE FUNCTION GiveBonus(
    @sal FLOAT
)
RETURNS FLOAT
AS
BEGIN
    IF (@sal IS NULL) OR (@sal < 0)
        RETURN 0;
    RETURN @sal * 1.05;
END

```

As is was mentioned previously, SQL Server stored functions do not support output and input/output parameters. That is why the behaviour of the GiveBonus stored function is slightly different from the behaviour of the GiveBonus stored procedure.

To execute the GiveBonus stored function using the TMSStoredProc component, the following code can be used:

[Delphi]

```

var
    sp: TMSStoredProc;
begin
    sp := TMSStoredProc.Create(nil);
    try
        // con is either TMSConnection or TMSCompactConnection already set up
        sp.Connection := con;
        // choosing a stored function name to execute
        sp.StoredProcName := 'GiveBonus';
        // building a query for chosen stored function based on the Params and S
        sp.PrepareSQL;
        // assigning parameter values
        sp.ParamByName('sal').AsFloat := 500.5;
        // executing of the stored function
        sp.Execute;
        // showing the return value
        ShowMessage(FloatToStr(sp.ParamByName('return_value').AsFloat));
    finally
        sp.Free;
    end;
end;

```

[C++Builder]


```
{
    TMSStoredProc* sp = new TMSStoredProc(NULL);
    try
    {
        // con is either TMSConnection or TMSCompactConnection already set up
        sp->Connection = con;
        // choosing a stored function name to execute
        sp->StoredProcName = "GiveBonus";
        // building a query for chosen stored function based on the Params and S
        sp->PrepareSQL();
        // assigning parameter values
        sp->ParamByName("sal")->AsFloat = 500.5;
        // executing of the stored function
        sp->Execute();
        // showing the return value
        ShowMessage(FloatToStr(sp->ParamByName("return_value")->AsFloat));
    }
    finally
    {
        sp->Free();
    }
}
```

Returning result sets

Besides scalar variables, a stored procedure can return result sets, i.e. the results of a SELECT statement. This question is discussed in details in the tutorial ["Working With Result Sets Using Stored Procedures"](#).

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3.13 Working With Result Sets Using Stored Procedures

This tutorial describes how to retrieve and modify result sets obtained from stored procedures using the [TMSStoredProc](#) component.

Requirements

This walkthrough supposes that you know how to connect to server (tutorials ["Connecting To SQL Server"](#) and ["Connecting To SQL Server Compact"](#)), how to create necessary objects on the server (tutorial ["Creating Database Objects"](#)), and how to insert data to created tables (tutorial ["Inserting Data Into Tables"](#)).

General information

Besides scalar variables, stored procedures can return result sets, i.e. the results of SELECT statements. Data can be inserted or modified in obtained result sets using the dataset functionality of the TMSStoredProc component.

The goal of this tutorial is to retrieve and modify data from the [dept](#) table using the TMSStoredProc component. The following stored procedure will be used to retrieve data:

```
CREATE PROCEDURE SelectDept
AS
BEGIN
    SELECT * FROM dept;
END
```

Using DataSet functionality

The Insert, Append, Edit, and Post methods of the TMSStoredProc component can be used to insert and modify data in obtained result sets. DML statements are generated by TMSStoredProc internally. The code below demonstrates using these methods:

[Delphi]

```
var
    sp: TMSStoredProc;
begin
    sp := TMSStoredProc.Create(nil);
    try
        // con is either TMSConnection or TMSCompactConnection already set up
        sp.Connection := con;
        // choose a stored procedure name
        sp.StoredProcName := 'SelectDept';
        // build a query for a chosen stored procedure based on the Params and S
        sp.PrepareSQL;
        // retrieve data
        sp.Open;
        // append record
        sp.Append;
        sp.FieldName('deptno').AsInteger := 50;
        sp.FieldName('dname').AsString := 'SALES';
        sp.FieldName('loc').AsString := 'NEW YORK';
        sp.Post;
        // insert record
        sp.Insert;
        sp.FieldName('deptno').AsInteger := 60;
        sp.FieldName('dname').AsString := 'ACCOUNTING';
        sp.FieldName('loc').AsString := 'LOS ANGELES';
        sp.Post;
        // to make the record with deptno=10 the current record
        sp.Findkey([10]);
        // modify record
        sp.Edit;
        sp.FieldName('dname').AsString := 'RESEARCH';
```

```

        sp.FieldName('loc').AsString := 'LOS ANGELES';
    sp.Post;
finally
    sp.Free;
end;
end;

```

[C++Builder]

```

{
    TMSStoredProc* sp = new TMSStoredProc(NULL);
    try
    {
        // con is either TMSConnection or TMSCompactConnection already set up
        sp->Connection = con;
        // choose a stored procedure name
        sp->StoredProcName = "SelectDept";
        // build a query for a chosen stored procedure based on the Params and S
        sp->PrepareSQL();
        // retrieve data
        sp->Open();
        // append record
        sp->Append();
        sp->FieldName("deptno")->AsInteger = 50;
        sp->FieldName("dname")->AsString = "SALES";
        sp->FieldName("loc")->AsString = "NEW YORK";
        sp->Post();
        // insert record
        sp->Insert();
        sp->FieldName("deptno")->AsInteger = 60;
        sp->FieldName("dname")->AsString = "ACCOUNTING";
        sp->FieldName("loc")->AsString = "LOS ANGELES";
        sp->Post();
        // to make the record with deptno=10 the current record
        sp->FindKey(ARRAYOFCONST((10)));
        // modify record
        sp->Edit();
        sp->FieldName("dname")->AsString = "RESEARCH";
        sp->FieldName("loc")->AsString = "LOS ANGELES";
        sp->Post();
    }
    __finally
    {
        sp->Free();
    }
}

```

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3.14 Demo Projects

SDAC includes a number of demo projects that show off the main SDAC functionality and development patterns.

The SDAC demo projects consist of one large project called *SdacDemo* with demos for all main SDAC components, use cases, and data access technologies, and a number of smaller projects on how to use SDAC in different IDEs and how to integrate SDAC with third-party components.

Most demo projects are built for Delphi and Borland Developer Studio. There are only two SDAC demos for C++Builder. However, the C++Builder distribution includes source code for all other demo projects as well.

Where are the SDAC demo projects located?

In most cases all SDAC demo projects are located in "%Sdac%\Demos\".

In Delphi 2007 for Win32 under Windows Vista all SDAC demo projects are located in "My Documents\Devart\Sdac for Delphi 2007\Demos", for example "C:\Documents and Settings\All Users\Documents\Devart\Sdac for Delphi 2007\Demos\".

The structure of the demo project directory depends on the IDE version you are using.

For most new IDEs the structure will be as follows.

Demos

```
|--SdacDemo [The main SDAC demo project]
|--TechnologySpecific
|   |--MSSQLCompact [Win32 version of the demo, using SQL Server
Compact Edition]
|--ThirdParty
|   |-- [A collection of demo projects on integration with third-
party components]
|--Performance [Demo project, that compares performance of SDAC
with another components (BDE, ADO, dbExpress)]
|--Miscellaneous
    |-- [Some other demo projects on design technologies]
```

SdacDemo is the main demo project that shows off all the SDAC functionality. The other directories contain a number of supplementary demo projects that describe special use cases. A list of all the samples in the SDAC demo project and a description for the

supplementary projects is provided in the following section.

Note: This documentation describes ALL the SDAC demo projects. The actual demo projects you will have installed on your computer depends on your SDAC version, SDAC edition, and the IDE version you are using. The integration demos may require installation of third-party components to compile and work properly.

Instructions for using the SDAC demo projects

To explore an SDAC demo project,

1. Launch your IDE.
2. In your IDE, choose File|Open Project from the menu bar.
3. Find the directory you installed SDAC to and open the Demos folder.
4. Browse through the demo project folders located here and open the project file of the demo you would like to use.
5. Compile and launch the demo. If it exists, consult the *ReadMe* file for more details.

The included sample applications are fully functional. To use the demos, you have to first set up a connection to SQL Server. You can do so by clicking on the "Connect" button.

Many demos may also use some database objects. If so, they will have two object manipulation buttons, "Create" and "Drop". If your demo requires additional objects, click "Create" to create the necessary database objects. When you are done with a demo, click "Drop" to remove all the objects used for the demo from your database.

Note: The SDAC demo directory includes two sample SQL scripts for creating and dropping all the test schema objects used in the SDAC demos. You can modify and execute this script manually, if you would like. This will not change the behavior of the demos.

You can find a complete walkthrough for the main SDAC demo project in the [Getting Started](#) section. The other SDAC demo projects include a *ReadMe* file with individual building and launching instructions.

Demo project descriptions

SdacDemo

SdacDemo is one large project that includes three collections of demos.

Working with components

A collection of samples that show how to work with the basic SDAC components.

General demos

A collection of samples that show off the SDAC technology and demonstrate some ways to work with data.

SQL Server-specific demos

A collection of samples that demonstrate how to incorporate SQL Server features in database applications.

SdacDemo can be opened from %Sdac%\Demos\SdacDemo\SdacDemo.dpr (.bdsproj). The following table describes all the demos contained in this project.

Working with Components

Name	Description
ChangeNotification	This demo uses the TMSChangeNotification component to automate synchronization of local data with the actual data on the server. Synchronization happens immediately after changes are applied to the server from a different connection.
ConnectDialog	Demonstrates how to customize the SDAC connect dialog . Changes the standard SDAC connect dialog to two custom connect dialogs. The first customized sample dialog is inherited from the TForm class, and the second one is inherited from the default SDAC connect dialog class.
CRDBGrid	Demonstrates how to work with the TCRDBGrid component. Shows off the main TCRDBGrid features, like filtering, searching, stretching, using compound headers, and more.
Dump	Demonstrates how to backup data from tables with the TMSDump component. Shows how to use scripts created during back up to restore table data. This demo lets you back up a table either by specifying the table name or by writing a SELECT query.
Loader	Uses the TMSLoader component to quickly load data into a server table. This demo also compares the two TMSLoader data loading handlers: GetColumnData and PutData .
Query	Demonstrates working with TMSQuery , which is one of the most useful SDAC components. Includes many TMSQuery usage scenarios. Demonstrates how to execute queries in both standard

	and NonBlocking mode and how to edit data and export it to XML files. Note: This is a very good introductory demo. We recommend starting here when first becoming familiar with SDAC.
ServiceBroker	Demonstrates working with the TMSServiceBroker component. This sample shows how to organize simple messaging.
Sql	Uses the TMSSQL component to execute SQL statements. Demonstrates how to work in a separate thread, in standard mode, in NonBlocking mode, and how to break long-duration query execution.
StoredProc	Uses the TMSSStoredProc component to access an editable recordset from an SQL Server stored procedure in the client application.
Table	Demonstrates how to use TMSTable to work with data from a single table on the server without writing any SQL queries manually. Performs server-side data sorting and filtering and retrieves results for browsing and editing.
Transaction	Demonstrates usage of the TMSTransaction component to control distributed transactions. The demo shows how to ensure consistent data changes across two connections.
UpdateSQL	Demonstrates using the TMSUpdateSQL component to customize update commands. Lets you optionally use TMSSQL and TMSQuery objects for carrying out insert, delete, query, and update commands.
VirtualTable	Demonstrates working with the TVirtualTable component. This sample shows how to fill virtual dataset with data from other datasets, filter data by a given criteria, locate specified records, perform file operations, and change data and table structure.

General Demos

Name	Description
CachedUpdates	Demonstrates how to perform the most important tasks of working with data in CachedUpdates mode, including highlighting uncommitted changes, managing transactions, and committing changes in a batch.
FilterAndIndex	Demonstrates SDAC's local storage functionality. This sample shows how to perform local filtering, sorting and TVirtualTable by multiple fields, including by calculated and lookup fields.
MasterDetail	Uses SDAC functionality to work with master/detail relationships . This sample shows how to use TMSMetaData local master/detail functionality. Demonstrates different kinds of master/detail linking, including linking by SQL, by simple fields, and by calculated fields.
Pictures	Uses SDAC functionality to work with BLOB fields and graphics.. The sample demonstrates how to retrieve binary data from SQL Server database and display it on visual components. Sample also shows

	how to load and save pictures to files and to the database.
StoredProcUpdates	Demonstrates updating a recordset using stored procedures. Update events are tied to stored procedure calls in design time, and every recordset change causes the corresponding stored procedure call to be performed. The commands to call stored procedures are stored in the SQLInsert , SQLDelete , SQLUpdate properties of TMSQuery .
Threads	Demonstrates how SDAC can be used in multithreaded applications. This sample allows you to set up several threads and test SDAC's performance with multithreading.

SQL Server-specific Demos

Name	Description
Lock	This demo shows how to ensure database consistency with locking mechanism of SQL Server through the SDAC functionality. Basing on your choice, a record can be locked exclusively, or just protected from writing.
LongStrings	Demonstrates SDAC functionality for working with long string fields (fields that have more than 256 characters). Shows the different ways they can be displayed as memo fields and string fields.
ServerCursors	Compares performance of opening a large recordset with different cursor types : client cursor in FetchAll =True mode, client cursor in FetchAll =False mode, and server cursor.
Text	Uses SDAC functionality to work with text. The sample demonstrates how to retrieve text data from SQL Server database and display it on visual components. Sample also shows how to load and save text to files and to the database.
UDT	This demo demonstrates SDAC abilities for working with CLR User-defined Types (UDT) of SQL Server. The demo folder includes the demo itself, and the sources of a sample type used in this demo. For more information on how to perform all necessary settings, see the <i>Readme.html</i> file in the demo folder.

Supplementary Demo Projects

SDAC also includes a number of additional demo projects that describe some special use cases, show how to use SDAC in different IDEs and give examples of how to integrate it with third-party components. These supplementary SDAC demo projects are sorted into subfolders in the %Sdac%\Demos\ directory.

Location	Name	Description
ThirdParty	FastReport	Demonstrates how SDAC can be

		used with FastReport components. This project consists of two parts. The first part is several packages that integrate SDAC components into the FastReport editor. The second part is a demo application that lets you design and preview reports with SDAC technology in the FastReport editor.
	InfoPower	Uses InfoPower components to display recordsets retrieved with SDAC. This demo project displays an InfoPower grid component and fills it with the result of an SDAC query. Shows how to link SDAC data sources to InfoPower components.
	IntraWeb	A collection of sample projects that show how to use SDAC components as data sources for IntraWeb applications. Contains IntraWeb samples for setting up a connection, querying a database and modifying data and working with CachedUpdates and MasterDetail relationships.
	QuickReport	Lets you launch and view a QuickReport application based on SDAC. This demo project lets you modify the application in design-time.
	ReportBuilder	Uses SDAC data sources to create a ReportBuilder report that takes data from SQL Server database. Shows how to set up a ReportBuilder document in design-time and how to integrate SDAC components into the Report Builder editor to perform document design in run-time.
TechnologySpecific	MSSQLCompact	Demonstrates how to create applications that work with Microsoft SQL Server Compact Edition . Demo connects to a database and opens a table. If the specified database does not exists, it will be created

		<p>automatically. User must have SQL Server Compact Edition installed to test this demo. This is the Win32 version of the project.</p>
Miscellaneous	CBuilder	<p>A general demo project about creating SDAC-based applications with C++Builder. Lets you execute SQL scripts and work with result sets in a grid. This is one of the two SDAC demos for C++Builder.</p>
	DII	<p>Demonstrates creating and loading DLLs for SDAC-based projects. This demo project consists of two parts - an MSDII project that creates a DLL of a form that sends a query to the server and displays its results, and an MSeXe project that can be executed to display a form for loading and running this DLL. Allows you to build a dll for one SDAC-based project and load and test it from a separate application.</p>
	FailOver	<p>Demonstrates the recommended approach to working with unstable networks. This sample lets you perform transactions and updates in several different modes, simulate a sudden session termination, and view what happens to your data state when connections to the server are unexpectedly lost. Shows off CachedUpdates, LocalMasterDetail, FetchAll, Pooling, and different Failover modes.</p>
	Midas	<p>Demonstrates using MIDAS technology with SDAC. This project consists of two parts: a MIDAS server that processes requests to the database and a thin MIDAS client that displays an interactive grid. This demo shows how to build thin clients that display interactive components and delegate all database interaction to a server application for processing.</p>

	Performance	Measures SDAC performance on several types of queries. This project lets you compare SDAC performance to BDE, ADO, and dbExpress. Tests the following functionality: Fetch, Master/Detail, Stored Procedure Call, Multi Executing, and Insert/Post.
	VirtualTableCB	Demonstrates working with the TVirtualTable component. This sample shows how to fill virtual dataset with data from other datasets, filter data by a given criteria, locate specified records, perform file operations, and change data and table structure. This is one of the two demo projects for C++Builder
<i>SdacDemo</i>	SdacDemo	<i>[Win32 version of the main SDAC demo project - see above]</i>

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3.15 Deployment

SDAC requires OLE DB to be installed on the workstation. In current versions of Microsoft Windows, as Windows 2000, OLE DB is already included as standard package. But it is highly recommended to download the latest version (newer than 2.5) of [Microsoft Data Access Components](#) (MDAC).

Many features of SQL Server like Query Notifications, MARS require [Microsoft SQL Server Native Client](#). If you need to use these features, you should download and install Microsoft SQL Server Native Client.

For applications that use [SQL Server Compact Edition](#), the server itself is required to be installed on the client computer.

In order to use extended abilities of [UDT fields](#), you will need to deploy the Devart.Sdac.UDTProxy.dll file with your application. This file should be present in the directory with your application, or registered in GAC.

SDAC applications can be built and deployed with or without run-time libraries. Using run-time libraries is managed with the "Build with runtime packages" check box in the Project Options dialog box.

Deploying Windows applications built without run-time packages

You can check that your application does not require run-time packages by making sure the "Build with runtime packages" check box is not selected in the Project Options dialog box.

Trial Limitation Warning

If you are evaluating deploying Windows applications with SDAC Trial Edition, you will need to deploy the following BPL files:

dacXX.bpl	always
sdacXX.bpl	always

and their dependencies (required IDE BPL files) with your application, even if it is built without run-time packages:

rtlXX.bpl	always
dbrtlXX.bpl	always
vcldbXXX.bpl	always

Deploying Windows applications built with run-time packages

You can set your application to be built with run-time packages by selecting the "Build with runtime packages" check box in the Project Options dialog box before compiling your application.

In this case, you will also need to deploy the following BPL files with your Windows application:

dacXX.bpl	always
sdacXX.bpl	always
dacvclXX.bpl	if your application uses the SdacVcl unit
sdacvclXX.bpl	if your application uses the SdacVcl unit
crcontrolsXX.bpl	if your application uses the CRDBGrid component

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4 Using SDAC

This section describes the basics of using SQL Server Data Access Components

- [Connecting in Direct Mode](#)
- [Updating Data with SDAC Dataset Components](#)
- [Master/Detail Relationships](#)
- [Using Table-Valued Parameters](#)
- [Data Type Mapping](#)
- [Data Encryption](#)
- [Working in an Unstable Network](#)
- [Disconnected Mode](#)
- [Performance of Obtaining Data](#)
- [Increasing Performance](#)
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- [SQL Server Compact Edition](#)
- [Working with User Defined Types \(UDT\)](#)
- [TMSTransaction Component](#)
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4.1 Connecting in Direct Mode

SDAC Professional Edition allows to connect to SQL Server in two ways: using the OLE DB interface or in the Direct mode via TCP/IP. The chosen connection mode is regulated by the `TMSConnection.Options.Provider` property.

SDAC connection modes

By default, SDAC, like most applications that work with SQL Server, uses the OLE DB interface directly through a set of COM-based interfaces to connect to server. Such approach allows using client applications on Windows workstations only.

To overcome these problems, SDAC Professional Edition includes an option to connect to SQL Server directly over the network using the TCP/IP protocol. This is referred to as connecting in the Direct mode. Connection in the Direct mode does not require OLEDB provider or SQL Native Client provider to be installed on target machines. The only requirement for running an SDAC-based application that uses the Direct mode is that the operating system must support the TCP/IP protocol.

Setting up Direct mode connections

Here is an example that illustrates connecting to SQL Server in the Direct mode. The server's IP address is 205.227.44.44, its port number is 1433 (this is the most commonly used port for SQL Server).

```
var
  MSConnection: TMSConnection;
. . .
MSConnection.Options.Provider := prDirect;
MSConnection.Authentication := auServer;
MSConnection.Username := 'sa';
MSConnection.Password := '';
MSConnection.Server := '205.227.44.44';
MSConnection.Port := 1433;
MSConnection.Connect;
```

All we have to do is to set the `TMSConnection.Options.Provider` property to `prDirect` to enable

Direct mode connections in your application. You do not have to rewrite other parts of your code.

Comparison of Client mode vs. Direct mode

Applications that use the OLE DB interface and those that use the Direct mode have similar size and performance. Security when using the Direct mode is the same as using the OLE DB interface.

Advantages of using the Direct mode

- Installation of OLEDB providers or SQL Native Client provider is not required.
- System requirements are reduced.
- Support for SQL Server in Mac OS X application development.

Direct mode limitations

- Connection using TCP/IP protocol only
- Certain problems may occur when using firewalls.

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4.2 Updating Data with SDAC Dataset Components

SDAC components that are descendants from [TCustomDADataSet](#) provide different means for reflecting local changes to the server.

The first approach is to use automatic generation of update SQL statements. Using this approach you should provide a SELECT statement, everything else will be made by SDAC automatically. In case when a SELECT statement uses multiple tables, you can use [UpdatingTable](#) property to specify which table will be updated. If [UpdatingTable](#) is blank, the table that corresponds to the first field in the dataset is used. This approach is the most preferable and is used in most cases.

Another approach is to set update SQL statements using [SQLInsert](#), [SQLUpdate](#) and [SQLDelete](#) properties. Set them with SQL statements that will perform corresponding data modifications on behalf of the original statement whenever insert, update or delete operation is called. This is useful when there is no possibility to generate correct statement or you need

to execute some specific statements. For example update operations should be made with stored procedure calls.

You may also assign [UpdateObject](#) property with the [TMSUpdateSQL](#) class instance which holds all updating SQL statements in one place. You can generate all these SQL statements using SDAC design time editors. For more careful customization of data update operations you can use [InsertObject](#), [ModifyObject](#) and [DeleteObject](#) properties of [TMSUpdateSQL](#) component.

See Also

- [TMSQuery](#)
- [TMSStoredProc](#)
- [TMSTable](#)
- [TMSUpdateSQL](#)

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4.3 Master/Detail Relationships

Master/detail (MD) relationship between two tables is a very widespread one. So it is very important to provide an easy way for database application developer to work with it. Lets examine how SDAC implements this feature.

Suppose we have classic MD relationship between "Department" and "Employee" tables.

"Department" table has field Dept_No. Dept_No is a primary key.

"Employee" table has a primary key EmpNo and foreign key Dept_No that binds "Employee" to "Department".

It is necessary to display and edit these tables.

SDAC provides two ways to bind tables. First code example shows how to bind two TCustomMSDataSet components (TMSQuery, TMSTable or even TMSStoredProc) into MD relationship via parameters.

```
procedure TForm1.Form1Create(Sender: TObject);  
var  
    Master, Detail: TMSQuery;
```



```
MasterSource: TDataSource;
begin
  // create master dataset
  Master := TMSQuery.Create(Self);
  Master.SQL.Text := 'SELECT * FROM Department';
  // create detail dataset
  Detail := TMSQuery.Create(Self);
  Detail.SQL.Text := 'SELECT * FROM Employee WHERE Dept_No = :Dept_No';
  // connect detail dataset with master via TDataSource component
  MasterSource := TDataSource.Create(Self);
  MasterSource.DataSet := Master;
  Detail.MasterSource := MasterSource;
  // open master dataset and only then detail dataset
  Master.Open;
  Detail.Open;
end;
```

Pay attention to one thing: parameter name in detail dataset SQL must be equal to the field name or the alias in the master dataset that is used as foreign key for detail table. After opening detail dataset always holds records with Dept_No field value equal to the one in the current master dataset record.

There is an additional feature: when inserting new records to detail dataset it automatically fills foreign key fields with values taken from master dataset.

Now suppose that detail table "Department" foreign key field is named DepLink but not Dept_No. In such case detail dataset described in above code example will not autofill DepLink field with current "Department".Dept_No value on insert. This issue is solved in second code example.

```
procedure TForm1.Form1Create(Sender: TObject);
var
  Master, Detail: TMSQuery;
  MasterSource: TDataSource;
begin
  // create master dataset
  Master := TMSQuery.Create(Self);
  Master.SQL.Text := 'SELECT * FROM Department';
  // create detail dataset
  Detail := TMSQuery.Create(Self);
  Detail.SQL.Text := 'SELECT * FROM Employee';
  // setup MD
  Detail.MasterFields := 'Dept_No'; // primary key in Department
  Detail.DetailFields := 'DepLink'; // foreign key in Employee
  // connect detail dataset with master via TDataSource component
  MasterSource := TDataSource.Create(Self);
  MasterSource.DataSet := Master;
  Detail.MasterSource := MasterSource;
  // open master dataset and only then detail dataset
  Master.Open;
  Detail.Open;
end;
```

In this code example MD relationship is set up using [MasterFields](#) and [DetailFields](#) properties. Also note that there are no WHERE clause in detail dataset SQL.

To defer refreshing of detail dataset while master dataset navigation you can use [DetailDelay](#) option.

Such MD relationship can be local and remote, depending on the [TCustomDADataset.Options.LocalMasterDetail](#) option. If this option is set to True, dataset uses local filtering for establishing master-detail relationship and does not refer to the server. Otherwise detail dataset performs query each time when record is selected in master dataset. Using local MD relationship can reduce server calls number and save server resources. It can be useful for slow connection. [CachedUpdates](#) mode can be used for detail dataset only for local MD relationship. Using local MD relationship is not recommended when detail table contains too many rows, because in remote MD relationship only records that correspond to the current record in master dataset are fetched. So, this can decrease network traffic in some cases.

See Also

- [TCustomDADataset.Options](#)
- [TMemDataSet.CachedUpdates](#)

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4.4 Using Table-Valued Parameters

Table-valued parameters are a new parameter type introduced in SQL Server 2008. They can be used to send multiple rows of data to a Transact-SQL statement or a stored routine without creating a temporary table or many parameters. To learn more on table-valued parameters, see <http://msdn.microsoft.com/en-us/library/bb510489.aspx>

This topic demonstrates how to use table-valued parameters in your application by the help of SDAC

1. In order to pass a table as a parameter to a stored procedure or function, create a TABLE TYPE as follows:

```
CREATE TYPE DeptTableType AS TABLE(  
    DNAME VARCHAR(20),
```

```
LOC VARCHAR(20)
)
```

2. In a stored procedure we will transfer data from a parameter to a table on a server. Here is a script example for creating a table:

```
CREATE TABLE DEPT(
  DEPTNO INT IDENTITY(1,1) NOT NULL PRIMARY KEY,
  DNAME VARCHAR(20) NULL,
  LOC VARCHAR(20) NULL
)
```

3. Create a stored procedure that uses the table type:

```
CREATE PROCEDURE SP_InsertDept
  @TVP DeptTableType READONLY
AS
BEGIN
  INSERT INTO DEPT ([DNAME], [LOC])
    SELECT * FROM @TVP
END
```

4. To work with Table-Valued Parameters, you should use the [TMSTableData](#) component. Fill it with data:

```
MSTableData.TableTypeName := 'DeptTableType';
MSTableData.Open;
MSTableData.Append;
MSTableData.Fields[0].AsString := 'ACCOUNTING';
MSTableData.Fields[1].AsString := 'NEW YORK';
MSTableData.Post;
MSTableData.Append;
MSTableData.Fields[0].AsString := 'RESEARCH';
MSTableData.Fields[1].AsString := 'DALLAS';
MSTableData.Post;
MSTableData.Append;
MSTableData.Fields[0].AsString := 'SALES';
MSTableData.Fields[1].AsString := 'CHICAGO';
MSTableData.Post;
```

```
MSTableData.Append;
MSTableData.Fields[0].AsString := 'OPERATIONS';
MSTableData.Fields[1].AsString := 'BOSTON';
MSTableData.Post;
```

5. Use the TMSStoredProc component to transfer data from the [TMSTableData](#) component to a table on a server:

```
MSStoredProc.StoredProcName := 'SP_InsertDept';
MSStoredProc.PrepareSQL;
MSStoredProc.ParamByName('TVP').ASTable := MSTableData.Table;
MSStoredProc.ExecProc;
MSTableData.Close;
```

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4.5 Data Type Mapping

Overview

Data Type Mapping is a flexible and easily customizable gear, which allows mapping between DB types and Delphi field types.

In this article there are several examples, which can be used when working with all supported DBs. In order to clearly display the universality of the Data Type Mapping gear, a separate DB will be used for each example.

Data Type Mapping Rules

In versions where Data Type Mapping was not supported, SDAC automatically set correspondence between the DB data types and Delphi field types. In versions with Data Type Mapping support the correspondence between the DB data types and Delphi field types can be set manually.

Here is the example with the numeric type in the following table of a SQL Server database:

```
CREATE TABLE DECIMAL_TYPES
(
  ID int IDENTITY (1,1) NOT NULL PRIMARY KEY,
  VALUE1 decimal(4, 0),
  VALUE2 decimal(10, 0),
```

```

VALUE3 decimal(15, 0),
VALUE4 decimal(5, 2),
VALUE5 decimal(10, 4),
VALUE6 decimal(15, 6)
)

```

And Data Type Mapping should be used so that:

- the numeric fields with Scale=0 in Delphi would be mapped to one of the field types: TSmallintField, TIntegerField or TLargeintField, depending on Precision
- to save precision, the numeric fields with Precision>=10 and Scale<= 4 would be mapped to TBCDField
- and the numeric fields with Scale>= 5 would be mapped to TFMTBCDField.

The above in the form of a table:

SQL Server data type	Default Delphi field type	Destination Delphi field type
decimal(4,0)	ftFloat	ftSmallint
decimal(10,0)	ftFloat	ftInteger
decimal(15,0)	ftFloat	ftLargeint
decimal(5,2)	ftFloat	ftFloat
decimal(10,4)	ftFloat	ftBCD
decimal(15,6)	ftFloat	ftFMTBCD

To specify that numeric fields with Precision <= 4 and Scale = 0 must be mapped to ftSmallint, such a rule should be set:

```

var
  DBType: word;
  MinPrecision: Integer;
  MaxPrecision: Integer;
  MinScale: Integer;
  MaxScale: Integer;
  FieldType: TFieldType;
begin
  DBType      := msDecimal;
  MinPrecision := 0;
  MaxPrecision := 4;
  MinScale    := 0;
  MaxScale    := 0;
  FieldType   := ftSmallint;
  MSConnection.DataTypeMap.AddDBTypeRule(DBType, MinPrecision, MaxPrecision,
end;

```

This is an example of the detailed rule setting, and it is made for maximum visualization.

Usually, rules are set much shorter, e.g. as follows:

```
// clear existing rules
MSConnection.DataTypeMap.Clear;
// rule for decimal(4,0)
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 0, 4, 0, 0, ftSma
// rule for decimal(10,0)
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 5, 10, 0, 0, ftInt
// rule for decimal(15,0)
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 11, r1Any, 0, 0, ftLar
// rule for decimal(5,2)
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 0, 9, 1, r1Any, ftFlo
// rule for decimal(10,4)
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 10, r1Any, 1, 4, ftBCD
// rule for decimal(15,6)
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 10, r1Any, 5, r1Any, ftFMT
```

Rules order

When setting rules, there can occur a situation when two or more rules that contradict to each other are set for one type in the database. In this case, only one rule will be applied — the one, which was set first.

For example, there is a table in an SQL Server database:

```
CREATE TABLE DECIMAL_TYPES
(
  ID int IDENTITY (1,1) NOT NULL PRIMARY KEY,
  VALUE1 decimal(5, 2),
  VALUE2 decimal(10, 4),
  VALUE3 decimal(15, 6)
)
```

TBCDField should be used for NUMBER(10,4), and TFMTTBCDField - for NUMBER(15,6) instead of default fields:

SQL Server data type	Default Delphi field type	Destination field type
decimal(5,2)	ftFloat	ftFloat
decimal(10,4)	ftFloat	ftBCD
decimal(15,6)	ftFloat	ftFMTBCD

If rules are set in the following way:

```
MSConnection.DataTypeMap.Clear;
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 0, 9, r1Any, r1Any, ft
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 0, r1Any, 0, 4, ft
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 0, r1Any, 0, r1Any, ft
```

it will lead to the following result:

SQL Server data type	Delphi field type
decimal(5,2)	ftFloat
decimal(10,4)	ftBCD
decimal(15,6)	ftFMTBCD

But if rules are set in the following way:

```
MSConnection.DataTypeMap.Clear;  
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 0, r1Any, 0, r1Any, ft  
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 0, r1Any, 0, 4, ft  
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 0, 9, r1Any, r1Any, ft
```

SQL Server data type	Delphi field type
decimal(5,2)	ftFMTBCD
decimal(10,4)	ftFMTBCD
decimal(15,6)	ftFMTBCD

This happens because the rule

```
MSConnection.DataTypeMap.AddDBTypeRule(msDecimal, 0, r1Any, 0, r1Any, ft
```

will be applied for the NUMBER fields, whose Precision is from 0 to infinity, and Scale is from 0 to infinity too. This condition is met by all NUMBER fields with any Precision and Scale.

When using Data Type Mapping, first matching rule is searched for each type, and it is used for mapping. In the second example, the first set rule appears to be the first matching rule for all three types, and therefore the ftFMTBCD type will be used for all fields in Delphi.

If to go back to the first example, the first matching rule for the NUMBER(5,2) type is the first rule, for NUMBER(10,4) - the second rule, and for NUMBER(15,6) - the third rule. So in the first example, the expected result was obtained.

So it should be remembered that if rules for Data Type Mapping are set so that two or more rules that contradict to each other are set for one type in the database, the rules will be applied in the specified order.

Defining rules for Connection and Dataset

Data Type Mapping allows setting rules for the whole connection as well as for each DataSet in the application.

For example, such table is created in SQL Server:

```
CREATE TABLE PERSON
(
  ID int IDENTITY (1,1) NOT NULL PRIMARY KEY,
  FIRSTNAME varchar(20),
  LASTNAME varchar(30),
  GENDER_CODE varchar(1),
  BIRTH_DTTM datetime
)
```

It is exactly known that the birth_dttm field contains birth day, and this field should be ftDate in Delphi, and not ftDateTime. If such rule is set:

```
MSConnection.DataTypeMap.Clear;
MSConnection.DataTypeMap.AddDBTypeRule(msDateTime, ftDate);
```

all DATETIME fields in Delphi will have the ftDate type, that is incorrect. The ftDate type was expected to be used for the DATETIME type only when working with the person table. In this case, Data Type Mapping should be set not for the whole connection, but for a particular DataSet:

```
MSQuery.DataTypeMap.Clear;
MSQuery.DataTypeMap.AddDBTypeRule(msDateTime, ftDate);
```

Or the opposite case. For example, DATETIME is used in the application only for date storage, and only one table stores both date and time. In this case, the following rules setting will be correct:

```
MSConnection.DataTypeMap.Clear;
MSConnection.DataTypeMap.AddDBTypeRule(msDateTime, ftDate);
MSQuery.DataTypeMap.Clear;
MSQuery.DataTypeMap.AddDBTypeRule(msDateTime, ftDateTime);
```

In this case, in all DataSets for the DATETIME type fields with the ftDate type will be created, and for MSQuery - with the ftDateTime type.

The point is that the priority of the rules set for the DataSet is higher than the priority of the rules set for the whole connection. This allows both flexible and convenient setting of Data Type Mapping for the whole application. There is no need to set the same rules for each DataSet, all the general rules can be set once for the whole connection. And if a DataSet with

an individual Data Type Mapping is necessary, individual rules can be set for it.

Rules for a particular field

Sometimes there is a need to set a rule not for the whole connection, and not for the whole dataset, but only for a particular field.

e.g. there is such table in a MySQL database:

```
CREATE TABLE ITEM
(
  ID int IDENTITY (1,1) NOT NULL PRIMARY KEY,
  NAME CHAR(50),
  GUID CHAR(38)
)
```

The **guid** field contains a unique identifier. For convenient work, this identifier is expected to be mapped to the TGuidField type in Delphi. But there is one problem, if to set the rule like this:

```
MSQuery.DataTypeMap.Clear;
MSQuery.DataTypeMap.AddDBTypeRule(msChar, ftGuid);
```

then both **name** and **guid** fields will have the ftGuid type in Delphi, that does not correspond to what was planned. In this case, the only way is to use Data Type Mapping for a particular field:

```
MSQuery.DataTypeMap.AddFieldRule('GUID', ftGuid);
```

In addition, it is important to remember that setting rules for particular fields has the highest priority. If to set some rule for a particular field, all other rules in the Connection or DataSet will be ignored for this field.

Ignoring conversion errors

Data Type Mapping allows mapping various types, and sometimes there can occur the problem with that the data stored in a DB cannot be converted to the correct data of the Delphi field type specified in rules of Data Type Mapping or vice-versa. In this case, an error will occur, which will inform that the data cannot be mapped to the specified type.

For example:

Database value	Destination field type	Error
'text value'	ftInteger	String cannot be converted to Integer
1000000	ftSmallint	Value is out of range
15,1	ftInteger	Cannot convert float to integer

But when setting rules for Data Type Mapping, there is a possibility to ignore data conversion errors:

```
MSConnection.DataTypeMap.AddDBTypeRule(msVarchar, ftInteger, True);
```

In this case, the correct conversion is impossible. But because of ignoring data conversion errors, Data Type Mapping tries to return values that can be set to the Delphi fields or DB fields depending on the direction of conversion.

Database value	Destination field type	Result	Result description
'text value'	ftInteger	0	0 will be returned if the text cannot be converted to number
1000000	ftSmallint	32767	32767 is the max value that can be assigned to the Smallint data type
15,1	ftInteger	15	15,1 was truncated to an integer value

Therefore ignoring of conversion errors should be used only if the conversion results are expected.

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4.6 Data Encryption

SDAC has built-in algorithms for data encryption and decryption. To enable encryption, you should attach the [TCREncryptor](#) component to the dataset, and specify the encrypted fields. When inserting or updating data in the table, information will be encrypted on the client side in accordance with the specified method. Also when reading data from the server, the components decrypt the data in these fields "on the fly".

For encryption, you should specify the data encryption algorithm (the [EncryptionAlgorithm](#) property) and password (the [Password](#) property). On the basis of the specified password, the key is generated, which encrypts the data. There is also a possibility to set the key directly using the [SetKey](#) method.

When storing the encrypted data, in addition to the initial data, you can also store additional information: the GUID and the hash. (The method is specified in the [TCREncryptor.DataHeader](#) property).

If data is stored without additional information, it is impossible to determine whether the data is encrypted or not. In this case, only the encrypted data should be stored in the column, otherwise, there will be confusion because of the inability to distinguish the nature of the data. Also in this way, the similar source data will be equivalent in the encrypted form, that is not good from the point of view of the information protection. The advantage of this method is the size of the initial data equal to the size of the encrypted data.

To avoid these problems, it is recommended to store, along with the data, the appropriate GUID, which is necessary for specifying that the value in the record is encrypted and it must be decrypted when reading data. This allows you to avoid confusion and keep in the same column both the encrypted and decrypted data, which is particularly important when using an existing table. Also, when doing in this way, a random initializing vector is generated before the data encryption, which is used for encryption. This allows you to receive different results for the same initial data, which significantly increases security.

The most preferable way is to store the hash data along with the GUID and encrypted information to determine the validity of the data and verify its integrity. In this way, if there was an attempt to falsify the data at any stage of the transmission or data storage, when decrypting the data, there will be a corresponding error generated. For calculating the hash the SHA1 or MD5 algorithms can be used (the [HashAlgorithm](#) property).

The disadvantage of the latter two methods - additional memory is required for storage of the auxiliary information.

As the encryption algorithms work with a certain size of the buffer, and when storing the additional information it is necessary to use additional memory, TCREncryptor supports encryption of string or binary fields only (*ftString*, *ftWideString*, *ftBytes*, *ftVarBytes*, *ftBlob*, *ftMemo*, *ftWideMemo*). If encryption of string fields is used, firstly, the data is encrypted, and then the obtained binary data is converted into hexadecimal format. In this case, data storage

requires two times more space (one byte = 2 characters in hexadecimal).

Therefore, to have the possibility to encrypt other data types (such as date, number, etc.), it is necessary to create a field of the binary or BLOB type in the table, and then convert it into the desired type on the client side with the help of data mapping.

It should be noted that the search and sorting by encrypted fields become impossible on the server side. Data search for these fields can be performed only on the client after decryption of data using the Locate and [LocateEx](#) methods. Sorting is performed by setting the [TMemDataSet.IndexFieldNames](#) property.

Example.

Let's say there is an employee list of an enterprise stored in the table with the following data: full name, date of employment, salary, and photo. We want all these data to be stored in the encrypted form. Write a script for creating the table:

```
CREATE TABLE EMP
(
    EMPNO int IDENTITY (1,1) NOT NULL PRIMARY KEY,
    ENAME varbinary(2000),
    HIREDATE varbinary(200),
    SAL varbinary(200),
    FOTO image
)
```

As we can see, the fields for storage of the textual information, date, and floating-point number are created with the VARBINARY type. This is for the ability to store encrypted information, and in the case of the text field - to improve performance. Write the code to process this information on the client.

```
MSQuery.SQL.Text := 'SELECT * FROM EMP';
MSQuery.Encryption.Encryptor := MSEncryptor;
MSQuery.Encryption.Fields := 'ENAME, HIREDATE, SAL, FOTO';
MSEncryptor.Password := '11111';
MSQuery.DataTypeMap.AddFieldNamedRule ('ENAME', ftString);
MSQuery.DataTypeMap.AddFieldNamedRule ('HIREDATE', ftDateTime);
MSQuery.DataTypeMap.AddFieldNamedRule ('SAL', ftFloat);
MSQuery.Open;
```

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4.7 Working in an Unstable Network

The following settings are recommended for working in an unstable network:

```
TCustomDAConnection.Options.LocalFailover = True
TCustomDAConnection.Options.DisconnectedMode = True
TDataSet.CachedUpdates = True
TCustomDADataSet.FetchAll = True
TCustomDADataSet.Options.LocalMasterDetail = True
```

These settings minimize the number of requests to the server. Using [TCustomDAConnection.Options.DisconnectedMode](#) allows DataSet to work without an active connection. It minimizes server resource usage and reduces connection break probability. I.e. in this mode connection automatically closes if it is not required any more. But every explicit operation must be finished explicitly. That means each explicit connect must be followed by explicit disconnect. Read [Working with Disconnected Mode](#) topic for more information.

Setting the [FetchAll](#) property to True allows to fetch all data after cursor opening and to close connection. If you are using master/detail relationship, we recommend to set the [LocalMasterDetail](#) option to True.

It is not recommended to prepare queries explicitly. Use the [CachedUpdates](#) mode for DataSet data editing. Use the [TCustomDADataSet.Options.UpdateBatchSize](#) property to reduce the number of requests to the server.

If a connection breaks, a fatal error occurs, and the [OnConnectionLost](#) event will be raised if the following conditions are fulfilled:

- There are no active transactions;
- There are no opened and not fetched datasets;
- There are no explicitly prepared datasets or SQLs.

If the user does not refuse suggested RetryMode parameter value (or does not use the [OnConnectionLost](#) event handler), SDAC can implicitly perform the following operations:

```
Connect;
DataSet.ApplyUpdates;
DataSet.Open;
```

I.e. when the connection breaks, implicit reconnect is performed and the corresponding operation is reexecuted. We recommend to wrap other operations in transactions and fulfill

their reexecuting yourself.

The using of [Pooling](#) in Disconnected Mode allows to speed up most of the operations because of connecting duration reducing.

See Also

- FailOver demo
- [Working with Disconnected Mode](#)
- [TCustomDACConnection.Options](#)
- [TCustomDACConnection.Pooling](#)

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4.8 Disconnected Mode

In disconnected mode a connection opens only when it is required. After performing all server calls connection closes automatically until next server call is required. Datasets remain opened when connection closes. Disconnected Mode may be useful for saving server resources and operating in an unstable or expensive network. Drawback of using disconnected mode is that each connection establishing requires some time for authorization. If connection is often closed and opened it can slow down application work. We recommend to use pooling to solve this problem. For additional information see [TCustomDACConnection.Pooling](#).

To enable disconnected mode set [TCustomDACConnection.Options.DisconnectedMode](#) to True.

In disconnected mode a connection is opened for executing requests to the server (if it was not opened already) and is closed automatically if it is not required any more. If the connection was explicitly opened (the [Connect](#) method was called or the Connected property was explicitly set to True), it does not close until the [Disonnect](#) method is called or the Connected property is set to False explicitly.

The following settings are recommended to use for working in disconnected mode:

```
TDataset.CachedUpdates = True
TCustomDADataset.FetchAll = True
TCustomDADataset.Options.LocalMasterDetail = True
```

These settings minimize the number of requests to the server.

Disconnected mode features

If you perform a query with the [FetchAll](#) option set to True, connection closes when all data is fetched if it is not used by someone else. If the FetchAll option is set to false, connection does not close until all data blocks are fetched.

If explicit transaction was started, connection does not close until the transaction is committed or rolled back.

If the query was prepared explicitly, connection does not close until the query is unprepared or its SQL text is changed.

See Also

- [TCustomDACConnection.Options](#)
- [FetchAll](#)
- [Devart.Sdac.TMSQuery.LockMode](#)
- [TCustomDACConnection.Pooling](#)
- [TCustomDACConnection.Connect](#)
- [TCustomDACConnection.Disconnect](#)
- [Working in unstable network](#)

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4.9 Performance of Obtaining Data

If you need to obtain an updatable recordset in your application and show it in a grid, the size of the data to be transferred from the server is very important. As a rule such recordsets are not that big, as it is hard for a user to handle tables containing thousands of records. In this case the most appropriate is the default SDAC behavior, when the [CursorType](#) property of the dataset is set to ctDefaultResultSet, and the [FetchAll](#) property is set to True.

Just the the same settings must be used, irrespectively of the data size, for the datasets serving as lookup sources for lookup fields.

If you want to see the result of a query execution returning a large amount of data immediately, you should set the `FetchAll` property to `False`, or use server cursors. In both cases only few records are fetched to the client immediately after opening. Other records are fetched on demand.

There are brief descriptions of advantages and disadvantages for different settings below.

- `CursorType = ctDefaultResultSet, FetchAll = True` - This is the default SDAC settings. Opening is pretty slow, but navigation is fast. All records are fetched on opening, and cached on the client.
- `CursorType = ctDefaultResultSet, FetchAll = False` - Opening is fast irrespectively of the total records count. Only several records are fetched on opening. You can specify the number of records in the [FetchRows](#) property. Other records are retrieved from the server on demand, and cached. Additional records may be demanded when scrolling through the linked grid, calling to `Locate`, `Last`, etc.
However, these settings may cause certain problems related transaction conflict and deadlocks. For more details please refer to the description of the [TCustomMSDataSet.FetchAll](#) property.
- `CursorType in [ctStatic, ctKeyset, ctDynamic]` - All these cursors are server cursors. They are characterized by quick opening, low client memory utilization, and slow navigation. Only data required at the moment is cached. For more details about these cursor types please refer to the description of the [CursorType](#) property.

If you need to get only certain values from the server, for example only record count, it is more effective to execute a query with parameters:

```
SET :Cnt = (SELECT COUNT(*) FROM ...)
```

instead of queries like this one:

```
SELECT COUNT(*) FROM ...
```

Note: Only the `ctDefaultResultSet` cursor allows executing batches of queries.

See Also

- [FetchAll](#)
- [CursorType](#)

- The ServerCursors demo in the SDAC General demo
- The FetchAll demo in the SDAC General demo

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4.10 Batch Operations

Data amount processed by modern databases grows steadily. In this regard, there is an acute problem – database performance. Insert, Update and Delete operations have to be performed as fast as possible. Therefore Devart provides several solutions to speed up processing of huge amounts of data. So, for example, insertion of a large portion of data to a DB is supported in the [TMSLoader](#). Unfortunately, [TMSLoader](#) allows to insert data only – it can't be used for updating and deleting data.

The new version of Devart Delphi Data Access Components introduces the new mechanism for large data processing — Batch Operations. The point is that just one parametrized Modify SQL query is executed. The plurality of changes is due to the fact that parameters of such a query will be not single values, but a full array of values. Such approach increases the speed of data operations dramatically. Moreover, in contrast to using [TMSLoader](#), Batch operations can be used not only for insertion, but for modification and deletion as well.

Let's have a better look at capabilities of Batch operations with an example of the BATCH_TEST table containing attributes of the most popular data types.

Batch_Test table generating scripts

```
CREATE TABLE BATCH_TEST
(
  ID      INT,
  F_INTEGER INT,
  F_FLOAT FLOAT,
  F_STRING VARCHAR(250),
  F_DATE  DATETIME,
  CONSTRAINT PK_BATCH_TEST PRIMARY KEY (ID)
)
```

Batch operations execution

To insert records into the BATCH_TEST table, we use the following SQL query:

```
INSERT INTO BATCH_TEST VALUES (:ID, :F_INTEGER, :F_FLOAT, :F_STRING, :F_DATE)
```

When a simple insertion operation is used, the query parameter values look as follows:

Parameters				
:ID	:F_INTEGER	:F_FLOAT	:F_STRING	:F_DATE
1	100	2.5	'String Value 1'	01.09.2015

After the query execution, one record will be inserted into the BATCH_TEST table.

When using Batch operations, the query and its parameters remain unchanged. However, parameter values will be enclosed in an array:

Parameters				
:ID	:F_INTEGER	:F_FLOAT	:F_STRING	:F_DATE
1	100	2.5	'String Value 1'	01.09.2015
2	200	3.15	'String Value 2'	01.01.2000
3	300	5.08	'String Value 3'	09.09.2010
4	400	7.5343	'String Value 4'	10.10.2015
5	500	0.4555	'String Value 5'	01.09.2015

Now, 5 records are inserted into the table at a time on query execution.

How to implement a Batch operation in the code?

Batch INSERT operation sample

Let's try to insert 1000 rows to the BATCH_TEST table using a Batch Insert operation:

```

var
  i: Integer;
begin
  // describe the SQL query
  MSQuery1.SQL.Text := 'INSERT INTO BATCH_TEST VALUES (:ID, :F_INTEGER, :F_F
  // define the parameter types passed to the query :
  MSQuery1.Params[0].DataType := ftInteger;
  MSQuery1.Params[1].DataType := ftInteger;
  MSQuery1.Params[2].DataType := ftFloat;
  MSQuery1.Params[3].DataType := ftString;
  MSQuery1.Params[4].DataType := ftDateTime;
  // specify the array dimension:
  MSQuery1.Params.ValueCount := 1000;
  // populate the array with parameter values:
  for i := 0 to MSQuery1.Params.ValueCount - 1 do begin
    MSQuery1.Params[0][i].AsInteger := i + 1;
    MSQuery1.Params[1][i].AsInteger := i + 2000 + 1;
    MSQuery1.Params[2][i].AsFloat := (i + 1) / 12;
    MSQuery1.Params[3][i].AsString := 'Values ' + IntToStr(i + 1);
    MSQuery1.Params[4][i].AsDateTime := Now;
  end;
  // insert 1000 rows into the BATCH_TEST table

```

```
MSQuery1.Execute(1000);
end;
```

This command will insert 1000 rows to the table with one SQL query using the prepared array of parameter values. The number of inserted rows is defined in the `ltrs` parameter of the `Execute(ltrs: integer; Offset: integer = 0)` method. In addition, you can pass another parameter – `Offset` (0 by default) – to the method. The `Offset` parameter points the array element, which the Batch operation starts from.

We can insert 1000 records into the `BATCH_TEST` table in 2 ways.

All 1000 rows at a time:

```
MSQuery1.Execute(1000);
```

2×500 rows:

```
// insert first 500 rows
MSQuery1.Execute(500, 0);
// insert next 500 rows
MSQuery1.Execute(500, 500);
```

500 rows, then 300, and finally 200:

```
// insert 500 rows
MSQuery1.Execute(500, 0);
// insert next 300 rows starting from 500
MSQuery1.Execute(300, 500);
// insert next 200 rows starting from 800
MSQuery1.Execute(200, 800);
```

Batch UPDATE operation sample

With Batch operations we can modify all 1000 rows of our `BATCH_TEST` table just this simple:

```
var
  i: Integer;
begin
  // describe the SQL query
  MSQuery1.SQL.Text := 'UPDATE BATCH_TEST SET F_INTEGER=:F_INTEGER, F_FLOAT=:F_FLOAT';
  // define parameter types passed to the query:
  MSQuery1.Params[0].DataType := ftInteger;
  MSQuery1.Params[1].DataType := ftFloat;
  MSQuery1.Params[2].DataType := ftString;
  MSQuery1.Params[3].DataType := ftDateTime;
  MSQuery1.Params[4].DataType := ftInteger;
  // specify the array dimension:
  MSQuery1.Params.ValueCount := 1000;
  // populate the array with parameter values:
  for i := 0 to 1000 - 1 do begin
    MSQuery1.Params[0][i].AsInteger := i - 2000 + 1;
    MSQuery1.Params[1][i].AsFloat := (i + 1) / 100;
```

```

MSQuery1.Params[2][i].AsString := 'New Values ' + IntToStr(i + 1);
MSQuery1.Params[3][i].AsDateTime := Now;
MSQuery1.Params[4][i].AsInteger := i + 1;
end;
// update 1000 rows in the BATCH_TEST table
MSQuery1.Execute(1000);
end;

```

Batch DELETE operation sample

Deleting 1000 rows from the BATCH_TEST table looks like the following operation:

```

var
  i: Integer;
begin
  // describe the SQL query
  MSQuery1.SQL.Text := 'DELETE FROM BATCH_TEST WHERE ID=:ID';
  // define parameter types passed to the query:
  MSQuery1.Params[0].DataType := ftInteger;
  // specify the array dimension
  MSQuery1.Params.ValueCount := 1000;
  // populate the arrays with parameter values
  for i := 0 to 1000 - 1 do
    MSQuery1.Params[0][i].AsInteger := i + 1;
  // delete 1000 rows from the BATCH_TEST table
  MSQuery1.Execute(1000);
end;

```

Performance comparison

The example with BATCH_TEST table allows to analyze execution speed of normal operations with a database and Batch operations:

Operation Type	25 000 records	
	Standard Operation (sec.)	Batch Operation (sec.)
Insert	19.19	3.09
Update	20.22	7.67
Delete	18.28	3.14
The less, the better.		

It should be noted, that the retrieved results may differ when modifying the same table on different database servers. This is due to the fact that operations execution speed may differ depending on the settings of a particular server, its current workload, throughput, network connection, etc.

Thing you shouldn't do when accessing parameters in Batch operations!

When populating the array and inserting records, we accessed query parameters by index. It would be more obvious to access parameters by name:

```
for i := 0 to 9999 do begin
  MSQuery1.Params.ParamByName('ID')[i].AsInteger := i + 1;
  MSQuery1.Params.ParamByName('F_INTEGER')[i].AsInteger := i + 2000 + 1;
  MSQuery1.Params.ParamByName('F_FLOAT')[i].AsFloat := (i + 1) / 12;
  MSQuery1.Params.ParamByName('F_STRING')[i].AsString := 'Values ' + IntToStr(i);
  MSQuery1.Params.ParamByName('F_DATE')[i].AsDateTime := Now;
end;
```

However, the parameter array would be populated slower, since you would have to define the ordinal number of each parameter by its name in each loop iteration. If a loop is executed 10000 times – **performance loss can become quite significant**.

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4.11 Increasing Performance

This topic considers basic stages of working with DataSet and ways to increase performance on each of these stages.

Connect

If your application performs Connect/Disconnect operations frequently, additional performance can be gained using pooling mode (`TCustomDACConnection.Pooling = True`). It reduces connection reopening time greatly (hundreds times). Such situation usually occurs in web applications.

Execute

If your application executes the same query several times, you can use the [TCustomDADataset.Prepare](#) method or set the [TDADatasetOptions.AutoPrepare](#) property to increase performance. For example, it can be enabled for Detail dataset in Master/Detail relationship or for update objects in [TCustomDAUpdateSQL](#). The performance gain achieved this way can be anywhere from several percent to several times, depending on the situation.

To execute SQL statements a `TMSSQL` component is more preferable than [TMSQuery](#). It can give several additional percents performance gain.

If the [TCustomDADataset.Options.StrictUpdate](#) option is set to False, the [RowsAffected](#)

property is not calculated and becomes equal zero. This can improve performance of query executing, so if you need to execute many data updating statements at once and you don't mind affected rows count, set this option to False.

Open

If you don't need to edit the dataset, you can set its [ReadOnly](#) property to increase its opening speed. In that case, an additional information, required for INSERT, UPDATE, and DELETE statement generation, will not be requested.

Fetch

In some situations you can increase performance a bit by using [TCustomDADataset.Options.CompressBlobMode](#).

You can also tweak your application performance by using the following properties of [TCustomDADataset](#) descendants:

- [FetchRows](#)
- [Options.FlatBuffers](#)
- [Options.LongStrings](#)
- [UniDirectional](#)

See the descriptions of these properties for more details and recommendations.

Navigate

The [Locate](#) function works faster when dataset is locally sorted on KeyFields fields. Local dataset sorting can be set with the [IndexFieldNames](#) property. Performance gain can be large if the dataset contains a large number of rows.

Lookup fields work faster when lookup dataset is locally sorted on lookup Keys.

Setting the [TDADatasetOptions.CacheCalcFields](#) property can improve performance when locally sorting and locating on calculated and lookup fields. It can be also useful when calculated field expressions contain complicated calculations.

Setting the [TDADatasetOptions.LocalMasterDetail](#) option can improve performance greatly by avoiding server requests on detail refreshes. Setting the [TDADatasetOptions.DetailDelay](#)

option can be useful for avoiding detail refreshes when switching master DataSet records frequently.

Update

If your application updates datasets in the CachedUpdates mode, then setting the [TCustomDADataset.Options.UpdateBatchSize](#) option to more than 1 can improve performance several hundred times more by reducing the number of requests to the server.

You can also increase the data sending performance a bit (several percents) by using `Dataset.UpdateObject.ModifyObject`, `Dataset.UpdateObject`, etc. Little additional performance improvement can be reached by setting the [AutoPrepare](#) property for these objects.

Insert

If you are about to insert a large number of records into a table, you should use the [T:Devart.Sdac.TMSLoader](#) component instead of Insert/Post methods, or execution of the INSERT commands multiple times in a cycle. Sometimes usage of [T:Devart.Sdac.TMSLoader](#) improves performance several times.

See Also

- [Performance of obtaining data](#)

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4.12 Macros

Macros help you to change SQL statements dynamically. They allow partial replacement of the query statement by user-defined text. Macros are identified by their names which are then referred from SQL statement to replace their occurrences for associated values.

First step is to assign macros with their names and values to a dataset object.

Then modify SQL statement to include macro names into desired insertion points. Prefix each name with & ("at") sign to let SDAC discriminate them at parse time. Resolved SQL statement will hold macro values instead of their names but at the right places of their occurrences. For example, having the following statement with the TableName macro name:

```
SELECT * FROM &TableName
```

You may later assign any actual table name to the macro value property leaving your SQL statement intact.

```
Query1.SQL.Text := 'SELECT * FROM &TableName';  
Query1.MacroByName('TableName').Value := 'Dept';  
Query1.Open;
```

SDAC replaces all macro names with their values and sends SQL statement to the server when SQL execution is requested.

Note that there is a difference between using [TMacro AsString](#) and [Value](#) properties. If you set macro with the [AsString](#) property, it will be quoted. For example, the following statements will result in the same result Query1.SQL property value.

```
Query1.MacroByName('StringMacro').Value := ''A string'';  
Query1.MacroByName('StringMacro').AsString := 'A string';
```

Macros can be especially useful in scripts that perform similar operations on different objects. You can use macros that will be replaced with an object name. It allows you to have the same script text and to change only macro values.

You may also consider using macros to construct adaptable conditions in WHERE clauses of your statements.

See Also

- [TMacro](#)
- [TCustomDADataset.MacroByName](#)
- [TCustomDADataset.Macros](#)

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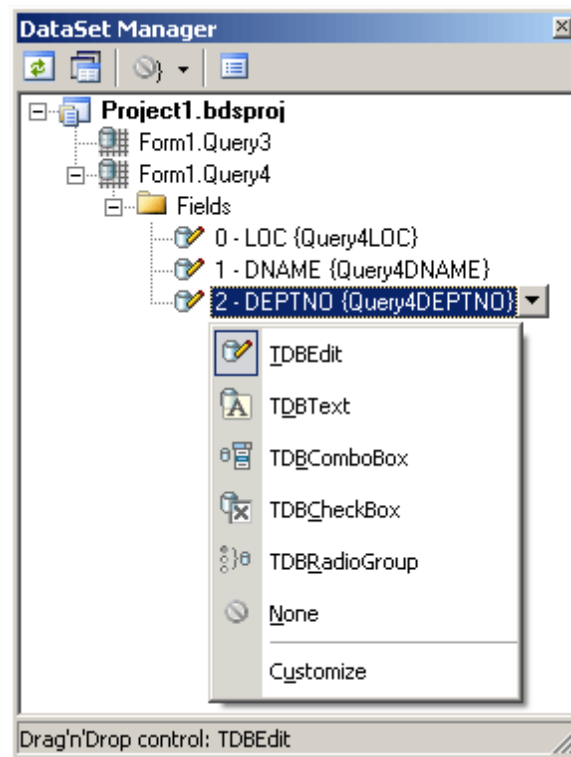
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4.13 DataSet Manager

DataSet Manager window

The DataSet Manager window displays the datasets in your project. You can use the DataSet Manager window to create a user interface (consisting of data-bound controls) by dragging items from the window onto forms in your project. Each item has a drop-down control list where you can select the type of control to create prior to dragging it onto a form. You can customize the control list with additional controls, including the controls you have created.



Using the DataSet Manager window, you can:

- Create forms that display data by dragging items from the DataSet Manager window onto forms.
- Customize the list of controls available for each data type in the DataSet Manager window.
- Choose which control should be created when dragging an item onto a form in your Windows application.
- Create and delete TField objects in the DataSets of your project.

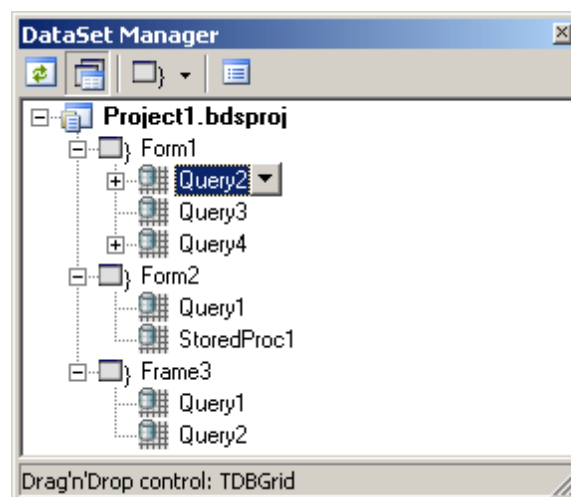
Opening the DataSet Manager window

You can display the DataSet Manager window by clicking DataSet Manager on the Tools menu. You can also use IDE desktop saving/loading to save DataSet Manager window position and restore it during the next IDE loads.

Observing project DataSets in the DataSet Manager Window

By default DataSet Manager shows DataSets of currently open forms. It can also extract DataSets from all forms in the project. To use this, click *Extract DataSets from all forms in project* button. This settings is remembered. Note, that using this mode can slow down opening of the large projects with plenty of forms and DataSets. Opening of such projects can be very slow in Delphi 6 and Borland Developer Studio 2006 and can take up to several tens of minutes.

DataSets can be grouped by form or connection. To change DataSet grouping click the *Grouping mode* button or click a down. You can also change grouping mode by selecting required mode from the DataSet Manager window popup menu.

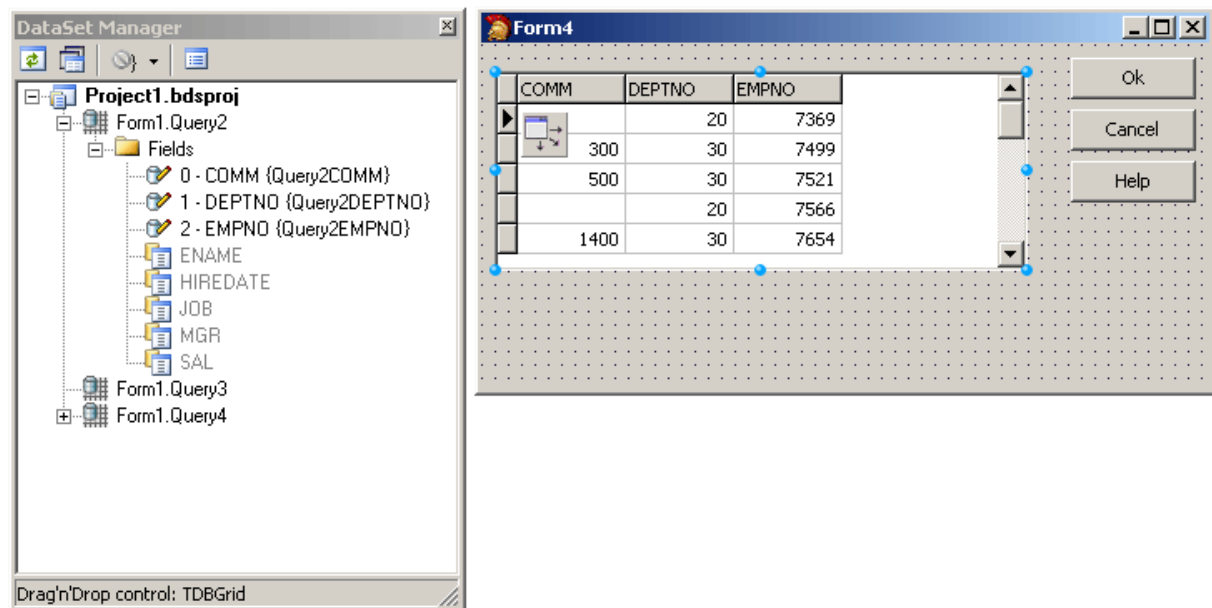


Creating Data-bound Controls

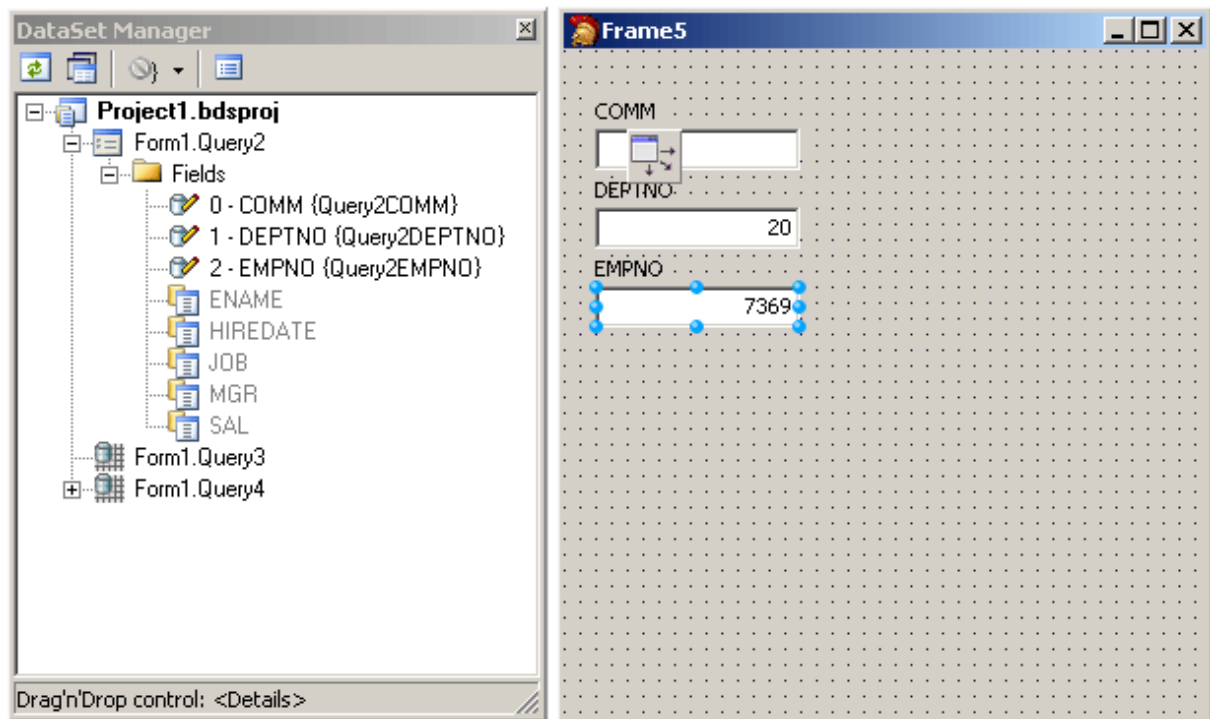
You can drag an item from the DataSet Manager window onto a form to create a new data-bound control. Each node in the DataSet Manager window allows you to choose the type of control that will be created when you drag it onto a form. You must choose between a Grid layout, where all columns or properties are displayed in a TDataGrid component, or a Details layout, where all columns or properties are displayed in individual controls.

To use grid layout drag the dataset node on the form. By default TDataSource and TDBGrid components are created. You can choose the control to be created prior to dragging by selecting an item in the DataSet Manager window and choosing the control from the item's

drop-down control list.

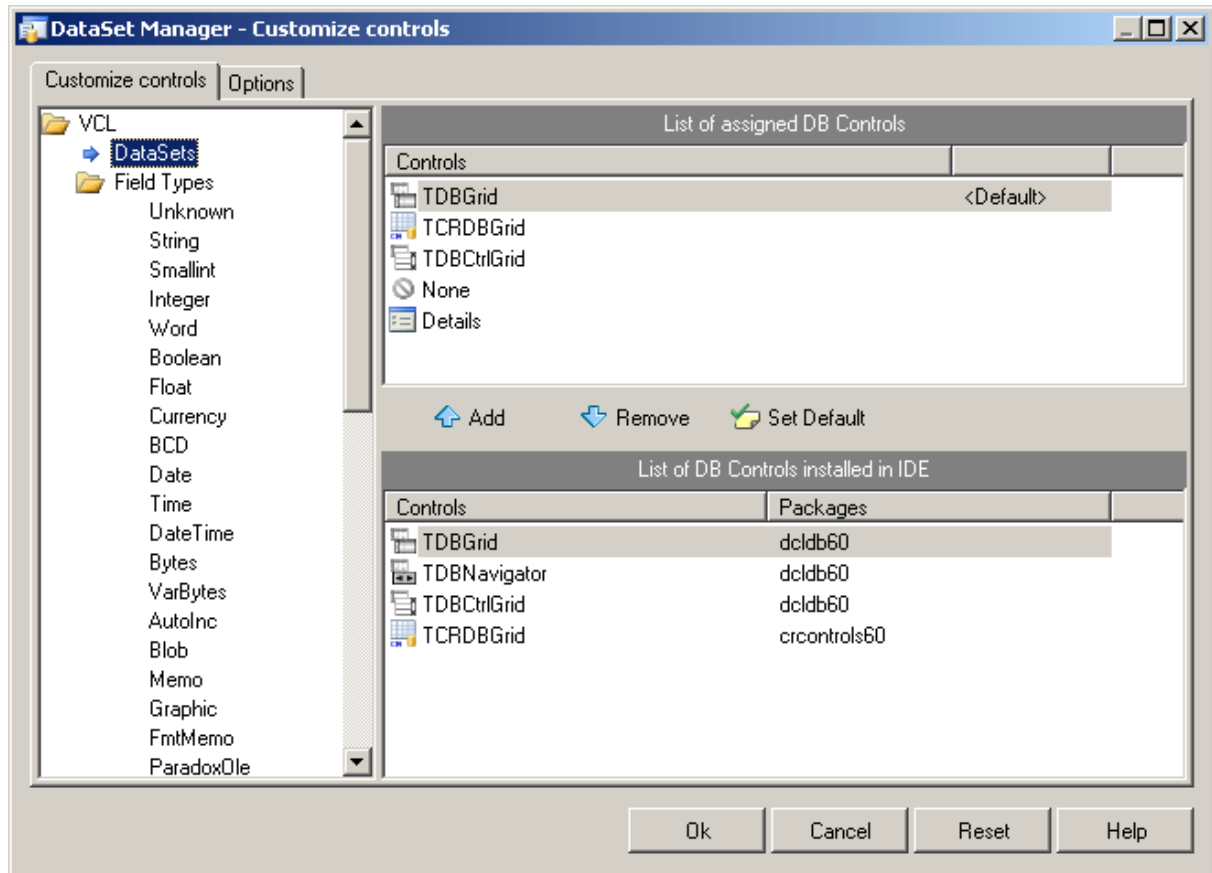


To use Details layout choose Details from the DataSet node drop-down control list in the DataSet Manager window. Then select required controls in the drop-down control list for each DataSet field. DataSet fields must be created. After setting required options you can drag the DataSet to the form from the DataSet wizard. DataSet Manager will create TDataSource component, and a component and a label for each field.



Adding custom controls to the DataSet Manager window

To add custom control to the list click the *Options* button on the DataSet Manager toolbar. A *DataSet Manager - Customize controls* dialog will appear. Using this dialog you can set controls for the DataSets and for the DataSet fields of different types. To do it, click DataSets node or the node of field of required type in *DB objects groups* box and use *Add* and *Remove* buttons to set required control list. You can also set default control by selecting it in the list of assigned DB controls and pressing *Default* button.



The default configuration can easily be restored by pressing Reset button in the *DataSet Manager - Options* dialog.

Working with TField objects

DataSet Manager allows you to create and remove TField objects. DataSet must be active to work with its fields in the DataSet Manager. You can add fields, based on the database table columns, create new fields, remove fields, use drag-n-drop to change fields order.

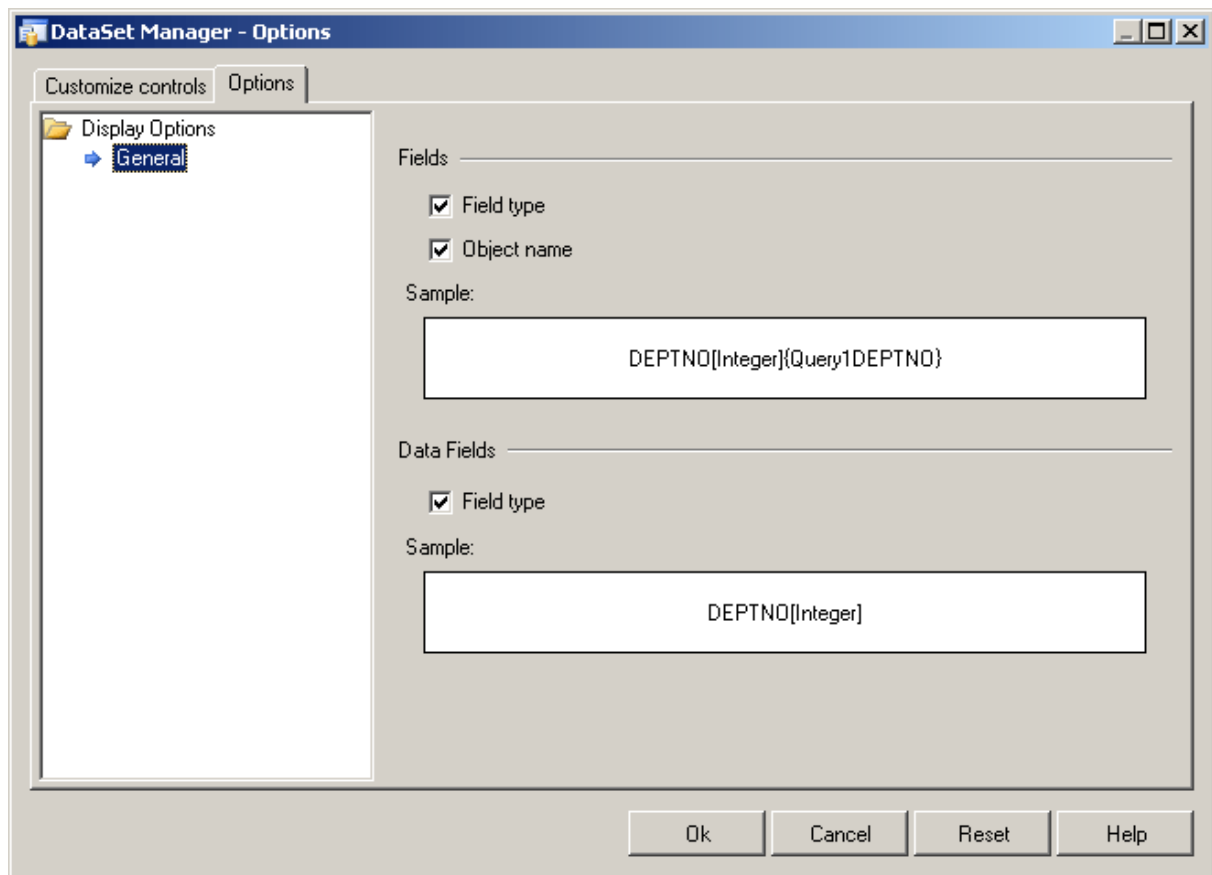
To create a field based on the database table column right-click the Fields node and select *Create Field* from the popup menu or press <Insert>. Note that after you add at least one field manually, DataSet fields corresponding to data fields will not be generated automatically when you drag the DataSet on the form, and you can not drag such fields on the form. To add all available fields right-click the Fields node and select *Add all fields* from the popup menu.

To create new field right-click the Fields node and select *New Field* from the popup menu or press <Ctrl+Insert>. The New Field dialog box will appear. Enter required values and press

OK button.

To delete fields select these fields in the DataSet Manager window and press <Delete>.

DataSet Manager allows you to change view of the fields displayed in the main window. Open the *Customize controls* dialog, and jump to the Options page.



You can chose what information will be added to names of the Field and Data Field objects in the main window of DataSet Manager. Below you can see the example.

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4.14 SQL Server Compact Edition

SDAC supports SQL Server [Compact Edition](#). SQL Server Compact Edition is an easy to install server for using by applications that do not require multi-user work with server. For example, SQL Server Compact Edition can be used on the local computers if there is no

permanent connection to the main database, for money access machines, automatic cash desks, different electronic facilities and so on. Please refer to SQL Server Compact Edition Books Online for more details about the features and usage of this server edition.

To work with SQL Server Compact Edition you should change the [Provider](#) property of the connection options to prCompact, or use the [TMSCompactConnection](#) component.

Database filename should be assigned to the [Database](#) property. If the file does not exist, it will be automatically created on the connection opening. The [Password](#) property is used to connect to or create a database.

Use the [Encrypt](#) option to specify if a database will be created or encrypted. If this option is set to True, the Password property must be assigned.

The [TMSStoredProc](#) component can not work with the SQL Server Compact Edition because this server edition does not support stored procedures.

Not all values of [ObjectType](#) property are supported by [TMSMetaData](#) component with the SQL Server Compact Edition.

Please refer to MSSQLCompact Demo to get a sample.

See Also

- MSSQLCompact Demo
- [TMSCompactConnection](#)
- [TMSConnection.Options](#)

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4.15 Working with User Defined Types (UDT)

What is UDT

Microsoft SQL Server 2005 introduced a new possibility to extend the standard type set with data types created in CLR. These types can be used to define columns in tables and variables, in triggers, stored procedures, and functions. UDT is an assembly containing a class written on any programming language. The language must support .NET Framework version 2.0 or higher.

SQL Server requirements

User Defined Types are supported by SQL Server 2005 and higher versions. It is necessary to make sure that CLR integration of the server is enabled. By default in SQL Server it is disabled. You can check whether the CLR integration is currently enabled running the following system routine:

```
sp_configure 'clr enabled'
```

This routine returns a dataset. If the value of the `run_value` field equals to 0, you need to enable CLR running the same routine with one additional parameter:

```
sp_configure 'clr enabled', 1
GO
RECONFIGURE
GO
```

Calling [RECONFIGURE](#) is required when applying a new value.

Client requirements

Here are the client requirements:

- .NET Framework version 2.00 or higher;
- Microsoft SQL Native Client;
- the assembly implementing UDT in an accessible place;
- the *Devart.Sdac.UDTProxy.dll* in an accessible place. This file can be found in the Bin subfolder of the SDAC installation directory.

An accessible place means one of the following locations:

1. The application directory (the preferable way);
2. Global Assembly Cache (GAC);
3. Any directory registered in the PATH system variable.

Creating UDT

You can create an assembly containing UDT using any programming language that supports .NET Framework version 2.00 and higher.

There is an example of a UDT implementation within SDAC demos. You can find it in the UDT

demo directory of the SDAC General demo. The sample UDT is called Square. It is implemented with Microsoft Visual Studio 2005. There are both sources and the binary assembly in the Square directory.

Using UDT

UDT can be used only in Win32 application.

In order to use a UDT in SQL Server, first of all you should register the UDT. This can be done by executing [CREATE ASSEMBLY](#) command. After the assembly was registered, it is necessary to create a new type from the registered assembly using the [CREATE TYPE](#) command. Now you can use the name of the registered type in SQL commands like [CREATE TABLE](#).

In order to provide native access to the UDT fields in your application, the client requirements should be fulfilled. Also make sure that TMSConnection is setup to use SQL Native Client as a provider ([TMSConnection.Options.Provider](#) should be equal to prNativeClient). If all settings are applied correctly, UDT fields are described as mapped to the [TMSUDTField](#) class. Otherwise, UDT fields are mapped to TVarBytesField. You can access specific properties of UDT using the [AsUDT](#) property of TMSUDTField. It may look like the code below (this code is taken from the UDT demo project included in the SDAC General demo):

```
var
  Square: variant;
begin
  MSQuery.Edit;
  Square := (MSQuery.FieldByName('c_square') as TMSUDTField).AsUDT;
  Square.BaseX := StrToInt(edBaseX.Text);
  Square.BaseY := StrToInt(edBaseY.Text);
  Square.Side := StrToInt(edSide.Text);
  MSQuery.Post;
```

BaseX, BaseY, and Length are properties of the Square class.

For an example see the UDT demo project included in the SDAC General demo.

See Also

- [MSSQLCompact Demo](#)
- [TMSCompactConnection](#)
- [TMSConnection.Options](#)

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4.16 TMSTransaction Component

The [TMSTransaction](#) component is designed to manage distributed transactions. Distributed transactions can be performed to one or more connections connected to the same or to different databases or servers. Within each connection a separate branch of the transaction is performed. TMSTransaction is based on the [Microsoft Distributed Transaction Coordinator](#) (MSDTC) functionality. Transactions can be managed by [StartTransaction](#), [Commit](#), and [Rollback](#) methods of TMSTransaction. For more information on distributed transactions and MSDTC please refer to [MSDN](#).

TMSTransaction does not support local transactions. To control local transactions you should use methods of the TMSConnection component.

The example below demonstrates using distributed transaction coordinated by Microsoft Distributed Transaction Coordinator:

```
begin
  MSConnection1.Connect;
  MSConnection2.Connect;
  MSTransaction.AddConnection(MSConnection1);
  MSTransaction.AddConnection(MSConnection2);
  MSTransaction.StartTransaction;
  MSSQL1.Connection := MSConnection1;
  MSSQL2.Connection := MSConnection2;
  try
    MSSQL1.Execute;
    MSSQL2.Execute;
    MSTransaction.Commit;
  except
    MSTransaction.Rollback;
  end;
end;
```

After both connections are established, they are added to the list of connections managed by MSTransaction. Call to StartTransaction makes both TMSConnections components work in the same distributed transaction. After MSSQL1 and MSSQL2 are executed, MSTransaction.Commit ensures that all changes to both databases are committed. If an exception occurs during execution, MSTransaction.Rollback restores both databases to their initial state.

[See Also](#)

- [TMSTransaction](#)

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4.17 DBMonitor

To extend monitoring capabilities of SDAC applications there is an additional tool called DBMonitor. It is provided as an alternative to Borland SQL Monitor which is also supported by SDAC.

DBMonitor is an easy-to-use tool to provide visual monitoring of your database applications.

DBMonitor has the following features:

- multiple client processes tracing;
- SQL event filtering (by sender objects);
- SQL parameter and error tracing.

DBMonitor is intended to hamper an application being monitored as little as possible.

To trace your application with DB Monitor you should follow these steps:

- drop [TMSSQLMonitor](#) component onto the form;
- turn [moDBMonitor](#) option on;
- set to True the Debug property for components you want to trace;
- start DBMonitor before running your program.

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4.18 Writing GUI Applications with SDAC

SDAC GUI part is standalone. This means that to make GUI elements such as SQL cursors, connect form, connect dialog etc. available, you should explicitly include SdacVcl unit in your application. This feature is needed for writing console applications.

Delphi and C++Builder

By default SDAC does not require Forms, Controls and other GUI related units. Only

[TMSConnectDialog](#) and [TMSAlerter](#) components require the Forms unit.

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4.19 Connection Pooling

Connection pooling enables an application to use a connection from a pool of connections that do not need to be reestablished for each use. Once a connection has been created and placed in a pool, an application can reuse that connection without performing the complete connection process.

Using a pooled connection can result in significant performance gains, because applications can save the overhead involved in making a connection. This can be particularly significant for middle-tier applications that connect over a network or for applications that connect and disconnect repeatedly, such as Internet applications.

To use connection pooling set the [Pooling](#) property of the [TCustomDACConnection](#) component to [True](#). Also you should set the [PoolingOptions](#) of the [TCustomDACConnection](#). These options include [MinPoolSize](#), [MaxPoolSize](#), [Validate](#), [ConnectionLifeTime](#). Connections belong to the same pool if they have identical values for the following parameters: [MinPoolSize](#), [MaxPoolSize](#), [Validate](#), [ConnectionLifeTime](#), [Server](#), [Username](#), [Password](#), [Database](#), [IsolationLevel](#), [Authentication](#), [QuotedIdentifier](#), [Provider](#), [Language](#), [Encrypt](#), [PersistSecurityInfo](#), [AutoTranslate](#), [NetworkLibrary](#), [ApplicationName](#), [WorkstationID](#), [PacketSize](#). When a connection component disconnects from the database the connection actually remains active and is placed into the pool. When this or another connection component connects to the database it takes a connection from the pool. Only when there are no connections in the pool, new connection is established.

Connections in the pool are validated to make sure that a broken connection will not be returned for the [TCustomDACConnection](#) component when it connects to the database. The pool validates connection when it is placed to the pool (e. g. when the [TCustomDACConnection](#) component disconnects). If connection is broken it is not placed to the pool. Instead the pool frees this connection. Connections that are held in the pool are validated every 30 seconds. All broken connections are freed. If you set the [PoolingOptions.Validate](#) to [True](#), a connection also will be validated when the [TCustomDACConnection](#) component connects and takes a connection from the pool. When some network problem occurs all connections to the database can be broken. Therefore the pool validates all connections before any of them will

be used by a [TCustomDACConnection](#) component if a fatal error is detected on one connection.

The pool frees connections that are held in the pool during a long time. If no new connections are placed to the pool it becomes empty after approximately 4 minutes. This pool behaviour is intended to save resources when the count of connections in the pool exceeds the count that is needed by application. If you set the [PoolingOptions.MinPoolSize](#) property to a non-zero value, this prevents the pool from freeing all pooled connections. When connection count in the pool decreases to [MinPoolSize](#) value, remaining connection will not be freed except if they are broken.

The [PoolingOptions.MaxPoolSize](#) property limits the count of connections that can be active at the same time. If maximum count of connections is active and some [TCustomDACConnection](#) component tries to connect, it will have to wait until any of [TCustomDACConnection](#) components disconnect. Maximum wait time is 30 seconds. If active connections' count does not decrease during 30 seconds, the [TCustomDACConnection](#) component will not connect and an exception will be raised.

You can limit the time of connection's existence by setting the [PoolingOptions.ConnectionLifeTime](#) property. When the [TCustomDACConnection](#) component disconnects, its internal connection will be freed instead of placing to the pool if this connection is active during the time longer than the value of the [PoolingOptions.ConnectionLifeTime](#) property. This property is designed to make load balancing work with the connection pool.

To force freeing of a connection when the [TCustomDACConnection](#) component disconnects, the [RemoveFromPool](#) method of [TCustomDACConnection](#) can be used. You can also free all connection in the pool by using the class procedures `Clear` or `AsyncClear` of [TMSConnectionPoolManager](#). These procedures can be useful when you know that all connections will be broken for some reason.

It is recommended to use connection pooling with the [DisconnectMode](#) option of the [TCustomDACConnection](#) component set to `True`. In this case internal connections can be shared between [TCustomDACConnection](#) components. When some operation is performed on the [TCustomDACConnection](#) component (for example, an execution of SQL statement) this component will connect using pooled connection and after performing operation it will disconnect. When an operation is performed on another [TCustomDACConnection](#) component it can use the same connection from the pool.

See Also

- [TCustomDAConnection.Pooling](#)
- [TCustomDAConnection.PoolingOptions](#)
- [Working with Disconnected Mode](#)

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4.20 Compatibility with Previous Versions

We always try to keep SDAC compatible with previous versions, but sometimes we have to change the behaviour of SDAC in order to enhance its functionality, or avoid bugs. This topic describes such changes, and how to revert the old SDAC behaviour. We strongly recommend not to turn on the old behaviour of SDAC. Use options described below only if changes applied to SDAC crashed your existent application.

Values of the options described below should be assigned in the **initialization** section of one of the units in your project.

DBAccess.BaseSQLOldBehavior:

The [BaseSQL](#) property is similar to the SQL property, but it does not store changes made by [AddWhere](#), [DeleteWhere](#), and [SetOrderBy](#) methods. After assigning an SQL text and modifying it by one of these methods, all subsequent changes of the SQL property will not be reflected in the BaseSQL property. This behavior was changed in SDAC 3.55.2.22. To restore old behavior, set the BaseSQLOldBehavior variable to True.

DBAccess.SQLGeneratorCompatibility:

If the manually assigned [RefreshSQL](#) property contains only "WHERE" clause, SDAC uses the value of the [BaseSQL](#) property to complete the refresh SQL statement. In this situation all modifications applied to the SELECT query by functions [AddWhere](#), [DeleteWhere](#) are not taken into account. This behavior was changed in SDAC 4.00.0.4. To restore the old behavior, set the BaseSQLOldBehavior variable to True.

MemDS.SendDataSetChangeEventAfterOpen:

Starting with SDAC 4.20.0.12, the DataSetChangeEvent is sent after the dataset gets open. It

was necessary to fix a problem with disappeared vertical scrollbar in some types of DB-aware grids. This problem appears only under Windows XP when visual styles are enabled.

To disable sending this event, change the value of this variable to False.

MemDS.DoNotRaiseExcetionOnUaFail:

Starting with SDAC 4.20.0.13, if the [OnUpdateRecord](#) event handler sets the UpdateAction parameter to uaFail, an exception is raised. The default value of UpdateAction is uaFail. So, the exception will be raised when the value of this parameter is left unchanged.

To restore the old behaviour, set DoNotRaiseExcetionOnUaFail to True.

MSAccess.___UseUpdateOptimization

In SDAC 4.00.0.4 update statements execution was optimized. This optimization changed behaviour of affected rows count retrieval for tables with triggers. If a trigger performs modifications of other records reacting on a modification in the underlying table, SQL Server sends several values of affected rows count (including for modifications made by the trigger). Prior to SDAC 4.00.0.4 the first value was considered as affected rows count, when in SDAC 4.00.0.4 and higher - the last value. However neither of these two approaches can be considered correct, as there can be triggers that snap into action both before modification and after modification. There is no way to determine which of the values returned by SQL Server is the correct value of affected rows count. Therefore we do not recommend using the [RowsAffected](#) property when updating tables with triggers.

[StrictUpdate](#) mode is based on RowsAffected, therefore we also do not recommend using StrictUpdate when updating tables with triggers.

If you want to disable this optimization, set the ___UseUpdateOptimization variable to False.

[TCustomMSConnectionOptions.UseWideMemos:](#)

Set [TCustomMSConnectionOptions.UseWideMemos](#) to False to disable mapping of NText database data type to ftWideMemo data type.

OLEDBAccess.ParamsInfoOldBehavior:

Starting with SDAC 3.70.1.26 preparing and the first call of a stored procedure were combined for performance optimization. This requires the necessity of setting the parameter type and data type of all parameters before preparing. In order to revert the old behaviour with

preparation and parameters, the OLEDBAccess unit should be added to the uses clause of a unit in an application, and the following line should be added to the initialization section of the unit:

```
ParamsInfoOldBehavior := True.
```

DBAccess.ParamStringAsAnsiString:

This variable has sense for Delphi 2009 and higher.

Set its value to True to use the AsAnsiString property when setting the parameter value through TDAParam.AsString. Otherwise the AsWideString property is used. The default value is False.

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4.21 64-bit Development with Embarcadero RAD Studio XE2

RAD Studio XE2 Overview

RAD Studio XE2 is the major breakthrough in the line of all Delphi versions of this product. It allows deploying your applications both on Windows and Mac OS platforms. Additionally, it is now possible to create 64-bit Windows applications to fully benefit from the power of new hardware. Moreover, you can create visually spectacular applications with the help of the FireMonkey GPU application platform.

Its main features are the following:

- Windows 64-bit platform support;
- Mac OS support;
- FireMonkey application development platform;
- Live data bindings with visual components;
- VCL styles for Windows applications.

Changes in 64-bit Application Development

64-bit platform support implies several important changes that each developer must keep in mind prior to the development of a new application or the modernization of an old one.

General

RAD Studio XE2 IDE is a 32-bit application. It means that it cannot load 64-bit packages at design-time. So, all design-time packages in RAD Studio XE2 IDE are 32-bit.

Therefore, if you develop your own components, you should remember that for the purpose of developing components with the 64-bit platform support, you have to compile run-time packages both for the 32- and 64-bit platforms, while design-time packages need to be compiled only for the 32-bit platform. This might be a source of difficulties if your package is simultaneously both a run-time and a design-time package, as it is more than likely that this package won't be compiled for the 64-bit platform. In this case, you will have to separate your package into two packages, one of which will be used as run-time only, and the other as design-time only.

For the same reason, if your design-time packages require that certain DLLs be loaded, you should remember that design-time packages can be only 32-bit and that is why they can load only 32-bit versions of these DLLs, while at run-time 64-bit versions of the DLLs will be loaded. Correspondingly, if there are only 64-bit versions of the DLL on your computer, you won't be able to use all functions at design-time and, vice versa, if you have only 32-bit versions of the DLLs, your application won't be able to work at run-time.

Extended type

For this type in a 64-bit applications compiler generates SSE2 instructions instead of FPU, and that greatly improves performance in applications that use this type a lot (where data accuracy is needed). For this purpose, the size and precision of Extended type is reduced:

TYPE	32-bit	64-bit
Extended	10 bytes	8 bytes

The following two additional types are introduced to ensure compatibility in the process of developing 32- and 64-bit applications:

Extended80 – whose size in 32-bit application is 10 bytes; however, this type provides the same precision as its 8-byte equivalent in 64-bit applications.

Extended80Rec – can be used to perform low-level operations on an extended precision floating-point value. For example, the sign, the exponent, and the mantissa can be changed separately. It enables you to perform memory-related operations with 10-bit floating-point

variables, but not extended-precision arithmetic operations.

Pointer and Integers

The major difference between 32- and 64-bit platforms is the volume of the used memory and, correspondingly, the size of the pointer that is used to address large memory volumes.

TYPE	32-bit	64-bit
Pointer	4 bytes	8 bytes

At the same time, the size of the Integer type remains the same for both platforms:

TYPE	32-bit	64-bit
Integer	4 bytes	4 bytes

That is why, the following code will work incorrectly on the 64-bit platform:

```
Ptr := Pointer(Integer(Ptr) + Offset);
```

While this code will correctly on the 64-bit platform and incorrectly on the 32-bit platform:

```
Ptr := Pointer(Int64(Ptr) + Offset);
```

For this purpose, the following platform-dependent integer type is introduced:

TYPE	32-bit	64-bit
NativeInt	4 bytes	8 bytes
NativeUInt	4 bytes	8 bytes

This type helps ensure that pointers work correctly both for the 32- and 64-bit platforms:

```
Ptr := Pointer(NativeInt(Ptr) + Offset);
```

However, you need to be extra-careful when developing applications for several versions of Delphi, in which case you should remember that in the previous versions of Delphi the NativeInt type had different sizes:

TYPE	Delphi Version	Size
NativeInt	D5	N/A
NativeInt	D6	N/A
NativeInt	D7	8 bytes
NativeInt	D2005	8 bytes

NativeInt	D2006	8 bytes
NativeInt	D2007	8 bytes
NativeInt	D2009	4 bytes
NativeInt	D2010	4 bytes
NativeInt	Delphi XE	4 bytes
NativeInt	Delphi XE2	4 or 8 bytes

Out parameters

Some WinAPIs have OUT parameters of the `SIZE_T` type, which is equivalent to `NativeInt` in Delphi XE2. The problem is that if you are developing only a 32-bit application, you won't be able to pass `Integer` to OUT, while in a 64-bit application, you will not be able to pass `Int64`; in both cases you will have to pass `NativeInt`.

For example:

```
procedure MyProc(out value: NativeInt);
begin
  value := 12345;
end;
var
  value1: NativeInt;
{$IFDEF WIN32}
  value2: Integer;
{$ENDIF}
{$IFDEF WIN64}
  value2: Int64;
{$ENDIF}
begin
  MyProc(value1); // will be compiled;
  MyProc(value2); // will not be compiled !!!
end;
```

Win API

If you pass pointers to `SendMessage/PostMessage/TControl.Perform`, the `wParam` and `lParam` parameters should be type-casted to the `WPARAM/LPARAM` type and not to `Integer/Longint`.

Correct:

```
SendMessage(hwnd, WM_SETTEXT, 0, LPARAM(@MyCharArray));
```

Wrong:

```
SendMessage(hwnd, WM_SETTEXT, 0, Integer(@MyCharArray));
```

Replace `SetWindowLong/GetWindowLog` with `SetWindowLongPtr/GetWindowLongPtr` for

GWLP_HINSTANCE, GWLP_ID, GWLP_USERDATA, GWLP_HWNDPARENT and GWLP_WNDPROC as they return pointers and handles. Pointers that are passed to SetWindowLongPtr should be type-casted to LONG_PTR and not to Integer/Longint.

Correct:

```
SetWindowLongPtr(hwnd, GWLP_WNDPROC, LONG_PTR(@MywindowProc));
```

Wrong:

```
SetWindowLong(hwnd, GWL_WNDPROC, Longint(@MywindowProc));
```

Pointers that are assigned to the TMessage.Result field should use a type-cast to LRESULT instead of Integer/Longint.

Correct:

```
Message.Result := LRESULT(Self);
```

Wrong:

```
Message.Result := Integer(Self);
```

All TWM...-records for the windows message handlers must use the correct Windows types for the fields:

```
Msg: UINT; wParam: WPARAM; lParam: LPARAM; Result: LRESULT)
```

Assembler

In order to make your application (that uses assembly code) work, you will have to make several changes to it:

- rewrite your code that mixes Pascal code and assembly code. Mixing them is not supported in 64-bit applications;
- rewrite assembly code that doesn't consider architecture and processor specifics.

You can use conditional defines to make your application work with different architectures.

You can learn more about Assembly code here: http://docwiki.embarcadero.com/RADStudio/en/Using_Inline_Assembly_Code You can also look at the following article that will help you to make your application support the 64-bit platform: http://docwiki.embarcadero.com/RADStudio/en/Converting_32-bit_Delphi_Applications_to_64-bit_Windows

Exception handling

The biggest difference in exception handling between Delphi 32 and 64-bit is that in Delphi XE2 64-bit you will gain more performance because of different internal exception mechanism. For 32-bit applications, the Delphi compiler (dcc32.exe) generates additional code that is executed any way and that causes performance loss. The 64-bit compiler (dcc64.exe) doesn't generate such code, it generates metadata and stores it in the PDATA section of an executable file instead.

But in Delphi XE2 64-bit it's impossible to have more than 16 levels of nested exceptions. Having more than 16 levels of nested exceptions will cause a Run Time error.

Debugging

Debugging of 64-bit applications in RAD Studio XE2 is remote. It is caused by the same reason: RAD Studio XE2 IDE is a 32 application, but your application is 64-bit. If you are trying to debug your application and you cannot do it, you should check that the **Include remote debug symbols** project option is enabled.

To enable it, perform the following steps:

1. Open Project Options (in the main menu **Project->Options**).
2. In the Target combobox, select **Debug configuration - 64-bit Windows platform**. If there is no such option in the combobox, right click "Target Platforms" in Project Manager and select **Add platform**. After adding the 64-bit Windows platform, the **Debug configuration - 64-bit Windows platform** option will be available in the Target combobox.
3. Select **Linking** in the left part of the Project Options form.
4. enable the **Include remote debug symbols** option.

After that, you can run and debug your 64-bit application.

To enable remote debugging, perform the following steps:

1. Install Platform Assistant Server (PAServer) on a remote computer. You can find PAServer in the %RAD_Studio_XE2_Install_Directory%\PAServer directory. The setup_paserver.exe file is an installation file for Windows, and the setup_paserver.zip file is an installation file for MacOS.
2. Run the PAServer.exe file on a remote computer and set the password that will be used to connect to this computer.

3. On a local computer with RAD Studio XE2 installed, right-click the target platform that you want to debug in Project Manager and select **Assign Remote Profile**. Click the **Add** button in the displayed window, input your profile name, click the **Next** button, input the name of a remote computer and the password to it (that you assigned when you started PAServer on a remote computer).

After that, you can test the connection by clicking the **Test Connection** button. If your connection failed, check that your firewalls on both remote and local computers do not block your connection, and try to establish a connection once more. If your connection succeeded, click the Next button and then the Finish button. Select your newly created profile and click **OK**.

After performing these steps you will be able to debug your application on a remote computer. Your application will be executed on a remote computer, but you will be able to debug it on your local computer with RAD Studio XE2.

For more information about working with Platform Assistant Server, please refer to http://docwiki.embarcadero.com/RADStudio/Tokyo/en/Running_the_Platform_Assistant_on_Windows

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4.22 Database Specific Aspects of 64-bit Development

SQL Server Connectivity Aspects

If you are working in the Direct mode or developing a 32-bit application only, then the development process will not be different for you, except some peculiarities of each particular platform. But if you are developing a 64-bit application, you have to be aware of specifics of working with client libraries at design-time and run-time. To connect to a SQL Server database at design-time, you must have its 32-bit client library. You have to place it to the C:\Windows\SysWOW64 directory. This requirement flows out from the fact that RAD Studio XE2 is a 32-bit application and it cannot load 64-bit libraries at design-time. To work with a SQL Server database at run-time (64-bit application), you must have the 64-bit client library placed to the C:\Windows\System32 directory.

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4.23 FILESTREAM Data

FILESTREAM is a feature of SQL Server 2008, which allows storage of and efficient access to BLOB data using a combination of SQL Server 2008 and the NTFS file system.

This topic demonstrates how to work with FILESTREAM data with the help of SDAC.

To work with FILESTREAM data, you should have an appropriate table on a server. SQL Server requires a table to have a column of the UNIQUEIDENTIFIER data type that has the ROWGUIDCOL attribute to be an appropriate one for working with FILESTREAM data. This column must not allow NULL values and must have either a UNIQUE or PRIMARY KEY single-column constraint. A FILESTREAM column must be defined as a VARBINARY(MAX) column that has the FILESTREAM attribute.

Here is an example of a script to create a correct table:

```
CREATE TABLE TESTFS(  
    ID INT PRIMARY KEY NOT NULL,  
    FS VARBINARY(MAX) FILESTREAM NULL,  
    GD UNIQUEIDENTIFIER UNIQUE ROWGUIDCOL NOT NULL DEFAULT NEWID()  
)
```

The FILESTREAM data is represented by a file on a computer where SQL Server is installed. In order to start working with it, you should insert any value into your FILESTREAM column. This will create a new file on a server and it will be possible to work with it. Here is an example that demonstrates it:

Delphi:

```
MSQuery.SQL.Text := 'SELECT * FROM TESTFS';  
MSQuery.Open;  
MSQuery.Append;  
MSQuery.FieldByName('ID').AsInteger := 1;  
MSQuery.FieldByName('FS').AsString := 'TEST';  
MSQuery.Post;
```

C++Builder:

```
MSQuery->SQL->Text = "SELECT * FROM TESTFS";  
MSQuery->Open();  
MSQuery->Append();  
MSQuery->FieldByName("ID")->AsInteger = 1;  
MSQuery->FieldByName("FS")->AsString = "TEST";  
MSQuery->Post();
```

After the steps above have been performed, it is possible to work with FILESTREAM data. Here is an example that demonstrates it:

Delphi:

```

procedure TMainForm.BitBtnRunClick(Sender: TObject);
var
  con: TMSConnection;
  qr: TMSQuery;
  fs: TMSFileStream;
  ts: AnsiString;
begin
  con := TMSConnection.Create(nil);
  qr := TMSQuery.Create(nil);
  try
    con.Authentication := auwindows; // FILESTREAM requirement
    con.Server := 'server';
    con.Database := 'database';
    qr.Connection := con;
    qr.SQL.Text := 'SELECT * FROM TESTFS';
    qr.Open;
    //writing data
    con.StartTransaction; // FILESTREAM requirement
    fs := qr.GetFileStreamForField('FS', daWrite);
    ts := 'TEST FILESTREAM';
    fs.WriteBuffer(ts[1], Length(ts));
    fs.Flush;
    fs.Close; // it's necessary to call this method before the transaction c
    con.Commit;
    //reading data
    con.StartTransaction; // FILESTREAM requirement
    fs := qr.GetFileStreamForField('FS', daRead);
    SetLength(ts, fs.Size);
    fs.ReadBuffer(ts[1], fs.Size);
    ShowMessage(ts);
    fs.Close; // it's necessary to call this method before the transaction c
    con.Commit;
  finally
    qr.Free;
    con.Free;
  end;
end;

```

C++Builder:

```

void __fastcall TMainForm::BitBtnRunClick(TObject *Sender)
{
  TMSConnection* con = new TMSConnection(NULL);
  TMSQuery* qr = new TMSQuery(NULL);
  try
  {
    con->Authentication = auwindows; // FILESTREAM requirement
    con->Server = "server";
    con->Database = "database";
    qr->Connection = con;

```



```
qr->SQL->Text = "SELECT * FROM TESTFS";
qr->Open();
//writing data
con->StartTransaction(); // FILESTREAM requirement
TMSFileStream* fs = qr->GetFileStreamForField("FS", daWrite);
char* ts = "TEST FILESTREAM";
fs->WriteBuffer(ts, strlen(ts));
fs->Flush();
fs->Close(); // it's necessary to call this method before the transaction
con->Commit();
//reading data
con->StartTransaction(); // FILESTREAM requirement
fs = qr->GetFileStreamForField("FS", daRead);
ts = new char[fs->Size];
fs->ReadBuffer(ts, fs->Size);
ShowMessage(ts);
fs->Close(); // it's necessary to call this method before the transaction
con->Commit();
}
finally
{
    qr->Free();
    con->Free();
}
}
```

As you can see from these examples, you don't need to free TMSFileStream manually. SDAC takes care of freeing all assigned TMSFileStream objects.

Note: You can find more information about working with FILESTREAM data in MSDN at [http://msdn.microsoft.com/en-us/library/cc949109\(v=sql.100\).aspx](http://msdn.microsoft.com/en-us/library/cc949109(v=sql.100).aspx)

See also

- [GetFileStreamForField](#)
- [Close](#)
- [Flush](#)

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5 Reference

This page shortly describes units that exist in SDAC.

Units

Unit Name	Description
CRAccess	This unit contains base classes for accessing databases.
CRBatchMove	This unit contains implementation of the TCRBatchMove component.
CREncryption	This unit contains base classes for data encryption.
CRGrid	This unit contains the TCRDBGrid component.
CRVio	This unit contains the TIPVersion enumeration.
DAAlerter	This unit contains the base class for the TMSAlerter component.
DADump	This unit contains the base class for the TMSDump component.
DALoader	This unit contains the base class for the TMSLoader component.
DAScript	This unit contains the base class for the TMSScript component.
DASQLMonitor	This unit contains the base class for the TMSSQLMonitor component.
DBAccess	This unit contains base classes for most of the components.
Devart.Dac.DataAdapter	This unit contains implementation of the DADDataAdapter class.
Devart.Sdac.DataAdapter	This unit contains implementation of the MSDDataAdapter class.
MemData	This unit contains classes for storing data in memory.
MemDS	This unit contains implementation of the TMemDataSet class.

<u>MSAccess</u>	This unit contains implementation of most public classes of SDAC.
<u>MSClasses</u>	This unit contains implementation of SQL Server classes.
<u>MSCompactConnection</u>	This unit contains implementation of the TMSCompactConnection class.
<u>MSConnectionPool</u>	This unit contains the TMSConnectionPoolManager class for managing connection pool.
<u>MSDataTypeMap</u>	This unit contains the implementation of mapping between SQL Server and Delphi data types.
<u>MSDump</u>	This unit contains implementation of the TMSDump component.
<u>MSLoader</u>	This unit contains implementation of the TMSLoader component.
<u>MSScript</u>	This unit contains implementation of the TMSScript component.
<u>MSServiceBroker</u>	This unit contains implementation of the TMSServiceBroker component and auxiliary classes.
<u>MSSQLMonitor</u>	This unit contains implementation of the TMSSQLMonitor component.
<u>MSTransaction</u>	This unit contains implementation of the TMSTransaction component.
<u>OLEDBAccess</u>	This unit contains classes for accessing SQL Server through OLE DB providers
<u>SdacVcl</u>	This unit contains the visual

	constituent of SDAC.
VirtualDataSet	This unit contains implementation of the TVirtualDataSet component.
VirtualTable	This unit contains implementation of the TVirtualTable component.

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5.1 CRAccess

This unit contains base classes for accessing databases.

Classes

Name	Description
TCRCursor	A base class for classes that work with database cursors.

Types

Name	Description
TBeforeFetchProc	This type is used for the TCustomDADataset.BeforeFetch event.

Enumerations

Name	Description
TCRIsolationLevel	Specifies how to handle transactions containing database modifications.
TCRTransactionAction	Specifies the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.
TCursorState	Used to set cursor state

5.1.1 Classes

Classes in the **CRAccess** unit.

Classes

Name	Description
TCRCursor	A base class for classes that work with database cursors.

5.1.1.1 TCRCursor Class

A base class for classes that work with database cursors.

For a list of all members of this type, see [TCRCursor](#) members.

Unit

[CRAccess](#)

Syntax

```
TCRCursor = class(TSharedObject);
```

Remarks

TCRCursor is a base class for classes that work with database cursors.

Inheritance Hierarchy

[TSharedObject](#)

TCRCursor

5.1.1.1.1 Members

[TCRCursor](#) class overview.

Properties

Name	Description
RefCount (inherited from TSharedObject)	Used to return the count of reference to a TSharedObject object.

Methods

Name	Description
AddRef (inherited from TSharedObject)	Increments the reference count for the number of references dependent on the TSharedObject object.
Release (inherited from TSharedObject)	Decrements the reference count.

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5.1.2 Types

Types in the **CRAccess** unit.

Types

Name	Description
TBeforeFetchProc	This type is used for the TCustomDADataset.BeforeFetch event.

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5.1.2.1 TBeforeFetchProc Procedure Reference

This type is used for the [TCustomDADataset.BeforeFetch](#) event.

Unit

[CRAccess](#)

Syntax

```
TBeforeFetchProc = procedure (var Cancel: boolean) of object;
```

Parameters

Cancel

True, if the current fetch operation should be aborted.

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5.1.3 Enumerations

Enumerations in the **CRAccess** unit.

Enumerations

Name	Description
TCRIsolationLevel	Specifies how to handle transactions containing database modifications.
TCRTransactionAction	Specifies the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.
TCursorState	Used to set cursor state

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5.1.3.1 TCRIsolationLevel Enumeration

Specifies how to handle transactions containing database modifications.

Unit

[CRAccess](#)

Syntax

```
TCRIsolationLevel = (ilReadCommitted, ilReadUnCommitted,
ilRepeatableRead, ilIsolated, ilSnapshot, ilCustom);
```

Values

Value	Meaning
ilCustom	The parameters of the transaction are set manually in the Params property.
ilIsolated	The most restricted level of transaction isolation. Database server isolates data involved in current transaction by putting additional processing on range locks. Used to put aside all undesired effects observed in the concurrent accesses to the same set of data, but may lead to a greater latency at times of a congested database environment.
ilReadCommitted	Sets isolation level at which transaction cannot see changes made by outside transactions until they are committed. Only dirty reads (changes made by uncommitted transactions) are eliminated by this state of the isolation level. The default value.
ilReadUnCommitted	The most unrestricted level of the transaction isolation. All types of data access interferences are possible. Mainly used for browsing database and to receive instant data with prospective changes.
ilRepeatableRead	Prevents concurrent transactions from modifying data in the current uncommitted transaction. This level eliminates dirty reads as well as nonrepeatable reads (repeatable reads of the same data in one transaction before and after outside transactions may have started and committed).
ilSnapshot	Uses row versioning. Provides transaction-level read consistency. A data snapshot is taken when the snapshot transaction starts, and remains consistent for the duration of a transaction.

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5.1.3.2 TCRTransactionAction Enumeration

Specifies the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.

Unit

[CRAccess](#)

Syntax

```
TCRTransactionAction = (taCommit, taRollback);
```

Values

Value	Meaning
taCommit	Transaction is committed.
taRollback	Transaction is rolled back.

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5.1.3.3 TCursorState Enumeration

Used to set cursor state

Unit

[CRAccess](#)

Syntax

```
TCursorState = (csInactive, csOpen, csParsed, csPrepared, csBound, csExecuteFetchAll, csExecuting, csExecuted, csFetching, csFetchingAll, csFetched);
```

Values

Value	Meaning
csBound	Parameters bound
csExecuted	Statement successfully executed
csExecuteFetchAll	Set before FetchAll
csExecuting	Statement is set before executing
csFetched	Fetch finished or canceled
csFetching	Set on first
csFetchingAll	Set on the FetchAll start
csInactive	Default state
csOpen	statement open
csParsed	Statement parsed
csPrepared	Statement prepared

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5.2 CRBatchMove

This unit contains implementation of the TCRBatchMove component.

Classes

Name	Description
TCRBatchMove	Transfers records between datasets.

Types

Name	Description
TCRBatchMoveProgressEvent	This type is used for the TCRBatchMove.OnBatchMoveProgress event.

Enumerations

Name	Description
TCRBatchMode	Used to set the type of the batch operation that will be executed after calling the TCRBatchMove.Execute method.
TCRFieldMappingMode	Used to specify the way fields of the destination and source datasets will be mapped to each other if the TCRBatchMove.Mappings list is empty.

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5.2.1 Classes

Classes in the **CRBatchMove** unit.

Classes

Name	Description
TCRBatchMove	Transfers records between datasets.

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5.2.1.1 TCRBatchMove Class

Transfers records between datasets.

For a list of all members of this type, see [TCRBatchMove](#) members.

Unit

[CRBatchMove](#)

Syntax

```
TCRBatchMove = class(TComponent);
```

Remarks

The TCRBatchMove component transfers records between datasets. Use it to copy dataset records to another dataset or to delete datasets records that match records in another dataset. The [TCRBatchMove.Mode](#) property determines the desired operation type, the [TCRBatchMove.Source](#) and [TCRBatchMove.Destination](#) properties indicate corresponding datasets.

Note: A TCRBatchMove component is added to the Data Access page of the component palette, not to the SDAC page.

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5.2.1.1.1 Members

[TCRBatchMove](#) class overview.

Properties

Name	Description
AbortOnKeyViol	Used to specify whether the batch operation should be terminated immediately after key or integrity violation.
AbortOnProblem	Used to specify whether the batch operation should be terminated immediately when it is necessary to truncate data to make it fit the specified Destination.
ChangedCount	Used to get the number of records changed in the destination dataset.
CommitCount	Used to set the number of records to be batch moved before commit occurs.
Destination	Used to specify the destination dataset for the batch operation.
FieldMappingMode	Used to specify the way fields of destination and source datasets will be mapped to each other if the TCRBatchMove.Mappings list is empty.
KeyViolCount	Used to get the number of records that could not be moved to or from the destination dataset because of integrity or key violations.
Mappings	Used to set field matching between source and destination datasets for the batch operation.
Mode	Used to set the type of the batch operation that will be executed after calling the TCRBatchMove.Execute

	method.
MovedCount	Used to get the number of records that were read from the source dataset during the batch operation.
ProblemCount	Used to get the number of records that could not be added to the destination dataset because of the field type mismatch.
RecordCount	Used to indicate the maximum number of records in the source dataset that will be applied to the destination dataset.
Source	Used to specify the source dataset for the batch operation.

Methods

Name	Description
Execute	Performs the batch operation.

Events

Name	Description
OnBatchMoveProgress	Occurs when providing feedback to the user about the batch operation in progress is needed.

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5.2.1.1.2 Properties

Properties of the **TCRBatchMove** class.

For a complete list of the **TCRBatchMove** class members, see the [TCRBatchMove Members](#) topic.

Public

Name	Description
ChangedCount	Used to get the number of records changed in the destination dataset.
KeyViolCount	Used to get the number of records that could not be moved to or from the destination dataset because of integrity or key violations.
MovedCount	Used to get the number of records that were read from the source dataset during the batch operation.
ProblemCount	Used to get the number of records that could not be added to the destination dataset because of the field type mismatch.

Published

Name	Description
AbortOnKeyViol	Used to specify whether the batch operation should be terminated immediately after key or integrity violation.
AbortOnProblem	Used to specify whether the batch operation should be terminated immediately when it is necessary to truncate data to make it fit the specified Destination.
CommitCount	Used to set the number of records to be batch moved before commit occurs.
Destination	Used to specify the destination dataset for the batch operation.
FieldMappingMode	Used to specify the way fields of destination and source datasets will be mapped to each other if the

	TCRBatchMove.Mappings list is empty.
Mappings	Used to set field matching between source and destination datasets for the batch operation.
Mode	Used to set the type of the batch operation that will be executed after calling the TCRBatchMove.Execute method.
RecordCount	Used to indicate the maximum number of records in the source dataset that will be applied to the destination dataset.
Source	Used to specify the source dataset for the batch operation.

See Also

- [TCRBatchMove Class](#)
- [TCRBatchMove Class Members](#)

5.2.1.1.2.1 AbortOnKeyViol Property

Used to specify whether the batch operation should be terminated immediately after key or integrity violation.

Class

[TCRBatchMove](#)

Syntax

```
property AbortOnKeyViol: boolean default True;
```

Remarks

Use the AbortOnKeyViol property to specify whether the batch operation is terminated immediately after key or integrity violation.

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5.2.1.1.2.2 AbortOnProblem Property

Used to specify whether the batch operation should be terminated immediately when it is necessary to truncate data to make it fit the specified Destination.

Class

[TCRBatchMove](#)

Syntax

```
property AbortOnProblem: boolean default True;
```

Remarks

Use the AbortOnProblem property to specify whether the batch operation is terminated immediately when it is necessary to truncate data to make it fit the specified Destination.

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5.2.1.1.2.3 ChangedCount Property

Used to get the number of records changed in the destination dataset.

Class

[TCRBatchMove](#)

Syntax

```
property ChangedCount: Integer;
```

Remarks

Use the ChangedCount property to get the number of records changed in the destination dataset. It shows the number of records that were updated in the bmUpdate or

bmAppendUpdate mode or were deleted in the bmDelete mode.

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5.2.1.1.2.4 CommitCount Property

Used to set the number of records to be batch moved before commit occurs.

Class

[TCRBatchMove](#)

Syntax

```
property CommitCount: integer default 0;
```

Remarks

Use the CommitCount property to set the number of records to be batch moved before the commit occurs. If it is set to 0, the operation will be chunked to the number of records to fit 32 Kb.

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5.2.1.1.2.5 Destination Property

Used to specify the destination dataset for the batch operation.

Class

[TCRBatchMove](#)

Syntax

```
property Destination: TDataSet;
```

Remarks

Specifies the destination dataset for the batch operation.

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5.2.1.1.2.6 FieldMappingMode Property

Used to specify the way fields of destination and source datasets will be mapped to each other if the [Mappings](#) list is empty.

Class

[TCRBatchMove](#)

Syntax

```
property FieldMappingMode: TCRFieldMappingMode default  
mmFieldIndex;
```

Remarks

Specifies in what way fields of destination and source datasets will be mapped to each other if the [Mappings](#) list is empty.

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5.2.1.1.2.7 KeyViolCount Property

Used to get the number of records that could not be moved to or from the destination dataset because of integrity or key violations.

Class

[TCRBatchMove](#)

Syntax

```
property KeyViolCount: Integer;
```

Remarks

Use the KeyViolCount property to get the number of records that could not be replaced, added, deleted from the destination dataset because of integrity or key violations.

If [AbortOnKeyViol](#) is True, then KeyViolCount will never exceed one, because the operation aborts when the integrity or key violation occurs.

See Also

- [AbortOnKeyViol](#)

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5.2.1.1.2.8 Mappings Property

Used to set field matching between source and destination datasets for the batch operation.

Class

[TCRBatchMove](#)

Syntax

```
property Mappings: TStrings;
```

Remarks

Use the Mappings property to set field matching between the source and destination datasets for the batch operation. By default fields matching is based on their position in the datasets. To map the column ColName in the source dataset to the column with the same name in the destination dataset, use:

ColName

Example

To map a column named SourceColName in the source dataset to the column named DestColName in the destination dataset, use:

```
DestColName=SourceColName
```

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5.2.1.1.2.9 Mode Property

Used to set the type of the batch operation that will be executed after calling the [Execute](#) method.

Class

[TCRBatchMove](#)

Syntax

```
property Mode: TCRBatchMode default bmAppend;
```

Remarks

Use the Mode property to set the type of the batch operation that will be executed after calling the [Execute](#) method.

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5.2.1.1.2.10 MovedCount Property

Used to get the number of records that were read from the source dataset during the batch operation.

Class

[TCRBatchMove](#)

Syntax

```
property MovedCount: Integer;
```

Remarks

Use the MovedCount property to get the number of records that were read from the source dataset during the batch operation. This number includes records that caused key or integrity violations or were trimmed.

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5.2.1.1.2.11 ProblemCount Property

Used to get the number of records that could not be added to the destination dataset because of the field type mismatch.

Class

[TCRBatchMove](#)

Syntax

```
property ProblemCount: Integer;
```

Remarks

Use the ProblemCount property to get the number of records that could not be added to the destination dataset because of the field type mismatch.

If [AbortOnProblem](#) is True, then ProblemCount will never exceed one, because the operation aborts when the problem occurs.

See Also

- [AbortOnProblem](#)

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5.2.1.1.2.12 RecordCount Property

Used to indicate the maximum number of records in the source dataset that will be applied to the destination dataset.

Class

[TCRBatchMove](#)

Syntax

```
property RecordCount: Integer default 0;
```

Remarks

Determines the maximum number of records in the source dataset, that will be applied to the destination dataset. If it is set to 0, all records in the source dataset will be applied to the destination dataset, starting from the first record. If RecordCount is greater than 0, up to the RecordCount records are applied to the destination dataset, starting from the current record in the source dataset. If RecordCount exceeds the number of records left in the source dataset, batch operation terminates after reaching last record.

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5.2.1.1.2.13 Source Property

Used to specify the source dataset for the batch operation.

Class

[TCRBatchMove](#)

Syntax

```
property Source: TDataSet;
```

Remarks

Specifies the source dataset for the batch operation.

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5.2.1.1.3 Methods

Methods of the **TCRBatchMove** class.

For a complete list of the **TCRBatchMove** class members, see the [TCRBatchMove Members](#) topic.

Public

Name	Description
Execute	Performs the batch operation.

See Also

- [TCRBatchMove Class](#)
- [TCRBatchMove Class Members](#)

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5.2.1.1.3.1 Execute Method

Performs the batch operation.

Class

[TCRBatchMove](#)

Syntax

```
procedure Execute;
```

Remarks

Call the Execute method to perform the batch operation.

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5.2.1.1.4 Events

Events of the **TCRBatchMove** class.

For a complete list of the **TCRBatchMove** class members, see the [TCRBatchMove Members](#) topic.

Published

Name	Description
OnBatchMoveProgress	Occurs when providing feedback to the user about the batch operation in progress is needed.

See Also

- [TCRBatchMove Class](#)
- [TCRBatchMove Class Members](#)

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5.2.1.1.4.1 OnBatchMoveProgress Event

Occurs when providing feedback to the user about the batch operation in progress is needed.

Class

[TCRBatchMove](#)

Syntax

```
property OnBatchMoveProgress: TCRBatchMoveProgressEvent;
```

Remarks

Write the OnBatchMoveProgress event handler to provide feedback to the user about the batch operation progress.

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5.2.2 Types

Types in the **CRBatchMove** unit.

Types

Name	Description
TCRBatchMoveProgressEvent	This type is used for the TCRBatchMove.OnBatchMoveProgress event.

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5.2.2.1 TCRBatchMoveProgressEvent Procedure Reference

This type is used for the [TCRBatchMove.OnBatchMoveProgress](#) event.

Unit

[CRBatchMove](#)

Syntax


```
TCRBatchMoveProgressEvent = procedure (Sender: TObject; Percent: integer) of object;
```

Parameters

- Sender*
An object that raised the event.
- Percent*
Percentage of the batch operation progress.

5.2.3 Enumerations

Enumerations in the **CRBatchMove** unit.

Enumerations

Name	Description
TCRBatchMode	Used to set the type of the batch operation that will be executed after calling the TCRBatchMove.Execute method.
TCRFieldMappingMode	Used to specify the way fields of the destination and source datasets will be mapped to each other if the TCRBatchMove.Mappings list is empty.

5.2.3.1 TCRBatchMode Enumeration

Used to set the type of the batch operation that will be executed after calling the [TCRBatchMove.Execute](#) method.

Unit
[CRBatchMove](#)

Syntax

```
TCRBatchMode = (bmAppend, bmUpdate, bmAppendUpdate, bmDelete);
```

Values

Value	Meaning
bmAppend	Appends the records from the source dataset to the destination dataset. The default mode.
bmAppendUpdate	Replaces records in the destination dataset with the matching records from the source dataset. If there is no matching record in the destination dataset, the record will be appended to it.
bmDelete	Deletes records from the destination dataset if there are matching records in the source dataset.
bmUpdate	Replaces records in the destination dataset with the matching records from the source dataset.

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5.2.3.2 TCRFieldMappingMode Enumeration

Used to specify the way fields of the destination and source datasets will be mapped to each other if the [TCRBatchMove.Mappings](#) list is empty.

Unit

[CRBatchMove](#)

Syntax

```
TCRFieldMappingMode = (mmFieldIndex, mmFieldName);
```

Values

Value	Meaning
mmFieldIndex	Specifies that the fields of the destination dataset will be mapped to the fields of the source dataset by field index.
mmFieldName	Mapping is performed by field names.

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5.3 CREncryption

This unit contains base classes for data encryption.

Classes

Name	Description
TCREncryptor	The class that performs data encryption and decryption in a client application using various encryption algorithms .

Enumerations

Name	Description
TCREncDataHeader	Specifies whether the additional information is stored with the encrypted data.
TCREncryptionAlgorithm	Specifies the algorithm of data encryption.
TCRHashAlgorithm	Specifies the algorithm of generating hash data.
TCRInvalidHashAction	Specifies the action to perform on data fetching when hash data is invalid.

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5.3.1 Classes

Classes in the **CREncryption** unit.

Classes

Name	Description
TCREncryptor	The class that performs data encryption and decryption in a client application using various encryption algorithms .

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5.3.1.1 TCEncryptor Class

The class that performs data encryption and decryption in a client application using various [encryption algorithms](#).

For a list of all members of this type, see [TCEncryptor](#) members.

Unit

[CEncryption](#)

Syntax

```
TCEncryptor = class(TComponent);
```

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5.3.1.1.1 Members

[TCEncryptor](#) class overview.

Properties

Name	Description
DataHeader	Specifies whether the additional information is stored with the encrypted data.
EncryptionAlgorithm	Specifies the algorithm of data encryption.
HashAlgorithm	Specifies the algorithm of generating hash data.
InvalidHashAction	Specifies the action to perform on data fetching when hash data is invalid.
Password	Used to set a password that is used to generate a key for encryption.

Methods

Name	Description
SetKey	Sets a key, using which data is encrypted.

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5.3.1.1.2 Properties

Properties of the **TCREncryptor** class.

For a complete list of the **TCREncryptor** class members, see the [TCREncryptor Members](#) topic.

Published

Name	Description
DataHeader	Specifies whether the additional information is stored with the encrypted data.
EncryptionAlgorithm	Specifies the algorithm of data encryption.
HashAlgorithm	Specifies the algorithm of generating hash data.
InvalidHashAction	Specifies the action to perform on data fetching when hash data is invalid.
Password	Used to set a password that is used to generate a key for encryption.

See Also

- [TCREncryptor Class](#)
- [TCREncryptor Class Members](#)

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5.3.1.1.2.1 DataHeader Property

Specifies whether the additional information is stored with the encrypted data.

Class

[TCREncryptor](#)

Syntax

```
property DataHeader: TCREncDataHeader default ehTagAndHash;
```

Remarks

Use DataHeader to specify whether the additional information is stored with the encrypted data. Default value is [ehTagAndHash](#).

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5.3.1.1.2.2 EncryptionAlgorithm Property

Specifies the algorithm of data encryption.

Class

[TCREncryptor](#)

Syntax

```
property EncryptionAlgorithm: TCREncryptionAlgorithm default  
eaBlowfish;
```

Remarks

Use EncryptionAlgorithm to specify the algorithm of data encryption. Default value is [eaBlowfish](#).

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5.3.1.1.2.3 HashAlgorithm Property

Specifies the algorithm of generating hash data.

Class

[TCREncryptor](#)

Syntax

```
property HashAlgorithm: TCRHashAlgorithm default haSHA1;
```

Remarks

Use HashAlgorithm to specify the algorithm of generating hash data. This property is used only if hash is stored with the encrypted data (the [DataHeader](#) property is set to [ehTagAndHash](#)). Default value is [haSHA1](#).

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5.3.1.1.2.4 InvalidHashAction Property

Specifies the action to perform on data fetching when hash data is invalid.

Class

[TCREncryptor](#)

Syntax

```
property InvalidHashAction: TCRInvalidHashAction default ihFail;
```

Remarks

Use InvalidHashAction to specify the action to perform on data fetching when hash data is invalid. This property is used only if hash is stored with the encrypted data (the [DataHeader](#) property is set to [ehTagAndHash](#)). Default value is [ihFail](#).

If the DataHeader property is set to ehTagAndHash, then on data fetching from a server the hash check is performed for each record. After data decryption its hash is calculated and compared with the hash stored in the field. If these values don't coincide, it means that the stored data is incorrect, and depending on the value of the InvalidHashAction property one of

the following actions is performed:

[ihFail](#) - the `InvalidHash` exception is raised and further data reading from the server is interrupted.

[ihSkipData](#) - the value of the field for this record is set to `Null`. No exception is raised.

[ihIgnoreError](#) - in spite of the fact that the data is not valid, the value is set in the field. No exception is raised.

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5.3.1.1.2.5 Password Property

Used to set a password that is used to generate a key for encryption.

Class

[TCREncryptor](#)

Syntax

```
property Password: string stored False;
```

Remarks

Use Password to set a password that is used to generate a key for encryption.

Note: Calling of the [SetKey](#) method clears the Password property.

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5.3.1.1.3 Methods

Methods of the **TCREncryptor** class.

For a complete list of the **TCREncryptor** class members, see the [TCREncryptor Members](#) topic.

Public

Name	Description
------	-------------

SetKey	Sets a key, using which data is encrypted.
------------------------	--

See Also

- [TCREncryptor Class](#)
- [TCREncryptor Class Members](#)

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5.3.1.1.3.1 SetKey Method

Sets a key, using which data is encrypted.

Class

[TCREncryptor](#)

Syntax

```
procedure SetKey(const Key; Count: Integer); overload; procedure SetKey(const Key: TBytes; Offset: Integer; Count: Integer); overload;
```

Parameters

- Key*
Holds bytes that represent a key.
- Offset*
Offset in bytes to the position, where the key begins.
- Count*
Number of bytes to use from Key.

Remarks

Use SetKey to set a key, using which data is encrypted.

Note: Calling of the SetKey method clears the Password property.

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5.3.2 Enumerations

Enumerations in the **CREncryption** unit.

Enumerations

Name	Description
TCREncDataHeader	Specifies whether the additional information is stored with the encrypted data.
TCREncryptionAlgorithm	Specifies the algorithm of data encryption.
TCRHashAlgorithm	Specifies the algorithm of generating hash data.
TCRInvalidHashAction	Specifies the action to perform on data fetching when hash data is invalid.

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5.3.2.1 TCREncDataHeader Enumeration

Specifies whether the additional information is stored with the encrypted data.

Unit

[CREncryption](#)

Syntax

```
TCREncDataHeader = (ehTagAndHash, ehTag, ehNone);
```

Values

Value	Meaning
ehNone	No additional information is stored.
ehTag	GUID and the random initialization vector are stored with the encrypted data.
ehTagAndHash	Hash, GUID, and the random initialization vector are stored with the encrypted data.

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5.3.2.2 TCREncryptionAlgorithm Enumeration

Specifies the algorithm of data encryption.

Unit

[CREncryption](#)

Syntax

```
TCREncryptionAlgorithm = (eaTripleDES, eaBlowfish, eaAES128, eaAES192, eaAES256, eaCast128, eaRC4);
```

Values

Value	Meaning
eaAES128	The AES encryption algorithm with key size of 128 bits is used.
eaAES192	The AES encryption algorithm with key size of 192 bits is used.
eaAES256	The AES encryption algorithm with key size of 256 bits is used.
eaBlowfish	The Blowfish encryption algorithm is used.
eaCast128	The CAST-128 encryption algorithm with key size of 128 bits is used.
eaRC4	The RC4 encryption algorithm is used.
eaTripleDES	The Triple DES encryption algorithm is used.

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5.3.2.3 TCRHashAlgorithm Enumeration

Specifies the algorithm of generating hash data.

Unit

[CREncryption](#)

Syntax

```
TCRHashAlgorithm = (haSHA1, haMD5);
```

Values

Value	Meaning
haMD5	The MD5 hash algorithm is used.
haSHA1	The SHA-1 hash algorithm is used.

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5.3.2.4 TCRIInvalidHashAction Enumeration

Specifies the action to perform on data fetching when hash data is invalid.

Unit

[CREncryption](#)

Syntax

```
TCRIInvalidHashAction = (ihFail, ihSkipData, ihIgnoreError);
```

Values

Value	Meaning
ihFail	The EInvalidHash exception is raised and further data reading from the server is interrupted.
ihIgnoreError	In spite of the fact that the data is not valid, the value is set in the field. No exception is raised.
ihSkipData	The value of the field for this record is set to Null. No exception is raised.

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5.4 CRVio

This unit contains the TIPVersion enumeration.

Enumerations

Name	Description
------	-------------

TIPVersion	Specifies Internet Protocol version.
----------------------------	--------------------------------------

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5.4.1 Enumerations

Enumerations in the **CRVio** unit.

Enumerations

Name	Description
TIPVersion	Specifies Internet Protocol version.

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5.4.1.1 TIPVersion Enumeration

Specifies Internet Protocol version.

Unit

[CRVio](#)

Syntax

```
TIPVersion = (ivIPv4, ivIPv6, ivIPBoth);
```

Values

Value	Meaning
ivIPBoth	Specifies that either IPv6 or IPv4 Internet Protocol version is used
ivIPv4	Specifies that the IPv4 Internet Protocol version is used
ivIPv6	Specifies that the IPv6 Internet Protocol version is used

Remarks

Note: When the TIPVersion property is set to **ivIPBoth**, a connection attempt is made via IPv6 if it is enabled in the operating system settings. If the connection attempt fails, a new connection attempt is made via IPv4.

See Also

- [TMSConnectionOptions.IPVersion](#)

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5.5 DAAlerter

This unit contains the base class for the TMSAlerter component.

Classes

Name	Description
TDAAlerter	A base class that defines functionality for database event notification.

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5.5.1 Classes

Classes in the **DAAlerter** unit.

Classes

Name	Description
TDAAlerter	A base class that defines functionality for database event notification.

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5.5.1.1 TDAAlerter Class

A base class that defines functionality for database event notification.

For a list of all members of this type, see [TDAAlerter](#) members.

Unit

[TDAAlerter](#)

Syntax

```
TDAAlerter = class(TComponent);
```

Remarks

TDAAlerter is a base class that defines functionality for descendant classes support database event notification. Applications never use TDAAlerter objects directly. Instead they use descendants of TDAAlerter.

The TDAAlerter component allows you to register interest in and handle events posted by a database server. Use TDAAlerter to handle events for responding to actions and database changes made by other applications. To get events, an application must register required events. To do this, set the Events property to the required events and call the Start method. When one of the registered events occurs OnEvent handler is called.

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5.5.1.1.1 Members

[TDAAlerter](#) class overview.

Properties

Name	Description
Active	Used to determine if TDAAlerter waits for messages.
AutoRegister	Used to automatically register events whenever connection opens.

Methods

Name	Description
SendEvent	Sends an event with Name and content Message.
Start	Starts waiting process.

Stop	Stops waiting process.
----------------------	------------------------

Events

Name	Description
OnError	Occurs if an exception occurs in waiting process

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5.5.1.1.2 Properties

Properties of the **TDAAlerter** class.

For a complete list of the **TDAAlerter** class members, see the [TDAAlerter Members](#) topic.

Public

Name	Description
Active	Used to determine if TDAAlerter waits for messages.
AutoRegister	Used to automatically register events whenever connection opens.

See Also

- [TDAAlerter Class](#)
- [TDAAlerter Class Members](#)

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5.5.1.1.2.1 Active Property

Used to determine if TDAAlerter waits for messages.

Class

[TDAAlerter](#)

Syntax

```
property Active: boolean default False;
```

Remarks

Check the Active property to know whether TDAlerter waits for messages or not. Set it to True to register events.

See Also

- [Start](#)
- [Stop](#)

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5.5.1.1.2.2 AutoRegister Property

Used to automatically register events whenever connection opens.

Class

[TDAlerter](#)

Syntax

```
property AutoRegister: boolean default False;
```

Remarks

Set the AutoRegister property to True to automatically register events whenever connection opens.

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5.5.1.1.3 Methods

Methods of the **TDAlerter** class.

For a complete list of the **TDAlerter** class members, see the [TDAlerter Members](#) topic.

Public

Name	Description
SendEvent	Sends an event with Name and content Message.
Start	Starts waiting process.
Stop	Stops waiting process.

See Also

- [TDAAlerter Class](#)
- [TDAAlerter Class Members](#)

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5.5.1.1.3.1 SendEvent Method

Sends an event with Name and content Message.

Class

[TDAAlerter](#)

Syntax

```
procedure SendEvent(const EventName: string; const Message:  
string);
```

Parameters

EventName

Holds the event name.

Message

Holds the content Message of the event.

Remarks

Use SendEvent procedure to send an event with Name and content Message.

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5.5.1.1.3.2 Start Method

Starts waiting process.

Class

[TDAAlerter](#)

Syntax

```
procedure start;
```

Remarks

Call the Start method to run waiting process. After starting TDAAlerter waits for messages with names defined by the Events property.

See Also

- [Stop](#)
- [Active](#)

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5.5.1.1.3.3 Stop Method

Stops waiting process.

Class

[TDAAlerter](#)

Syntax

```
procedure stop;
```

Remarks

Call Stop method to end waiting process.

See Also

- [Start](#)

5.5.1.1.4 Events

Events of the **TDAAlerter** class.

For a complete list of the **TDAAlerter** class members, see the [TDAAlerter Members](#) topic.

Public

Name	Description
OnError	Occurs if an exception occurs in waiting process

- See Also
- [TDAAlerter Class](#)
 - [TDAAlerter Class Members](#)

5.5.1.1.4.1 OnError Event

Occurs if an exception occurs in waiting process

Class

[TDAAlerter](#)

Syntax

```
property OnError: TAlerterErrorEvent;
```

Remarks

The OnError event occurs if an exception occurs in waiting process. Alerter stops in this case. The exception can be accessed using the E parameter.

5.6 DADump

This unit contains the base class for the TMSDump component.

Classes

Name	Description
TDADump	A base class that defines functionality for descendant classes that dump database objects to a script.
TDADumpOptions	This class allows setting up the behaviour of the TDADump class.

Types

Name	Description
TDABackupProgressEvent	This type is used for the TDADump.OnBackupProgress event.
TDARestoreProgressEvent	This type is used for the TDADump.OnRestoreProgress event.

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5.6.1 Classes

Classes in the **DADump** unit.

Classes

Name	Description
TDADump	A base class that defines functionality for descendant classes that dump database objects to a script.
TDADumpOptions	This class allows setting up the behaviour of the TDADump class.

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5.6.1.1 TDADump Class

A base class that defines functionality for descendant classes that dump database objects to a script.

For a list of all members of this type, see [TDADump](#) members.

Unit

[DADump](#)

Syntax

```
TDADump = class (TComponent);
```

Remarks

TDADump is a base class that defines functionality for descendant classes that dump database objects to a script. Applications never use TDADump objects directly. Instead they use descendants of TDADump.

Use TDADump descendants to dump database objects, such as tables, stored procedures, and functions for backup or for transferring the data to another SQL server. The dump contains SQL statements to create the table or other database objects and/or populate the table.

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5.6.1.1.1 Members

[TDADump](#) class overview.

Properties

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.

Debug	Used to display the statement that is being executed and the values and types of its parameters.
Options	Used to specify the behaviour of a TDADump component.
SQL	Used to set or get the dump script.
TableNames	Used to set the names of the tables to dump.

Methods

Name	Description
Backup	Dumps database objects to the TDADump.SQL property.
BackupQuery	Dumps the results of a particular query.
BackupToFile	Dumps database objects to the specified file.
BackupToStream	Dumps database objects to the stream.
Restore	Executes a script contained in the SQL property.
RestoreFromFile	Executes a script from a file.
RestoreFromStream	Executes a script received from the stream.

Events

Name	Description
OnBackupProgress	Occurs to indicate the TDADump.Backup , M:Devart.Dac.TDADump.BackupToFile(System.String) or M:Devart.Dac.TDADump.BackupToStream(Borland.Vcl.TStream) method execution progress.

OnError	Occurs when SQL Server raises some error on TDADump.Restore .
OnRestoreProgress	Occurs to indicate the TDADump.Restore , TDADump.RestoreFromFile , or TDADump.RestoreFromStream method execution progress.

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5.6.1.1.2 Properties

Properties of the **TDADump** class.

For a complete list of the **TDADump** class members, see the [TDADump Members](#) topic.

Public

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.
Options	Used to specify the behaviour of a TDADump component.

Published

Name	Description
Debug	Used to display the statement that is being executed and the values and types of its parameters.
SQL	Used to set or get the dump script.
TableNames	Used to set the names of the tables to dump.

See Also

- [TDADump Class](#)
- [TDADump Class Members](#)

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5.6.1.1.2.1 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

[TDADump](#)

Syntax

```
property Connection: TCustomDACConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store.

Set at design-time by selecting from the list of provided TCustomDACConnection or its descendant class objects.

At runtime, link an instance of a TCustomDACConnection descendant to the Connection property.

See Also

- [TCustomDACConnection](#)

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5.6.1.1.2.2 Debug Property

Used to display the statement that is being executed and the values and types of its parameters.

Class

[TDADump](#)

Syntax

```
property Debug: boolean default False;
```

Remarks

Set the Debug property to True to display the statement that is being executed and the values and types of its parameters.

You should add the SdacVcl unit to the uses clause of any unit in your project to make the Debug property work.

Note: If TMSSQLMonitor is used in the project and the TMSSQLMonitor.Active property is set to False, the debug window is not displayed.

See Also

- [TCustomDADDataSet.Debug](#)
- [TCustomDASQL.Debug](#)

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5.6.1.1.2.3 Options Property

Used to specify the behaviour of a TDADump component.

Class

[TDADump](#)

Syntax

```
property Options: TDADumpOptions;
```

Remarks

Use the Options property to specify the behaviour of a TDADump component.

Descriptions of all options are in the table below.

Option Name	Description
AddDrop	Used to add drop statements to a script before creating statements.
CompleteInsert	Used to explicitly specify the table fields names when generating the INSERT SQL query. The default value is False.
GenerateHeader	Used to add a comment header to a script.
QuoteNames	Used for TDADump to quote all database object names in generated SQL statements.

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5.6.1.1.2.4 SQL Property

Used to set or get the dump script.

Class

[TDADump](#)

Syntax

```
property SQL: TStrings;
```

Remarks

Use the SQL property to get or set the dump script. The SQL property stores script that is executed by the [Restore](#) method. This property will store the result of [Backup](#) and [BackupQuery](#). At design time the SQL property can be edited by invoking the String List editor in Object Inspector.

See Also

- [Restore](#)
- [Backup](#)
- [BackupQuery](#)

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5.6.1.1.2.5 TableNames Property

Used to set the names of the tables to dump.

Class

[TDADump](#)

Syntax

```
property TableNames: string;
```

Remarks

Use the TableNames property to set the names of the tables to dump. Table names must be separated with semicolons. If the property is empty, the [Backup](#) method will dump all available tables.

See Also

- [Backup](#)

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5.6.1.1.3 Methods

Methods of the **TDADump** class.

For a complete list of the **TDADump** class members, see the [TDADump Members](#) topic.

Public

Name	Description
Backup	Dumps database objects to the TDADump.SQL property.
BackupQuery	Dumps the results of a particular query.
BackupToFile	Dumps database objects to the specified file.
BackupToStream	Dumps database objects to the stream.

Restore	Executes a script contained in the SQL property.
RestoreFromFile	Executes a script from a file.
RestoreFromStream	Executes a script received from the stream.

See Also

- [TDADump Class](#)
- [TDADump Class Members](#)

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5.6.1.1.3.1 Backup Method

Dumps database objects to the [SQL](#) property.

Class

[TDADump](#)

Syntax

```
procedure Backup;
```

Remarks

Call the Backup method to dump database objects. The result script will be stored in the [SQL](#) property.

See Also

- [SQL](#)
- [Restore](#)
- [BackupToFile](#)
- [BackupToStream](#)
- [BackupQuery](#)

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5.6.1.1.3.2 BackupQuery Method

Dumps the results of a particular query.

Class

[TDADump](#)

Syntax

```
procedure BackupQuery(const Query: string);
```

Parameters

Query

Holds a query used for data selection.

Remarks

Call the BackupQuery method to dump the results of a particular query. Query must be a valid select statement. If this query selects data from several tables, only data of the first table in the from list will be dumped.

See Also

- [Restore](#)
- [Backup](#)
- [BackupToFile](#)
- [BackupToStream](#)

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5.6.1.1.3.3 BackupToFile Method

Dumps database objects to the specified file.

Class

[TDADump](#)

Syntax

```
procedure BackupToFile(const FileName: string; const Query:  
string = '');;
```

Parameters

FileName

Holds the file name to dump database objects to.

Query

Your query to receive the data for dumping.

Remarks

Call the BackupToFile method to dump database objects to the specified file.

See Also

- [RestoreFromStream](#)
- [Backup](#)
- [BackupToStream](#)

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5.6.1.1.3.4 BackupToStream Method

Dumps database objects to the stream.

Class

[TDADump](#)

Syntax

```
procedure BackupToStream(Stream: TStream; const Query: string =  
'');
```

Parameters

Stream

Holds the stream to dump database objects to.

Query

Your query to receive the data for dumping.

Remarks

Call the BackupToStream method to dump database objects to the stream.

See Also

- [RestoreFromStream](#)
- [Backup](#)
- [BackupToFile](#)

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5.6.1.1.3.5 Restore Method

Executes a script contained in the SQL property.

Class

[TDADump](#)

Syntax

```
procedure Restore;
```

Remarks

Call the Restore method to execute a script contained in the SQL property.

See Also

- [RestoreFromFile](#)
- [RestoreFromStream](#)
- [Backup](#)
- [SQL](#)

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5.6.1.1.3.6 RestoreFromFile Method

Executes a script from a file.

Class

[TDADump](#)

Syntax

```
procedure RestoreFromFile(const FileName: string);  
overload; procedure RestoreFromFile(const FileName: string;  
Encoding: TEncoding); overload;
```

Parameters

FileName

Holds the file name to execute a script from.

Remarks

Call the RestoreFromFile method to execute a script from the specified file.

See Also

- [Restore](#)
- [RestoreFromStream](#)
- [BackupToFile](#)

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5.6.1.1.3.7 RestoreFromStream Method

Executes a script received from the stream.

Class

[TDADump](#)

Syntax

```
procedure RestoreFromStream(Stream: TStream);
```

Parameters

Stream

Holds a stream to receive a script to be executed.

Remarks

Call the RestoreFromStream method to execute a script received from the stream.

See Also

- [Restore](#)
- [RestoreFromFile](#)
- [BackupToStream](#)

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5.6.1.1.4 Events

Events of the **TDADump** class.

For a complete list of the **TDADump** class members, see the [TDADump Members](#) topic.

Published

Name	Description
OnBackupProgress	Occurs to indicate the TDADump.Backup , M:Devart.Dac.TDADump.BackupToFile(System.String) or M:Devart.Dac.TDADump.BackupToStream(Borland.Vcl.TStream) method execution progress.
OnError	Occurs when SQL Server raises some error on TDADump.Restore .
OnRestoreProgress	Occurs to indicate the TDADump.Restore , TDADump.RestoreFromFile , or TDADump.RestoreFromStream method execution progress.

See Also

- [TDADump Class](#)
- [TDADump Class Members](#)

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5.6.1.1.4.1 OnBackupProgress Event

Occurs to indicate the [Backup](#), M:Devart.Dac.TDADump.BackupToFile(System.String) or M:Devart.Dac.TDADump.BackupToStream(Borland.Vcl.TStream) method execution progress.

Class

[TDADump](#)

Syntax

```
property OnBackupProgress: TDABackupProgressEvent;
```

Remarks

The OnBackupProgress event occurs several times during the dumping process of the [Backup](#), M:Devart.Dac.TDADump.BackupToFile(System.String), or M:Devart.Dac.TDADump.BackupToStream(Borland.Vcl.TStream) method execution and indicates its progress. ObjectName parameter indicates the name of the currently dumping database object. ObjectNum shows the number of the current database object in the backup queue starting from zero. ObjectCount shows the quantity of database objects to dump. Percent parameter shows the current percentage of the current table data dumped, not the current percentage of the entire dump process.

See Also

- [Backup](#)
- [BackupToFile](#)
- [BackupToStream](#)

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5.6.1.1.4.2 OnError Event

Occurs when SQL Server raises some error on [Restore](#).

Class

[TDADump](#)

Syntax

```
property OnError: TOnErrorEvent;
```

Remarks

The OnError event occurs when SQL Server raises some error on [Restore](#).

Action indicates the action to take when the OnError handler exits. On entry into the handler, Action is always set to eaException.

Note: You should add the DAScript module to the 'uses' list to use the OnError event handler.

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5.6.1.1.4.3 OnRestoreProgress Event

Occurs to indicate the [Restore](#), [RestoreFromFile](#), or [RestoreFromStream](#) method execution progress.

Class

[TDADump](#)

Syntax

```
property OnRestoreProgress: TDARestoreProgressEvent;
```

Remarks

The OnRestoreProgress event occurs several times during the dumping process of the [Restore](#), [RestoreFromFile](#), or [RestoreFromStream](#) method execution and indicates its progress. The Percent parameter of the OnRestoreProgress event handler indicates the

percentage of the whole restore script execution.

See Also

- [Restore](#)
- [RestoreFromFile](#)
- [RestoreFromStream](#)

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5.6.1.2 TDADumpOptions Class

This class allows setting up the behaviour of the TDADump class.

For a list of all members of this type, see [TDADumpOptions](#) members.

Unit

[DADump](#)

Syntax

```
TDADumpOptions = class(TPersistent);
```

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5.6.1.2.1 Members

[TDADumpOptions](#) class overview.

Properties

Name	Description
AddDrop	Used to add drop statements to a script before creating statements.
CompleteInsert	Used to explicitly specify the table fields names when generating the INSERT SQL query. The default value is False.

GenerateHeader	Used to add a comment header to a script.
QuoteNames	Used for TDADump to quote all database object names in generated SQL statements.

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5.6.1.2.2 Properties

Properties of the **TDADumpOptions** class.

For a complete list of the **TDADumpOptions** class members, see the [TDADumpOptions Members](#) topic.

Published

Name	Description
AddDrop	Used to add drop statements to a script before creating statements.
CompleteInsert	Used to explicitly specify the table fields names when generating the INSERT SQL query. The default value is False.
GenerateHeader	Used to add a comment header to a script.
QuoteNames	Used for TDADump to quote all database object names in generated SQL statements.

See Also

- [TDADumpOptions Class](#)
- [TDADumpOptions Class Members](#)

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5.6.1.2.2.1 AddDrop Property

Used to add drop statements to a script before creating statements.

Class

[TDADumpOptions](#)

Syntax

```
property AddDrop: boolean default True;
```

Remarks

Use the AddDrop property to add drop statements to a script before creating statements.

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5.6.1.2.2.2 CompleteInsert Property

Used to explicitly specify the table fields names when generating the INSERT SQL query. The default value is False.

Class

[TDADumpOptions](#)

Syntax

```
property CompleteInsert: boolean default False;
```

Remarks

If the CompleteInsert property is set to True, SQL query will include the field names, for example:

```
INSERT INTO dept(deptno, dname, loc) VALUES ('10', 'ACCOUNTING', 'NEW YORK');
```

If False, it won't include the field names, for example:

```
INSERT INTO dept VALUES ('10', 'ACCOUNTING', 'NEW YORK');
```

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5.6.1.2.2.3 GenerateHeader Property

Used to add a comment header to a script.

Class

[TDADumpOptions](#)

Syntax

```
property GenerateHeader: boolean default True;
```

Remarks

Use the GenerateHeader property to add a comment header to a script. It contains script generation date, DAC version, and some other information.

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5.6.1.2.2.4 QuoteNames Property

Used for TDADump to quote all database object names in generated SQL statements.

Class

[TDADumpOptions](#)

Syntax

```
property QuoteNames: boolean default False;
```

Remarks

If the QuoteNames property is True, TDADump quotes all database object names in generated SQL statements.

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5.6.2 Types

Types in the **DADump** unit.

Types

Name	Description
TDABackupProgressEvent	This type is used for the TDADump.OnBackupProgress event.
TDARestoreProgressEvent	This type is used for the TDADump.OnRestoreProgress event.

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5.6.2.1 TDABackupProgressEvent Procedure Reference

This type is used for the [TDADump.OnBackupProgress](#) event.

Unit

[DADump](#)

Syntax

```
TDABackupProgressEvent = procedure (Sender: TObject; ObjectName: string; ObjectNum: integer; ObjectCount: integer; Percent: integer) of object;
```

Parameters

- Sender*
An object that raised the event.
- ObjectName*
The name of the currently dumping database object.
- ObjectNum*
The number of the current database object in the backup queue starting from zero.
- ObjectCount*
The quantity of database objects to dump.
- Percent*
The current percentage of the current table data dumped.

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5.6.2.2 TDARestoreProgressEvent Procedure Reference

This type is used for the [TDADump.OnRestoreProgress](#) event.

Unit

[DADump](#)

Syntax

```
TDARestoreProgressEvent = procedure (Sender: TObject; Percent: integer) of object;
```

Parameters

Sender

An object that raised the event.

Percent

The percentage of the whole restore script execution.

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5.7 DALoader

This unit contains the base class for the TMSLoader component.

Classes

Name	Description
TDAColumn	Represents the attributes for column loading.
TDAColumns	Holds a collection of TDAColumn objects.
TDALoader	This class allows loading external data into database.
TDALoaderOptions	Allows loading external data into database.

Types

Name	Description
TDAPutDataEvent	This type is used for the TDALoader.OnPutData event.
TGetColumnDataEvent	This type is used for the TDALoader.OnGetColumnData event.
TLoaderProgressEvent	This type is used for the TDALoader.OnProgress event.

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5.7.1 Classes

Classes in the **DALoader** unit.

Classes

Name	Description
TDAColumn	Represents the attributes for column loading.
TDAColumns	Holds a collection of TDAColumn objects.
TDALoader	This class allows loading external data into database.
TDALoaderOptions	Allows loading external data into database.

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5.7.1.1 TDAColumn Class

Represents the attributes for column loading.

For a list of all members of this type, see [TDAColumn](#) members.

Unit

[DALoader](#)

Syntax

```
TDAColumn = class(TCollectionItem);
```

Remarks

Each [TDALoader](#) uses [TDAColumns](#) to maintain a collection of TDAColumn objects. TDAColumn object represents the attributes for column loading. Every TDAColumn object corresponds to one of the table fields with the same name as its [TDAColumn.Name](#) property.

To create columns at design-time use the column editor of the [TDALoader](#) component.

See Also

- [TDALoader](#)
- [TDAColumns](#)

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5.7.1.1.1 Members

[TDAColumn](#) class overview.

Properties

Name	Description
FieldType	Used to specify the types of values that will be loaded.
Name	Used to specify the field name of loading table.

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5.7.1.1.2 Properties

Properties of the **TDAColumn** class.

For a complete list of the **TDAColumn** class members, see the [TDAColumn Members](#) topic.

Published

Name	Description
FieldType	Used to specify the types of values that will be loaded.
Name	Used to specify the field name of loading table.

See Also

- [TDAColumn Class](#)
- [TDAColumn Class Members](#)

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5.7.1.1.2.1 FieldType Property

Used to specify the types of values that will be loaded.

Class

[TDAColumn](#)

Syntax

```
property FieldType: TFieldType default ftString;
```

Remarks

Use the FieldType property to specify the types of values that will be loaded. Field types for columns may not match data types for the corresponding fields in the database table. [TDALoader](#) will cast data values to the types of their fields.

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5.7.1.1.2.2 Name Property

Used to specify the field name of loading table.

Class

[TDAColumn](#)

Syntax

```
property Name: string;
```

Remarks

Each TDAColumn corresponds to one field of the loading table. Use the Name property to specify the name of this field.

See Also

- [FieldType](#)

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5.7.1.2 TDAColumns Class

Holds a collection of [TDAColumn](#) objects.

For a list of all members of this type, see [TDAColumns](#) members.

Unit

[DALoader](#)

Syntax

```
TDAColumns = class(TOwnedCollection);
```

Remarks

Each TDAColumns holds a collection of [TDAColumn](#) objects. TDAColumns maintains an index of the columns in its Items array. The Count property contains the number of columns in the collection. At design-time, use the Columns editor to add, remove, or modify columns.

See Also

- [TDALoader](#)
- [TDAColumn](#)

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5.7.1.2.1 Members

[TDAColumns](#) class overview.

Properties

Name	Description
Items	Used to access individual columns.

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5.7.1.2.2 Properties

Properties of the **TDAColumns** class.

For a complete list of the **TDAColumns** class members, see the [TDAColumns Members](#) topic.

Public

Name	Description
Items	Used to access individual columns.

See Also

- [TDAColumns Class](#)
- [TDAColumns Class Members](#)

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5.7.1.2.2.1 Items Property(Indexer)

Used to access individual columns.

Class

[TDAColumns](#)

Syntax

```
property Items[Index: integer]: TDAColumn; default;
```

Parameters

Index

Holds the Index of [TDAColumn](#) to refer to.

Remarks

Use the Items property to access individual columns. The value of the Index parameter corresponds to the Index property of [TDAColumn](#).

See Also

- [TDAColumn](#)

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5.7.1.3 TDALoader Class

This class allows loading external data into database.

For a list of all members of this type, see [TDALoader](#) members.

Unit

[DALoader](#)

Syntax

```
TDALoader = class (TComponent);
```

Remarks

TDALoader allows loading external data into database. To specify the name of loading table set the [TDALoader.TableName](#) property. Use the [TDALoader.Columns](#) property to access individual columns. Write the [TDALoader.OnGetColumnData](#) or [TDALoader.OnPutData](#) event handlers to read external data and pass it to the database. Call the [TDALoader.Load](#) method to start loading data.

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5.7.1.3.1 Members

[TDALoader](#) class overview.

Properties

Name	Description
Columns	Used to add a TDAColumn object for each field that will be loaded.
Connection	property. Used to specify TCustomDACConnection in which TDALoader will be executed.
TableName	Used to specify the name of the table to which data will be loaded.

Methods

Name	Description
CreateColumns	Creates TDAColumn objects for all fields of the table with the same name as TDALoader.TableName .
Load	Starts loading data.
LoadFromDataSet	Loads data from the specified dataset.
PutColumnData	Overloaded. Puts the value of individual columns.

Events

Name	Description
OnGetColumnData	Occurs when it is needed to put column values.
OnProgress	Occurs if handling data loading progress of the TDALoader.LoadFromDataSet method is needed.
OnPutData	Occurs when putting loading data by rows is needed.

5.7.1.3.2 Properties

Properties of the **TDALoader** class.

For a complete list of the **TDALoader** class members, see the [TDALoader Members](#) topic.

Public

Name	Description
Columns	Used to add a TDAColumn object for each field that will be loaded.
Connection	property. Used to specify TCustomDAConnection in which TDALoader will be executed.
TableName	Used to specify the name of the table to which data will be loaded.

See Also

- [TDALoader Class](#)
- [TDALoader Class Members](#)

5.7.1.3.2.1 Columns Property

Used to add a [TDAColumn](#) object for each field that will be loaded.

Class

[TDALoader](#)

Syntax

```
property columns: TDAColumns stored IsColumnsStored;
```

Remarks

Use the Columns property to add a [TDAColumn](#) object for each field that will be loaded.

See Also

- [TDAColumns](#)

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5.7.1.3.2.2 Connection Property

property. Used to specify TCustomDAConnection in which TDALoader will be executed.

Class

[TDALoader](#)

Syntax

```
property Connection: TCustomDAConnection;
```

Remarks

Use the Connection property to specify TCustomDAConnection in which TDALoader will be executed. If Connection is not connected, the [Load](#) method calls [TCustomDAConnection.Connect](#).

See Also

- [TCustomDAConnection](#)

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5.7.1.3.2.3 TableName Property

Used to specify the name of the table to which data will be loaded.

Class

[TDALoader](#)

Syntax

```
property TableName: string;
```

Remarks

Set the TableName property to specify the name of the table to which data will be loaded. Add TDAColumn objects to [Columns](#) for the fields that are needed to be loaded.

See Also

- [TDAColumn](#)
- [TCustomDACConnection.GetTableNames](#)

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5.7.1.3.3 Methods

Methods of the **TDALoader** class.

For a complete list of the **TDALoader** class members, see the [TDALoader Members](#) topic.

Public

Name	Description
CreateColumns	Creates TDAColumn objects for all fields of the table with the same name as TDALoader.TableName .
Load	Starts loading data.
LoadFromDataSet	Loads data from the specified dataset.
PutColumnData	Overloaded. Puts the value of individual columns.

See Also

- [TDALoader Class](#)
- [TDALoader Class Members](#)

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5.7.1.3.3.1 CreateColumns Method

Creates [TDAColumn](#) objects for all fields of the table with the same name as [TableName](#).

Class

[TDALoader](#)

Syntax

```
procedure CreateColumns;
```

Remarks

Call the CreateColumns method to create [TDAColumn](#) objects for all fields of the table with the same name as [TableName](#). If columns were created before, they will be recreated. You can call CreateColumns from the component popup menu at design-time. After you can customize column loading by setting properties of TDAColumn objects.

See Also

- [TDAColumn](#)
- [TableName](#)

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5.7.1.3.3.2 Load Method

Starts loading data.

Class

[TDALoader](#)

Syntax

```
procedure Load; virtual;
```

Remarks

Call the Load method to start loading data. At first it is necessary to [create columns](#) and write one of the [OnPutData](#) or [OnGetColumnData](#) event handlers.

See Also

- [OnGetColumnData](#)
- [OnPutData](#)

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5.7.1.3.3.3 LoadFromDataSet Method

Loads data from the specified dataset.

Class

[TDALoader](#)

Syntax

```
procedure LoadFromDataSet(DataSet: TDataSet);
```

Parameters

DataSet

Holds the dataset to load data from.

Remarks

Call the LoadFromDataSet method to load data from the specified dataset. There is no need to create columns and write event handlers for [OnPutData](#) and [OnGetColumnData](#) before calling this method.

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5.7.1.3.3.4 PutColumnData Method

Puts the value of individual columns.

Class

[TDALoader](#)

Overload List

Name	Description
PutColumnData(Col: integer; Row: integer; const Value: variant)	Puts the value of individual columns by the column index.
PutColumnData(const ColName: string; Row: integer; const Value: variant)	Puts the value of individual columns by the column name.

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Puts the value of individual columns by the column index.

Class

[TDALoader](#)

Syntax

```
procedure PutColumnData(Col: integer; Row: integer; const Value: variant); overload; virtual;
```

Parameters

Col

Holds the index of a loading column. The first column has index 0.

Row

Holds the number of loading row. Row starts from 1.

Value

Holds the column value.

Remarks

Call the PutColumnData method to put the value of individual columns. The Col parameter indicates the index of loading column. The first column has index 0. The Row parameter indicates the number of the loading row. Row starts from 1.

This overloaded method works faster because it searches the right index by its index, not by the index name.

The value of a column should be assigned to the Value parameter.

See Also

- [TDALoader.OnPutData](#)

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Puts the value of individual columns by the column name.

Class

[TDALoader](#)

Syntax

```
procedure PutColumnData(const ColName: string; Row: integer;  
const Value: variant); overload;
```

Parameters

ColName

Holds the name of a loading column.

Row

Holds the number of loading row. Row starts from 1.

Value

Holds the column value.

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5.7.1.3.4 Events

Events of the **TDALoader** class.

For a complete list of the **TDALoader** class members, see the [TDALoader Members](#) topic.

Public

Name	Description
OnGetColumnData	Occurs when it is needed to put column values.
OnProgress	Occurs if handling data loading progress of the TDALoader.LoadFromDataSet method is needed.

OnPutData	Occurs when putting loading data by rows is needed.
---------------------------	---

See Also

- [TDALoader Class](#)
- [TDALoader Class Members](#)

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5.7.1.3.4.1 OnGetColumnData Event

Occurs when it is needed to put column values.

Class

[TDALoader](#)

Syntax

```
property OnGetColumnData: TGetColumnDataEvent;
```

Remarks

Write the OnGetColumnData event handler to put column values. [TDALoader](#) calls the OnGetColumnData event handler for each column in the loop. Column points to a [TDAColumn](#) object that corresponds to the current loading column. Use its Name or Index property to identify what column is loading. The Row parameter indicates the current loading record. TDALoader increments the Row parameter when all the columns of the current record are loaded. The first row is 1. Set EOF to True to stop data loading. Fill the Value parameter by column values. To start loading call the [Load](#) method.

Another way to load data is using the [OnPutData](#) event.

Example

This handler loads 1000 rows.

```
procedure TfmMain.GetColumnData(Sender: TObject;  
    Column: TDAColumn; Row: Integer; var Value: Variant;  
    var EOF: Boolean);  
begin
```

```
if ROW <= 1000 then begin
  case Column.Index of
    0: Value := Row;
    1: Value := Random(100);
    2: Value := Random*100;
    3: Value := 'abc01234567890123456789';
    4: Value := Date;
  else
    Value := Null;
  end;
end
else
  EOF := True;
end;
```

See Also

- [OnPutData](#)
- [Load](#)

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5.7.1.3.4.2 OnProgress Event

Occurs if handling data loading progress of the [LoadFromDataSet](#) method is needed.

Class

[TDALoader](#)

Syntax

```
property OnProgress: TLoaderProgressEvent;
```

Remarks

Add a handler to this event if you want to handle data loading progress of the [LoadFromDataSet](#) method.

See Also

- [LoadFromDataSet](#)

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5.7.1.3.4.3 OnPutData Event

Occurs when putting loading data by rows is needed.

Class

[TDALoader](#)

Syntax

```
property OnPutData: TDAPutDataEvent;
```

Remarks

Write the OnPutData event handler to put loading data by rows.

Note that rows should be loaded from the first in the ascending order.

To start loading, call the [Load](#) method.

Example

This handler loads 1000 rows.

```
procedure TfmMain.PutData(Sender: TDALoader);  
var  
    Count: Integer;  
    i: Integer;  
begin  
    Count := StrToInt(edRows.Text);  
    for i := 1 to Count do begin  
        Sender.PutColumnData(0, i, 1);  
        Sender.PutColumnData(1, i, Random(100));  
        Sender.PutColumnData(2, i, Random*100);  
        Sender.PutColumnData(3, i, 'abc01234567890123456789');  
        Sender.PutColumnData(4, i, Date);  
    end;  
end;
```

See Also

- [TDALoader.PutColumnData](#)
- [Load](#)
- [OnGetColumnData](#)

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5.7.1.4 TDALoaderOptions Class

Allows loading external data into database.

For a list of all members of this type, see [TDALoaderOptions](#) members.

Unit

[DALoader](#)

Syntax

```
TDALoaderOptions = class(TPersistent);
```

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5.7.1.4.1 Members

[TDALoaderOptions](#) class overview.

Properties

Name	Description
UseBlankValues	Forces SDAC to fill the buffer with null values after loading a row to the database.

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5.7.1.4.2 Properties

Properties of the **TDALoaderOptions** class.

For a complete list of the **TDALoaderOptions** class members, see the [TDALoaderOptions Members](#) topic.

Public

Name	Description
UseBlankValues	Forces SDAC to fill the buffer with null values after

	loading a row to the database.
--	--------------------------------

See Also

- [TDALoaderOptions Class](#)
- [TDALoaderOptions Class Members](#)

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5.7.1.4.2.1 UseBlankValues Property

Forces SDAC to fill the buffer with null values after loading a row to the database.

Class

[TDALoaderOptions](#)

Syntax

```
property UseBlankValues: boolean default True;
```

Remarks

Used to force SDAC to fill the buffer with null values after loading a row to the database.

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5.7.2 Types

Types in the **DALoader** unit.

Types

Name	Description
TDAPutDataEvent	This type is used for the TDALoader.OnPutData event.
TGetColumnDataEvent	This type is used for the TDALoader.OnGetColumnData event.

TLoaderProgressEvent	This type is used for the TDALoader.OnProgress event.
--------------------------------------	---

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5.7.2.1 TDAPutDataEvent Procedure Reference

This type is used for the [TDALoader.OnPutData](#) event.

Unit

[DALoader](#)

Syntax

```
TDAPutDataEvent = procedure (Sender: TDALoader) of object;
```

Parameters

Sender
An object that raised the event.

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5.7.2.2 TGetColumnDataEvent Procedure Reference

This type is used for the [TDALoader.OnGetColumnData](#) event.

Unit

[DALoader](#)

Syntax

```
TGetColumnDataEvent = procedure (Sender: TObject; Column: TDAColumn; Row: integer; var Value: variant; var IsEOF: boolean) of object;
```

Parameters

Sender
An object that raised the event.

Column

Points to [TDAColumn](#) object that corresponds to the current loading column.

Row

Indicates the current loading record.

Value

Holds column values.

IsEOF

True, if data loading needs to be stopped.

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5.7.2.3 TLoaderProgressEvent Procedure Reference

This type is used for the [TDALoader.OnProgress](#) event.

Unit

[DALoader](#)

Syntax

```
TLoaderProgressEvent = procedure (Sender: TObject; Percent: integer) of object;
```

Parameters

Sender

An object that raised the event.

Percent

Percentage of the load operation progress.

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5.8 DAScript

This unit contains the base class for the TMSScript component.

Classes

Name	Description
TDAScript	Makes it possible to execute several SQL statements one by one.

TDASStatement	This class has attributes and methods for controlling single SQL statement of a script.
TDASStatements	Holds a collection of TDASStatement objects.

Types

Name	Description
TAfterStatementExecuteEvent	This type is used for the TDAScript.AfterExecute event.
TBeforeStatementExecuteEvent	This type is used for the TDAScript.BeforeExecute event.
TOnErrorEvent	This type is used for the TDAScript.OnError event.

Enumerations

Name	Description
TErrorAction	Indicates the action to take when the OnError handler exits.

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5.8.1 Classes

Classes in the **DAScript** unit.

Classes

Name	Description
TDAScript	Makes it possible to execute several SQL statements one by one.
TDASStatement	This class has attributes and methods for controlling single SQL statement of a

	script.
TDASentences	Holds a collection of TDASentences objects.

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5.8.1.1 TDAScript Class

Makes it possible to execute several SQL statements one by one.

For a list of all members of this type, see [TDAScript](#) members.

Unit

[DAScript](#)

Syntax

```
TDAScript = class(TComponent);
```

Remarks

Often it is necessary to execute several SQL statements one by one. This can be performed using a lot of components such as [TCustomDASQL](#) descendants. Usually it isn't the best solution. With only one TDAScript descendant component you can execute several SQL statements as one. This sequence of statements is called script. To separate single statements use semicolon (;) or slash (/) and for statements that can contain semicolon, only slash. Note that slash must be the first character in line.

Errors that occur during execution can be processed in the [TDAScript.OnError](#) event handler. By default, on error TDAScript shows exception and continues execution.

See Also

- [TCustomDASQL](#)

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5.8.1.1.1 Members

[TDAScript](#) class overview.

Properties

Name	Description
Connection	Used to specify the connection in which the script will be executed.
DataSet	Refers to a dataset that holds the result set of query execution.
Debug	Used to display the script execution and all its parameter values.
Delimiter	Used to set the delimiter string that separates script statements.
EndLine	Used to get the current statement last line number in a script.
EndOffset	Used to get the offset in the last line of the current statement.
EndPos	Used to get the end position of the current statement.
Macros	Used to change SQL script text in design- or run-time easily.
SQL	Used to get or set script text.
StartLine	Used to get the current statement start line number in a script.
StartOffset	Used to get the offset in the first line of the current statement.
StartPos	Used to get the start position of the current statement in a script.
Statements	Contains a list of statements obtained from the SQL property.

Methods

Name	Description
BreakExec	Stops script execution.
ErrorOffset	Used to get the offset of the statement if the Execute method raised an exception.
Execute	Executes a script.
ExecuteFile	Executes SQL statements contained in a file.
ExecuteNext	Executes the next statement in the script and then stops.
ExecuteStream	Executes SQL statements contained in a stream object.
FindMacro	Finds a macro with the specified name.
MacroByName	Finds a macro with the specified name.

Events

Name	Description
AfterExecute	Occurs after a SQL script execution.
BeforeExecute	Occurs when taking a specific action before executing the current SQL statement is needed.
OnError	Occurs when SQL Server raises an error.

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5.8.1.1.2 Properties

Properties of the **TDAScript** class.

For a complete list of the **TDAScript** class members, see the [TDAScript Members](#) topic.

Public

Name	Description
Connection	Used to specify the connection in which the script will be executed.
DataSet	Refers to a dataset that holds the result set of query execution.
EndLine	Used to get the current statement last line number in a script.
EndOffset	Used to get the offset in the last line of the current statement.
EndPos	Used to get the end position of the current statement.
StartLine	Used to get the current statement start line number in a script.
StartOffset	Used to get the offset in the first line of the current statement.
StartPos	Used to get the start position of the current statement in a script.
Statements	Contains a list of statements obtained from the SQL property.

Published

Name	Description
Debug	Used to display the script execution and all its parameter values.
Delimiter	Used to set the delimiter string that separates script statements.
Macros	Used to change SQL script text in design- or run-time easily.
SQL	Used to get or set script text.

See Also

- [TDAScript Class](#)
- [TDAScript Class Members](#)

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5.8.1.1.2.1 Connection Property

Used to specify the connection in which the script will be executed.

Class

[TDAScript](#)

Syntax

```
property Connection: TCustomDACConnection;
```

Remarks

Use the Connection property to specify the connection in which the script will be executed. If Connection is not connected, the [Execute](#) method calls the Connect method of Connection.

Set at design-time by selecting from the list of provided [TCustomDACConnection](#) objects.

At run-time, set the Connection property to reference an existing TCustomDACConnection object.

See Also

- [TCustomDACConnection](#)

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5.8.1.1.2.2 DataSet Property

Refers to a dataset that holds the result set of query execution.

Class

[TDAScript](#)

Syntax

```
property DataSet: TCustomDADataset;
```

Remarks

Set the DataSet property to retrieve the results of the SELECT statements execution inside a script.

See Also

- [ExecuteNext](#)
- [Execute](#)

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5.8.1.1.2.3 Debug Property

Used to display the script execution and all its parameter values.

Class

[TDAScript](#)

Syntax

```
property Debug: boolean default False;
```

Remarks

Set the Debug property to True to display the statement that is being executed and the values and types of its parameters.

You should add the SdacVcl unit to the uses clause of any unit in your project to make the Debug property work.

Note: If TMSSQLMonitor is used in the project and the TMSSQLMonitor.Active property is set to False, the debug window is not displayed.

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5.8.1.1.2.4 Delimiter Property

Used to set the delimiter string that separates script statements.

Class

[TDAScript](#)

Syntax

```
property Delimiter: string stored IsDelimiterStored;
```

Remarks

Use the Delimiter property to set the delimiter string that separates script statements. By default it is semicolon (;). You can use slash (/) to separate statements that can contain semicolon if the Delimiter property's default value is semicolon. Note that slash must be the first character in line.

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5.8.1.1.2.5 EndLine Property

Used to get the current statement last line number in a script.

Class

[TDAScript](#)

Syntax

```
property EndLine: Int64;
```

Remarks

Use the EndLine property to get the current statement last line number in a script.

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5.8.1.1.2.6 EndOffset Property

Used to get the offset in the last line of the current statement.

Class

[TDAScript](#)

Syntax

```
property EndOffset: Int64;
```

Remarks

Use the EndOffset property to get the offset in the last line of the current statement.

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5.8.1.1.2.7 EndPos Property

Used to get the end position of the current statement.

Class

[TDAScript](#)

Syntax

```
property EndPos: Int64;
```

Remarks

Use the EndPos property to get the end position of the current statement (the position of the last character in the statement) in a script.

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5.8.1.1.2.8 Macros Property

Used to change SQL script text in design- or run-time easily.

Class

[TDAScript](#)

Syntax

```
property Macros: TMacros stored False;
```

Remarks

With the help of macros you can easily change SQL script text in design- or run-time. Macros extend abilities of parameters and allow changing conditions in the WHERE clause or sort order in the ORDER BY clause. You just insert &MacroName in a SQL query text and change value of macro by the Macro property editor in design-time or the MacroByName function in run-time. In time of opening query macro is replaced by its value.

See Also

- [TMacro](#)
- [MacroByName](#)

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5.8.1.1.2.9 SQL Property

Used to get or set script text.

Class

[TDAScript](#)

Syntax

```
property SQL: TStrings;
```

Remarks

Use the SQL property to get or set script text.

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5.8.1.1.2.10 StartLine Property

Used to get the current statement start line number in a script.

Class

[TDA Script](#)

Syntax

```
property StartLine: Int64;
```

Remarks

Use the StartLine property to get the current statement start line number in a script.

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5.8.1.1.2.11 StartOffset Property

Used to get the offset in the first line of the current statement.

Class

[TDA Script](#)

Syntax

```
property StartOffset: Int64;
```

Remarks

Use the StartOffset property to get the offset in the first line of the current statement.

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5.8.1.1.2.12 StartPos Property

Used to get the start position of the current statement in a script.

Class

[TDA Script](#)

Syntax

```
property StartPos: Int64;
```

Remarks

Use the StartPos property to get the start position of the current statement (the position of the first statement character) in a script.

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5.8.1.1.2.13 Statements Property

Contains a list of statements obtained from the SQL property.

Class

[TDAScript](#)

Syntax

```
property Statements: TDASentences;
```

Remarks

Contains a list of statements that are obtained from the SQL property. Use the Access Statements property to view SQL statement, set parameters or execute the specified statement. Statements is a zero-based array of statement records. Index specifies the array element to access.

For example, consider the following script:

```
CREATE TABLE A (FIELD1 INTEGER);  
INSERT INTO A VALUES(1);  
INSERT INTO A VALUES(2);  
INSERT INTO A VALUES(3);  
CREATE TABLE B (FIELD1 INTEGER);  
INSERT INTO B VALUES(1);  
INSERT INTO B VALUES(2);  
INSERT INTO B VALUES(3);
```

Note: The list of statements is created and filled when the value of Statements property is requested. That's why the first access to the Statements property can take a long time.

Example

You can use the Statements property in the following way:

```
procedure TForm1.Button1Click(Sender: TObject);
var
  i: integer;
begin
  with Script do
    begin
      for i := 0 to Statements.Count - 1 do
        if Copy(Statements[i].SQL, 1, 6) <> 'CREATE' then
          Statements[i].Execute;
        end;
      end;
    end;
end;
```

See Also

- [TDAStatements](#)

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5.8.1.1.3 Methods

Methods of the **TDAScript** class.

For a complete list of the **TDAScript** class members, see the [TDAScript Members](#) topic.

Public

Name	Description
BreakExec	Stops script execution.
ErrorOffset	Used to get the offset of the statement if the Execute method raised an exception.
Execute	Executes a script.
ExecuteFile	Executes SQL statements contained in a file.
ExecuteNext	Executes the next statement in the script and then stops.
ExecuteStream	Executes SQL statements contained in a stream object.
FindMacro	Finds a macro with the

	specified name.
MacroByName	Finds a macro with the specified name.

See Also

- [TDAScript Class](#)
- [TDAScript Class Members](#)

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5.8.1.1.3.1 BreakExec Method

Stops script execution.

Class

[TDAScript](#)

Syntax

```
procedure BreakExec; virtual;
```

Remarks

Call the BreakExec method to stop script execution.

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5.8.1.1.3.2 ErrorOffset Method

Used to get the offset of the statement if the Execute method raised an exception.

Class

[TDAScript](#)

Syntax

```
function ErrorOffset: Int64;
```

Return Value

offset of an error.

Remarks

Call the `ErrorOffset` method to get the offset of the statement if the `Execute` method raised an exception.

See Also

- [OnError](#)

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5.8.1.1.3.3 Execute Method

Executes a script.

Class

[TDAScript](#)

Syntax

```
procedure Execute; virtual;
```

Remarks

Call the `Execute` method to execute a script. If SQL Server raises an error, the `OnError` event occurs.

See Also

- [ExecuteNext](#)
- [OnError](#)
- [ErrorOffset](#)

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5.8.1.1.3.4 ExecuteFile Method

Executes SQL statements contained in a file.

Class

[TDA Script](#)

Syntax

```
procedure ExecuteFile(const FileName: string);
```

Parameters

FileName

Holds the file name.

Remarks

Call the ExecuteFile method to execute SQL statements contained in a file. Script doesn't load full content into memory. Reading and execution is performed by blocks of 64k size. Therefore, it is optimal to use it for big files.

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5.8.1.1.3.5 ExecuteNext Method

Executes the next statement in the script and then stops.

Class

[TDA Script](#)

Syntax

```
function ExecuteNext: boolean; virtual;
```

Return Value

True, if there are any statements left in the script, False otherwise.

Remarks

Use the ExecuteNext method to execute the next statement in the script statement and stop. If SQL Server raises an error, the OnError event occurs.

See Also

- [Execute](#)
- [OnError](#)
- [ErrorOffset](#)

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5.8.1.1.3.6 ExecuteStream Method

Executes SQL statements contained in a stream object.

Class

[TDAScript](#)

Syntax

```
procedure ExecuteStream(Stream: TStream);
```

Parameters

Stream

Holds the stream object from which the statements will be executed.

Remarks

Call the ExecuteStream method to execute SQL statements contained in a stream object. Reading from the stream and execution is performed by blocks of 64k size.

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5.8.1.1.3.7 FindMacro Method

Finds a macro with the specified name.

Class

[TDAScript](#)

Syntax


```
function FindMacro(Name: string): TMacro;
```

Parameters

Name

Holds the name of a macro to search for.

Return Value

TMacro object if a match is found, nil otherwise.

Remarks

Call the FindMacro method to find a macro with the specified name. If a match is found, FindMacro returns the macro. Otherwise, it returns nil. Use this method instead of a direct reference to the [TMacros.Items](#) property to avoid depending on the order of the items.

See Also

- [TMacro](#)
- [Macros](#)
- [MacroByName](#)

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5.8.1.1.3.8 MacroByName Method

Finds a macro with the specified name.

Class

[TDAScript](#)

Syntax

```
function MacroByName(Name: string): TMacro;
```

Parameters

Name

Holds the name of a macro to search for.

Return Value

TMacro object if a match is found.

Remarks

Call the `MacroByName` method to find a macro with the specified name. If a match is found, `MacroByName` returns the macro. Otherwise, an exception is raised. Use this method instead of a direct reference to the [TMacros.Items](#) property to avoid depending on the order of the items.

To locate a parameter by name without raising an exception if the parameter is not found, use the `FindMacro` method.

To set a value to a macro, use the [TMacro.Value](#) property.

See Also

- [TMacro](#)
- [Macros](#)
- [FindMacro](#)

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5.8.1.1.4 Events

Events of the **TDAScript** class.

For a complete list of the **TDAScript** class members, see the [TDAScript Members](#) topic.

Published

Name	Description
AfterExecute	Occurs after a SQL script execution.
BeforeExecute	Occurs when taking a specific action before executing the current SQL statement is needed.
OnError	Occurs when SQL Server raises an error.

See Also

- [TDAScript Class](#)
- [TDAScript Class Members](#)

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5.8.1.1.4.1 AfterExecute Event

Occurs after a SQL script execution.

Class

[TDAScript](#)

Syntax

```
property AfterExecute: TAfterStatementExecuteEvent;
```

Remarks

Occurs after a SQL script has been executed.

See Also

- [Execute](#)

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5.8.1.1.4.2 BeforeExecute Event

Occurs when taking a specific action before executing the current SQL statement is needed.

Class

[TDAScript](#)

Syntax

```
property BeforeExecute: TBeforeStatementExecuteEvent;
```

Remarks

Write the BeforeExecute event handler to take specific action before executing the current SQL statement. SQL holds text of the current SQL statement. Write SQL to change the statement that will be executed. Set Omit to True to skip statement execution.

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5.8.1.1.4.3 OnError Event

Occurs when SQL Server raises an error.

Class

[TDAScript](#)

Syntax

```
property OnError: TOnErrorEvent;
```

Remarks

Occurs when SQL Server raises an error.

Action indicates the action to take when the OnError handler exits. On entry into the handler, Action is always set to eaFail.

See Also

- [ErrorOffset](#)

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5.8.1.2 TDASentence Class

This class has attributes and methods for controlling single SQL statement of a script.

For a list of all members of this type, see [TDASentence](#) members.

Unit

[DAScript](#)

Syntax

```
TDASentence = class(TCollectionItem);
```

Remarks

TDAScript contains SQL statements, represented as TDASentence objects. The

TDAScript class has attributes and methods for controlling single SQL statement of a script.

See Also

- [TDAScript](#)
- [TDAScripts](#)

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5.8.1.2.1 Members

[TDAScript](#) class overview.

Properties

Name	Description
EndLine	Used to determine the number of the last statement line in a script.
EndOffset	Used to get the offset in the last line of the statement.
EndPos	Used to get the end position of the statement in a script.
Omit	Used to avoid execution of a statement.
Params	Contains parameters for an SQL statement.
Script	Used to determine the TDAScript object the SQL Statement belongs to.
SQL	Used to get or set the text of an SQL statement.
StartLine	Used to determine the number of the first statement line in a script.
StartOffset	Used to get the offset in the first line of a statement.
StartPos	Used to get the start position of the statement in a script.

Methods

Name	Description
Execute	Executes a statement.

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5.8.1.2.2 Properties

Properties of the **TDASstatement** class.

For a complete list of the **TDASstatement** class members, see the [TDASstatement Members](#) topic.

Public

Name	Description
EndLine	Used to determine the number of the last statement line in a script.
EndOffset	Used to get the offset in the last line of the statement.
EndPos	Used to get the end position of the statement in a script.
Omit	Used to avoid execution of a statement.
Params	Contains parameters for an SQL statement.
Script	Used to determine the TDAScript object the SQL Statement belongs to.
SQL	Used to get or set the text of an SQL statement.
StartLine	Used to determine the number of the first statement line in a script.
StartOffset	Used to get the offset in the first line of a statement.
StartPos	Used to get the start position of the statement in a script.

See Also

- [TDASTatement Class](#)
- [TDASTatement Class Members](#)

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5.8.1.2.2.1 EndLine Property

Used to determine the number of the last statement line in a script.

Class

[TDASTatement](#)

Syntax

```
property EndLine: integer;
```

Remarks

Use the EndLine property to determine the number of the last statement line in a script.

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5.8.1.2.2.2 EndOffset Property

Used to get the offset in the last line of the statement.

Class

[TDASTatement](#)

Syntax

```
property EndOffset: integer;
```

Remarks

Use the EndOffset property to get the offset in the last line of the statement.

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5.8.1.2.2.3 EndPos Property

Used to get the end position of the statement in a script.

Class

[TDAStatement](#)

Syntax

```
property EndPos: integer;
```

Remarks

Use the EndPos property to get the end position of the statement (the position of the last character in the statement) in a script.

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5.8.1.2.2.4 Omit Property

Used to avoid execution of a statement.

Class

[TDAStatement](#)

Syntax

```
property Omit: boolean;
```

Remarks

Set the Omit property to True to avoid execution of a statement.

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5.8.1.2.2.5 Params Property

Contains parameters for an SQL statement.

Class

[TDAStatement](#)

Syntax

```
property Params: TDAParams;
```

Remarks

Contains parameters for an SQL statement.

Access Params at runtime to view and set parameter names, values, and data types dynamically. Params is a zero-based array of parameter records. Index specifies the array element to access.

See Also

- [TDAParam](#)

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5.8.1.2.2.6 Script Property

Used to determine the TDAScript object the SQL Statement belongs to.

Class

[TDAStatement](#)

Syntax

```
property Script: TDAScript;
```

Remarks

Use the Script property to determine the TDAScript object the SQL Statement belongs to.

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5.8.1.2.2.7 SQL Property

Used to get or set the text of an SQL statement.

Class

[TDASentence](#)

Syntax

```
property SQL: string;
```

Remarks

Use the SQL property to get or set the text of an SQL statement.

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5.8.1.2.2.8 StartLine Property

Used to determine the number of the first statement line in a script.

Class

[TDASentence](#)

Syntax

```
property StartLine: integer;
```

Remarks

Use the StartLine property to determine the number of the first statement line in a script.

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5.8.1.2.2.9 StartOffset Property

Used to get the offset in the first line of a statement.

Class

[TDASentence](#)

Syntax

```
property StartOffset: integer;
```

Remarks

Use the StartOffset property to get the offset in the first line of a statement.

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5.8.1.2.2.10 StartPos Property

Used to get the start position of the statement in a script.

Class

[TDASstatement](#)

Syntax

```
property StartPos: integer;
```

Remarks

Use the StartPos property to get the start position of the statement (the position of the first statement character) in a script.

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5.8.1.2.3 Methods

Methods of the **TDASstatement** class.

For a complete list of the **TDASstatement** class members, see the [TDASstatement Members](#) topic.

Public

Name	Description
Execute	Executes a statement.

See Also

- [TDASentence Class](#)
- [TDASentence Class Members](#)

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5.8.1.2.3.1 Execute Method

Executes a statement.

Class

[TDASentence](#)

Syntax

```
procedure Execute;
```

Remarks

Use the Execute method to execute a statement.

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5.8.1.3 TDASentences Class

Holds a collection of [TDASentence](#) objects.

For a list of all members of this type, see [TDASentences](#) members.

Unit

[DAScript](#)

Syntax

```
TDASentences = class(TCollection);
```

Remarks

Each TDASentences holds a collection of [TDASentence](#) objects. TDASentences maintains

an index of the statements in its `Items` array. The `Count` property contains the number of statements in the collection. Use `TDAStatements` class to manipulate script SQL statements.

See Also

- [TDAScript](#)
- [TDAStatement](#)

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5.8.1.3.1 Members

[TDAStatements](#) class overview.

Properties

Name	Description
Items	Used to access separate script statements.

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5.8.1.3.2 Properties

Properties of the **TDAStatements** class.

For a complete list of the **TDAStatements** class members, see the [TDAStatements Members](#) topic.

Public

Name	Description
Items	Used to access separate script statements.

See Also

- [TDAStatements Class](#)
- [TDAStatements Class Members](#)

5.8.1.3.2.1 Items Property(Indexer)

Used to access separate script statements.

Class

[TDAStatements](#)

Syntax

```
property Items[Index: Integer]: TDASatement; default;
```

Parameters

Index

Holds the index value.

Remarks

Use the Items property to access individual script statements. The value of the Index parameter corresponds to the Index property of [TDASatement](#).

See Also

- [TDASatement](#)

5.8.2 Types

Types in the **DAScript** unit.

Types

Name	Description
TAfterStatementExecuteEvent	This type is used for the TDAScript.AfterExecute event.
TBeforeStatementExecuteEvent	This type is used for the TDAScript.BeforeExecute event.

TOnErrorEvent	This type is used for the TDAScript.OnError event.
-------------------------------	--

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5.8.2.1 TAfterStatementExecuteEvent Procedure Reference

This type is used for the [TDAScript.AfterExecute](#) event.

Unit

[DAScript](#)

Syntax

```
TAfterStatementExecuteEvent = procedure (Sender: Tobject; SQL: string) of object;
```

Parameters

Sender
An object that raised the event.

SQL
Holds the passed SQL statement.

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5.8.2.2 TBeforeStatementExecuteEvent Procedure Reference

This type is used for the [TDAScript.BeforeExecute](#) event.

Unit

[DAScript](#)

Syntax

```
TBeforeStatementExecuteEvent = procedure (Sender: Tobject; var SQL: string; var Omit: boolean) of object;
```

Parameters

Sender
An object that raised the event.

SQL

Holds the passed SQL statement.

Omit

True, if the statement execution should be skipped.

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5.8.2.3 TOnErrorEvent Procedure Reference

This type is used for the [TDAScript.OnError](#) event.

Unit

[DAScript](#)

Syntax

```
TOnErrorEvent = procedure (Sender: TObject; E: Exception; SQL:  
string; var Action: TErrorAction) of object;
```

Parameters

Sender

An object that raised the event.

E

The error code.

SQL

Holds the passed SQL statement.

Action

The action to take when the OnError handler exits.

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5.8.3 Enumerations

Enumerations in the **DAScript** unit.

Enumerations

Name	Description
TErrorAction	Indicates the action to take when the OnError handler

exits.

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5.8.3.1 TErrorAction Enumeration

Indicates the action to take when the OnError handler exits.

Unit

[DAScript](#)

Syntax

```
TErrorAction = (eaAbort, eaFail, eaException, eaContinue);
```

Values

Value	Meaning
eaAbort	Abort execution without displaying an error message.
eaContinue	Continue execution.
eaException	In Delphi 6 and higher exception is handled by the Application.HandleException method.
eaFail	Abort execution and display an error message.

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5.9 DASQLMonitor

This unit contains the base class for the TMSSQLMonitor component.

Classes

Name	Description
TCustomDASQLMonitor	A base class that introduces properties and methods to monitor dynamic SQL execution in database applications interactively.
TDBMonitorOptions	This class holds options for

	dbMonitor.
--	------------

Types

Name	Description
TDATraceFlags	Represents the set of TDATraceFlag .
TMonitorOptions	Represents the set of TMonitorOption .
TOnSQLEvent	This type is used for the TCustomDASQLMonitor.OnSQL event.

Enumerations

Name	Description
TDATraceFlag	Use TraceFlags to specify which database operations the monitor should track in an application at runtime.
TMonitorOption	Used to define where information from SQLMonitor will be dispalyed.

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5.9.1 Classes

Classes in the **DASQLMonitor** unit.

Classes

Name	Description
TCustomDASQLMonitor	A base class that introduces properties and methods to monitor dynamic SQL execution in database applications interactively.
TDBMonitorOptions	This class holds options for dbMonitor.

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5.9.1.1 TCustomDASQLMonitor Class

A base class that introduces properties and methods to monitor dynamic SQL execution in database applications interactively.

For a list of all members of this type, see [TCustomDASQLMonitor](#) members.

Unit

[DASQLMonitor](#)

Syntax

```
TCustomDASQLMonitor = class(TComponent);
```

Remarks

TCustomDASQLMonitor is a base class that introduces properties and methods to monitor dynamic SQL execution in database applications interactively. TCustomDASQLMonitor provides two ways of displaying debug information. It monitors either by dialog window or by Borland's proprietary SQL Monitor. Furthermore to receive debug information use the [TCustomDASQLMonitor.OnSQL](#) event.

In applications use descendants of TCustomDASQLMonitor.

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5.9.1.1.1 Members

[TCustomDASQLMonitor](#) class overview.

Properties

Name	Description
Active	Used to activate monitoring of SQL.
DBMonitorOptions	Used to set options for dbMonitor.

Options	Used to include the desired properties for TCustomDASQLMonitor.
TraceFlags	Used to specify which database operations the monitor should track in an application at runtime.

Events

Name	Description
OnSQL	Occurs when tracing of SQL activity on database components is needed.

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5.9.1.1.2 Properties

Properties of the **TCustomDASQLMonitor** class.

For a complete list of the **TCustomDASQLMonitor** class members, see the [TCustomDASQLMonitor Members](#) topic.

Public

Name	Description
Active	Used to activate monitoring of SQL.
DBMonitorOptions	Used to set options for dbMonitor.
Options	Used to include the desired properties for TCustomDASQLMonitor.
TraceFlags	Used to specify which database operations the monitor should track in an application at runtime.

See Also

- [TCustomDASQLMonitor Class](#)

- [TCustomDASQLMonitor Class Members](#)

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5.9.1.1.2.1 Active Property

Used to activate monitoring of SQL.

Class

[TCustomDASQLMonitor](#)

Syntax

```
property Active: boolean default True;
```

Remarks

Set the Active property to True to activate monitoring of SQL.

See Also

- [OnSQL](#)

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5.9.1.1.2.2 DBMonitorOptions Property

Used to set options for dbMonitor.

Class

[TCustomDASQLMonitor](#)

Syntax

```
property DBMonitorOptions: TDBMonitorOptions;
```

Remarks

Use DBMonitorOptions to set options for dbMonitor.

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5.9.1.1.2.3 Options Property

Used to include the desired properties for TCustomDASQLMonitor.

Class

[TCustomDASQLMonitor](#)

Syntax

```
property Options: TMonitorOptions default [moDialog,  
moSQLMonitor, moDBMonitor, moCustom];
```

Remarks

Set Options to include the desired properties for TCustomDASQLMonitor.

See Also

- [OnSQL](#)

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5.9.1.1.2.4 TraceFlags Property

Used to specify which database operations the monitor should track in an application at runtime.

Class

[TCustomDASQLMonitor](#)

Syntax

```
property TraceFlags: TDATraceFlags default [tfQPrepare,  
tfQExecute, tfError, tfConnect, tfTransact, tfParams, tfMisc];
```

Remarks

Use the TraceFlags property to specify which database operations the monitor should track in an application at runtime.

See Also

- [OnSQL](#)

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5.9.1.1.3 Events

Events of the **TCustomDASQLMonitor** class.

For a complete list of the **TCustomDASQLMonitor** class members, see the [TCustomDASQLMonitor Members](#) topic.

Public

Name	Description
OnSQL	Occurs when tracing of SQL activity on database components is needed.

See Also

- [TCustomDASQLMonitor Class](#)
- [TCustomDASQLMonitor Class Members](#)

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5.9.1.1.3.1 OnSQL Event

Occurs when tracing of SQL activity on database components is needed.

Class

[TCustomDASQLMonitor](#)

Syntax

property OnSQL: [TONSQLEvent](#);

Remarks

Write the OnSQL event handler to let an application trace SQL activity on database components. The Text parameter holds the detected SQL statement. Use the Flag parameter to make selective processing of SQL in the handler body.

See Also

- [TraceFlags](#)

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5.9.1.2 TDBMonitorOptions Class

This class holds options for dbMonitor.

For a list of all members of this type, see [TDBMonitorOptions](#) members.

Unit

[DASQLMonitor](#)

Syntax

```
TDBMonitorOptions = class(TPersistent);
```

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5.9.1.2.1 Members

[TDBMonitorOptions](#) class overview.

Properties

Name	Description
Host	Used to set the host name or IP address of the computer where dbMonitor application runs.
Port	Used to set the port number for connecting to dbMonitor.
ReconnectTimeout	Used to set the minimum time that should be spent before reconnecting to

	dbMonitor is allowed.
SendTimeout	Used to set timeout for sending events to dbMonitor.

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5.9.1.2.2 Properties

Properties of the **TDBMonitorOptions** class.

For a complete list of the **TDBMonitorOptions** class members, see the [TDBMonitorOptions Members](#) topic.

Published

Name	Description
Host	Used to set the host name or IP address of the computer where dbMonitor application runs.
Port	Used to set the port number for connecting to dbMonitor.
ReconnectTimeout	Used to set the minimum time that should be spent before reconnecting to dbMonitor is allowed.
SendTimeout	Used to set timeout for sending events to dbMonitor.

See Also

- [TDBMonitorOptions Class](#)
- [TDBMonitorOptions Class Members](#)

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5.9.1.2.2.1 Host Property

Used to set the host name or IP address of the computer where dbMonitor application runs.

Class

[TDBMonitorOptions](#)

Syntax

```
property Host: string;
```

Remarks

Use the Host property to set the host name or IP address of the computer where dbMonitor application runs.

dbMonitor supports remote monitoring. You can run dbMonitor on a different computer than monitored application runs. In this case you need to set the Host property to the corresponding computer name.

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5.9.1.2.2.2 Port Property

Used to set the port number for connecting to dbMonitor.

Class

[TDBMonitorOptions](#)

Syntax

```
property Port: integer default DBMonitorPort;
```

Remarks

Use the Port property to set the port number for connecting to dbMonitor.

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5.9.1.2.2.3 ReconnectTimeout Property

Used to set the minimum time that should be spent before reconnecting to dbMonitor is allowed.

Class

[TDBMonitorOptions](#)

Syntax

```
property ReconnectTimeout: integer default  
DefaultReconnectTimeout;
```

Remarks

Use the ReconnectTimeout property to set the minimum time (in milliseconds) that should be spent before allowing reconnecting to dbMonitor. If an error occurs when the component sends an event to dbMonitor (dbMonitor is not running), next events are ignored and the component does not restore the connection until ReconnectTimeout is over.

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5.9.1.2.2.4 SendTimeout Property

Used to set timeout for sending events to dbMonitor.

Class

[TDBMonitorOptions](#)

Syntax

```
property SendTimeout: integer default DefaultSendTimeout;
```

Remarks

Use the SendTimeout property to set timeout (in milliseconds) for sending events to dbMonitor. If dbMonitor does not respond in the specified timeout, event is ignored.

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5.9.2 Types

Types in the **DASQLMonitor** unit.

Types

Name	Description
TDATraceFlags	Represents the set of TDATraceFlag .
TMonitorOptions	Represents the set of TMonitorOption .
TOnSQLEvent	This type is used for the TCustomDASQLMonitor.OnSQL event.

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5.9.2.1 TDATraceFlags Set

Represents the set of [TDATraceFlag](#).

Unit

[DASQLMonitor](#)

Syntax

```
TDATraceFlags = set of TDATraceFlag;
```

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5.9.2.2 TMonitorOptions Set

Represents the set of [TMonitorOption](#).

Unit

[DASQLMonitor](#)

Syntax

```
TMonitorOptions = set of TMonitorOption;
```

5.9.2.3 TOnSQLEvent Procedure Reference

This type is used for the [TCustomDASQLMonitor.OnSQL](#) event.

Unit

[DASQLMonitor](#)

Syntax

```
TOnSQLEvent = procedure (Sender: TObject; Text: string; Flag: TDATraceFlag) of object;
```

Parameters

Sender

An object that raised the event.

Text

Holds the detected SQL statement.

Flag

Use the Flag parameter to make selective processing of SQL in the handler body.

5.9.3 Enumerations

Enumerations in the **DASQLMonitor** unit.

Enumerations

Name	Description
TDATraceFlag	Use TraceFlags to specify which database operations the monitor should track in an application at runtime.
TMonitorOption	Used to define where information from SQLMonitor will be dispalyed.

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5.9.3.1 TDATraceFlag Enumeration

Use TraceFlags to specify which database operations the monitor should track in an application at runtime.

Unit

[DASQLMonitor](#)

Syntax

```
TDATraceFlag = (tfQPrepare, tfQExecute, tfQFetch, tfError, tfStmt,
tfConnect, tfTransact, tfBlob, tfService, tfMisc, tfParams,
tfObjDestroy, tfPool);
```

Values

Value	Meaning
tfBlob	This option is declared for future use.
tfConnect	Establishing a connection.
tfError	Errors of query execution.
tfMisc	This option is declared for future use.
tfObjDestroy	Destroying of components.
tfParams	Representing parameter values for tfQPrepare and tfQExecute.
tfPool	Connection pool operations.
tfQExecute	Execution of the queries.
tfQFetch	This option is declared for future use.
tfQPrepare	Queries preparation.
tfService	This option is declared for future use.
tfStmt	This option is declared for future use.
tfTransact	Processing transactions.

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5.9.3.2 TMonitorOption Enumeration

Used to define where information from SQLMonitor will be displayed.

Unit

[DASQLMonitor](#)

Syntax

```
TMonitorOption = (moDialog, moSQLMonitor, moDBMonitor, moCustom, moHandled);
```

Values

Value	Meaning
moCustom	Monitoring of SQL for individual components is allowed. Set Debug properties in SQL-related components to True to let TCustomDASQLMonitor instance to monitor their behavior. Has effect when moDialog is included.
moDBMonitor	Debug information is displayed in DBMonitor .
moDialog	Debug information is displayed in debug window.
moHandled	Component handle is included into the event description string.
moSQLMonitor	Debug information is displayed in Borland SQL Monitor.

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5.10 DBAccess

This unit contains base classes for most of the components.

Classes

Name	Description
EDAEError	A base class for exceptions that are raised when an error occurs on the server side.
TCRDataSource	Provides an interface between a DAC dataset components and data-aware controls on a form.

TCustomConnectDialog	A base class for the connect dialog components.
TCustomDAConnection	A base class for components used to establish connections.
TCustomDADataset	Encapsulates general set of properties, events, and methods for working with data accessed through various database engines.
TCustomDASQL	A base class for components executing SQL statements that do not return result sets.
TCustomDAUpdateSQL	A base class for components that provide DML statements for more flexible control over data modifications.
TDACondition	Represents a condition from the TDAConditions list.
TDAConditions	Holds a collection of TDACondition objects.
TDAConnectionOptions	This class allows setting up the behaviour of the TDAConnection class.
TDAConnectionSSLOptions	This class is used to set up the SSL options.
TDADatasetOptions	This class allows setting up the behaviour of the TDADataset class.
TDAEncryption	Used to specify the options of the data encryption in a dataset.
TDAMapRule	Class that forms rules for Data Type Mapping.
TDAMapRules	Used for adding rules for DataSet fields mapping with both identifying by field name and by field type and Delphi field types.
TDAMetaData	A class for retrieving metainformation of the specified database objects

	in the form of dataset.
TDAParam	A class that forms objects to represent the values of the parameters set .
TDAParams	This class is used to manage a list of TDAParam objects for an object that uses field parameters.
TDATransaction	A base class that implements functionality for controlling transactions.
TMacro	Object that represents the value of a macro.
TMacros	Controls a list of TMacro objects for the TCustomDASQL.Macros or TCustomDADataset components.
TPoolingOptions	This class allows setting up the behaviour of the connection pool.
TSmartFetchOptions	Smart fetch options are used to set up the behavior of the SmartFetch mode.

Types

Name	Description
TAfterExecuteEvent	This type is used for the TCustomDADataset.AfterExecute and TCustomDASQL.AfterExecute events.
TAfterFetchEvent	This type is used for the TCustomDADataset.AfterFetch event.
TBeforeFetchEvent	This type is used for the TCustomDADataset.BeforeFetch event.
TConnectionLostEvent	This type is used for the TCustomDAConnection.OnConnectionLost event.
TDAConnectionErrorEvent	This type is used for the TCustomDAConnection.On

	Error event.
TDATransactionErrorEvent	This type is used for the TDATransaction.OnError event.
TRefreshOptions	Represents the set of TRefreshOption .
TUpdateExecuteEvent	This type is used for the TCustomDADDataSet.AfterUpdateExecute and TCustomDADDataSet.BeforeUpdateExecute events.

Enumerations

Name	Description
TLabelSet	Sets the language of labels in the connect dialog.
TLockMode	Specifies the lock mode.
TRefreshOption	Indicates when the editing record will be refreshed.
TRetryMode	Specifies the application behavior when connection is lost.

Variables

Name	Description
BaseSQLOldBehavior	After assigning SQL text and modifying it by AddWhere , DeleteWhere , and SetOrderBy , all subsequent changes of the SQL property will not be reflected in the BaseSQL property.
ChangeCursor	When set to True allows data access components to change screen cursor for the execution time.
SQLGeneratorCompatibility	The value of the TCustomDADDataSet.BaseSQL property is used to complete the refresh SQL

	statement, if the manually assigned TCustomDAUpdateSQL.RefreshSQL property contains only WHERE clause.
--	--

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5.10.1 Classes

Classes in the **DBAccess** unit.

Classes

Name	Description
EDAEError	A base class for exceptions that are raised when an error occurs on the server side.
TCRDataSource	Provides an interface between a DAC dataset components and data-aware controls on a form.
TCustomConnectDialog	A base class for the connect dialog components.
TCustomDACConnection	A base class for components used to establish connections.
TCustomDADataset	Encapsulates general set of properties, events, and methods for working with data accessed through various database engines.
TCustomDASQL	A base class for components executing SQL statements that do not return result sets.
TCustomDAUpdateSQL	A base class for components that provide DML statements for more flexible control over data modifications.
TDACCondition	Represents a condition from the TDACConditions list.

TDAConditions	Holds a collection of TDACondition objects.
TDACConnectionOptions	This class allows setting up the behaviour of the TDACConnection class.
TDACConnectionSSLOptions	This class is used to set up the SSL options.
TDADatasetOptions	This class allows setting up the behaviour of the TDADataset class.
TDAEncryption	Used to specify the options of the data encryption in a dataset.
TDAMapRule	Class that forms rules for Data Type Mapping.
TDAMapRules	Used for adding rules for DataSet fields mapping with both identifying by field name and by field type and Delphi field types.
TDAMetaData	A class for retrieving metainformation of the specified database objects in the form of dataset.
TDAParam	A class that forms objects to represent the values of the parameters set .
TDAParams	This class is used to manage a list of TDAParam objects for an object that uses field parameters.
TDATransaction	A base class that implements functionality for controlling transactions.
TMacro	Object that represents the value of a macro.
TMacros	Controls a list of TMacro objects for the TCustomDASQL.Macros or TCustomDADataset components.
TPoolingOptions	This class allows setting up the behaviour of the connection pool.

TSmartFetchOptions	Smart fetch options are used to set up the behavior of the SmartFetch mode.
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5.10.1.1 EDAError Class

A base class for exceptions that are raised when an error occurs on the server side.

For a list of all members of this type, see [EDAError](#) members.

Unit

[DBAccess](#)

Syntax

```
EDAError = class(EDatabaseError);
```

Remarks

EDAError is a base class for exceptions that are raised when an error occurs on the server side.

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5.10.1.1.1 Members

[EDAError](#) class overview.

Properties

Name	Description
Component	Contains the component that caused the error.
ErrorCode	Determines the error code returned by the server.

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5.10.1.1.2 Properties

Properties of the **EDAEError** class.

For a complete list of the **EDAEError** class members, see the [EDAEError Members](#) topic.

Public

Name	Description
Component	Contains the component that caused the error.
ErrorCode	Determines the error code returned by the server.

See Also

- [EDAEError Class](#)
- [EDAEError Class Members](#)

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5.10.1.1.2.1 Component Property

Contains the component that caused the error.

Class

[EDAEError](#)

Syntax

```
property Component: TObject;
```

Remarks

The Component property contains the component that caused the error.

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5.10.1.1.2.2 ErrorCode Property

Determines the error code returned by the server.

Class

[EDAEError](#)

Syntax

```
property ErrorCode: integer;
```

Remarks

Use the ErrorCode property to determine the error code returned by SQL Server. This value is always positive.

In SQL Server it's preferable to use EOLEDBError.OLEDBErrorCode and EMSError.MSSQLErrorCode instead of EDAError.ErrorCode.

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5.10.1.2 TCRDataSource Class

Provides an interface between a DAC dataset components and data-aware controls on a form.

For a list of all members of this type, see [TCRDataSource](#) members.

Unit

[DBAccess](#)

Syntax

```
TCRDataSource = class(TDataSource);
```

Remarks

TCRDataSource provides an interface between a DAC dataset components and data-aware controls on a form.

TCRDataSource inherits its functionality directly from the TDataSource component.

At design time assign individual data-aware components' DataSource properties from their drop-down listboxes.

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5.10.1.2.1 Members

[TCRDataSource](#) class overview.

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5.10.1.3 TCustomConnectDialog Class

A base class for the connect dialog components.

For a list of all members of this type, see [TCustomConnectDialog](#) members.

Unit

[DBAccess](#)

Syntax

```
TCustomConnectDialog = class(TComponent);
```

Remarks

TCustomConnectDialog is a base class for the connect dialog components. It provides functionality to show a dialog box where user can edit username, password and server name before connecting to a database. You can customize captions of buttons and labels by their properties.

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5.10.1.3.1 Members

[TCustomConnectDialog](#) class overview.

Properties

Name	Description
CancelButton	Used to specify the label for the Cancel button.
Caption	Used to set the caption of dialog box.
ConnectButton	Used to specify the label for the Connect button.
DialogClass	Used to specify the class of the form that will be displayed to enter login information.
LabelSet	Used to set the language of buttons and labels captions.
PasswordLabel	Used to specify a prompt for password edit.
Retries	Used to indicate the number of retries of failed connections.
SavePassword	Used for the password to be displayed in ConnectDialog in asterisks.
ServerLabel	Used to specify a prompt for the server name edit.
StoreLogInfo	Used to specify whether the login information should be kept in system registry after a connection was established.
UsernameLabel	Used to specify a prompt for username edit.

Methods

Name	Description
Execute	Displays the connect dialog and calls the connection's Connect method when user clicks the Connect button.
GetServerList	Retrieves a list of available server names.

5.10.1.3.2 Properties

Properties of the **TCustomConnectDialog** class.

For a complete list of the **TCustomConnectDialog** class members, see the [TCustomConnectDialog Members](#) topic.

Public

Name	Description
CancelButton	Used to specify the label for the Cancel button.
Caption	Used to set the caption of dialog box.
ConnectButton	Used to specify the label for the Connect button.
DialogClass	Used to specify the class of the form that will be displayed to enter login information.
LabelSet	Used to set the language of buttons and labels captions.
PasswordLabel	Used to specify a prompt for password edit.
Retries	Used to indicate the number of retries of failed connections.
SavePassword	Used for the password to be displayed in ConnectDialog in asterisks.
ServerLabel	Used to specify a prompt for the server name edit.
StoreLogInfo	Used to specify whether the login information should be kept in system registry after a connection was established.
UsernameLabel	Used to specify a prompt for username edit.

See Also

- [TCustomConnectDialog Class](#)

- [TCustomConnectDialog Class Members](#)

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5.10.1.3.2.1 CancelButton Property

Used to specify the label for the Cancel button.

Class

[TCustomConnectDialog](#)

Syntax

```
property CancelButton: string;
```

Remarks

Use the CancelButton property to specify the label for the Cancel button.

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5.10.1.3.2.2 Caption Property

Used to set the caption of dialog box.

Class

[TCustomConnectDialog](#)

Syntax

```
property Caption: string;
```

Remarks

Use the Caption property to set the caption of dialog box.

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5.10.1.3.2.3 ConnectButton Property

Used to specify the label for the Connect button.

Class

[TCustomConnectDialog](#)

Syntax

```
property ConnectButton: string;
```

Remarks

Use the ConnectButton property to specify the label for the Connect button.

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5.10.1.3.2.4 DialogClass Property

Used to specify the class of the form that will be displayed to enter login information.

Class

[TCustomConnectDialog](#)

Syntax

```
property DialogClass: string;
```

Remarks

Use the DialogClass property to specify the class of the form that will be displayed to enter login information. When this property is blank, TCustomConnectDialog uses the default form - TConnectForm. You can write your own login form to enter login information and assign its class name to the DialogClass property. Each login form must have ConnectDialog: TCustomConnectDialog published property to access connection information. For details see the implementation of the connect form which sources are in the Lib subdirectory of the SDAC installation directory.

See Also

- [GetServerList](#)

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5.10.1.3.2.5 LabelSet Property

Used to set the language of buttons and labels captions.

Class

[TCustomConnectDialog](#)

Syntax

```
property LabelSet: TLabelSet default IsEnglish;
```

Remarks

Use the LabelSet property to set the language of labels and buttons captions.

The default value is IsEnglish.

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5.10.1.3.2.6 PasswordLabel Property

Used to specify a prompt for password edit.

Class

[TCustomConnectDialog](#)

Syntax

```
property PasswordLabel: string;
```

Remarks

Use the PasswordLabel property to specify a prompt for password edit.

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5.10.1.3.2.7 Retries Property

Used to indicate the number of retries of failed connections.

Class

[TCustomConnectDialog](#)

Syntax

```
property Retries: word default 3;
```

Remarks

Use the Retries property to determine the number of retries of failed connections.

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5.10.1.3.2.8 SavePassword Property

Used for the password to be displayed in ConnectDialog in asterisks.

Class

[TCustomConnectDialog](#)

Syntax

```
property SavePassword: boolean default False;
```

Remarks

If True, and the Password property of the connection instance is assigned, the password in ConnectDialog is displayed in asterisks.

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5.10.1.3.2.9 ServerLabel Property

Used to specify a prompt for the server name edit.

Class

[TCustomConnectDialog](#)

Syntax

```
property ServerLabel: string;
```

Remarks

Use the ServerLabel property to specify a prompt for the server name edit.

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5.10.1.3.2.10 StoreLogInfo Property

Used to specify whether the login information should be kept in system registry after a connection was established.

Class

[TCustomConnectDialog](#)

Syntax

```
property StoreLogInfo: boolean default True;
```

Remarks

Use the StoreLogInfo property to specify whether to keep login information in system registry after a connection was established using provided username, password and servername.

Set this property to True to store login information.

The default value is True.

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5.10.1.3.2.11 UsernameLabel Property

Used to specify a prompt for username edit.

Class

[TCustomConnectDialog](#)

Syntax

```
property UsernameLabel: string;
```

Remarks

Use the UsernameLabel property to specify a prompt for username edit.

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5.10.1.3.3 Methods

Methods of the **TCustomConnectDialog** class.

For a complete list of the **TCustomConnectDialog** class members, see the

[TCustomConnectDialog Members](#) topic.

Public

Name	Description
Execute	Displays the connect dialog and calls the connection's Connect method when user clicks the Connect button.
GetServerList	Retrieves a list of available server names.

See Also

- [TCustomConnectDialog Class](#)
- [TCustomConnectDialog Class Members](#)

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5.10.1.3.3.1 Execute Method

Displays the connect dialog and calls the connection's Connect method when user clicks the Connect button.

Class

[TCustomConnectDialog](#)

Syntax

```
function Execute: boolean; virtual;
```

Return Value

True, if connected.

Remarks

Displays the connect dialog and calls the connection's Connect method when user clicks the Connect button. Returns True if connected. If user clicks Cancel, Execute returns False.

In the case of failed connection Execute offers to connect repeat [Retries](#) times.

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5.10.1.3.3.2 GetServerList Method

Retrieves a list of available server names.

Class

[TCustomConnectDialog](#)

Syntax

```
procedure GetServerList(List: TStrings); virtual;
```

Parameters

List

Holds a list of available server names.

Remarks

Call the GetServerList method to retrieve a list of available server names. It is particularly relevant for writing custom login form.

See Also

- [DialogClass](#)

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5.10.1.4 TCustomDACConnection Class

A base class for components used to establish connections.

For a list of all members of this type, see [TCustomDACConnection](#) members.

Unit

[DBAccess](#)

Syntax

```
TCustomDACConnection = class(TCustomConnection);
```

Remarks

TCustomDACConnection is a base class for components that establish connection with database, provide customised login support, and perform transaction control.

Do not create instances of TCustomDACConnection. To add a component that represents a connection to a source of data, use descendants of the TCustomDACConnection class.

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5.10.1.4.1 Members

[TCustomDACConnection](#) class overview.

Properties

Name	Description
ConnectDialog	Allows to link a TCustomConnectDialog component.
ConnectionString	Used to specify the connection information, such as: UserName, Password, Server, etc.
ConvertEOL	Allows customizing line breaks in string fields and

	parameters.
InTransaction	Indicates whether the transaction is active.
LoginPrompt	Specifies whether a login dialog appears immediately before opening a new connection.
Options	Specifies the connection behavior.
Password	Serves to supply a password for login.
Pooling	Enables or disables using connection pool.
PoolingOptions	Specifies the behaviour of connection pool.
Server	Serves to supply the server name for login.
Username	Used to supply a user name for login.

Methods

Name	Description
ApplyUpdates	Overloaded. Applies changes in datasets.
Commit	Commits current transaction.
Connect	Establishes a connection to the server.
CreateSQL	Creates a component for queries execution.
Disconnect	Performs disconnect.
ExecProc	Allows to execute stored procedure or function providing its name and parameters.
ExecProcEx	Allows to execute a stored procedure or function.
ExecSQL	Executes a SQL statement with parameters.
ExecSQLEx	Executes any SQL statement outside the TQuery or TSQL

	components.
GetDatabaseNames	Returns a database list from the server.
GetKeyFieldNames	Provides a list of available key field names.
GetStoredProcNames	Returns a list of stored procedures from the server.
GetTableNames	Provides a list of available tables names.
MonitorMessage	Sends a specified message through the TCustomDASQLMonitor component.
Ping	Used to check state of connection to the server.
RemoveFromPool	Marks the connection that should not be returned to the pool after disconnect.
Rollback	Discards all current data changes and ends transaction.
StartTransaction	Begins a new user transaction.

Events

Name	Description
OnConnectionLost	This event occurs when connection was lost.
OnError	This event occurs when an error has arisen in the connection.

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5.10.1.4.2 Properties

Properties of the **TCustomDACConnection** class.

For a complete list of the **TCustomDACConnection** class members, see the

[TCustomDACConnection Members](#) topic.

Public

Name	Description
ConnectDialog	Allows to link a TCustomConnectDialog component.
ConnectionString	Used to specify the connection information, such as: UserName, Password, Server, etc.
ConvertEOL	Allows customizing line breaks in string fields and parameters.
InTransaction	Indicates whether the transaction is active.
LoginPrompt	Specifies whether a login dialog appears immediately before opening a new connection.
Options	Specifies the connection behavior.
Password	Serves to supply a password for login.
Pooling	Enables or disables using connection pool.
PoolingOptions	Specifies the behaviour of connection pool.
Server	Serves to supply the server name for login.
Username	Used to supply a user name for login.

See Also

- [TCustomDACConnection Class](#)
- [TCustomDACConnection Class Members](#)

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5.10.1.4.2.1 ConnectDialog Property

Allows to link a [TCustomConnectDialog](#) component.

Class

[TCustomDAConnection](#)

Syntax

```
property ConnectDialog: TCustomConnectDialog;
```

Remarks

Use the ConnectDialog property to assign to connection a [TCustomConnectDialog](#) component.

See Also

- [TCustomConnectDialog](#)

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5.10.1.4.2.2 ConnectString Property

Used to specify the connection information, such as: UserName, Password, Server, etc.

Class

[TCustomDAConnection](#)

Syntax

```
property ConnectString: string stored False;
```

Remarks

SDAC recognizes an ODBC-like syntax in provider string property values. Within the string, elements are delimited by using a semicolon. Each element consists of a keyword, an equal sign character, and the value passed on initialization. For example:

```
Server=London1;User ID=nancyd
```

Connection parameters

The following connection parameters can be used to customize connection:

Parameter Name	Description
LoginPrompt	Specifies whether a login dialog appears immediately before opening a new connection.
Pooling	Enables or disables using connection pool.
ConnectionLifeTime	Used to specify the maximum time during which an opened connection can be used by connection pool.
MaxPoolSize	Used to specify the maximum number of connections that can be opened in connection pool.
MinPoolSize	Used to specify the minimum number of connections that can be opened in connection pool.
Validate Connection	Used for a connection to be validated when it is returned from the pool.
Server	Serves to supply the server name for login.
Database (If prCompact)	Used to specify the database name that is a default source of data for SQL queries once a connection is established.
Username	Used to supply a user name for login.
Password	Serves to supply a password for login.
Port	Used to specify the port number for the connection.
ConnectionTimeout	Used to specify the amount of time before an attempt to make a connection is considered unsuccessful.
Provider	Used to specify a provider from the list of supported providers.
ForceCreateDatabase	Used to force TMSConnection to create a new database before opening a connection, if the database is not exists.
Encrypt	Specifies if data should be encrypted before sending it over the network.
Integrated Security, Trusted Connection	Used to specify the authentication service used by the database server to identify a user.
Language	Specifies the SQL Server language name.
PersistSecurityInfo	Used to allow the data source object to persist sensitive authentication information such as a password along with other authentication information.

AutoTranslate	Used to translate character strings sent between the client and server by converting through Unicode.
NetworkLibrary	Specifies the name of the Net-Library (DLL) used to communicate with an instance of SQL Server.
ApplicationName	The name of a client application. The default value is the name of the executable file of your application.
WorkstationID	A string identifying the workstation.
PacketSize	Network packet size in bytes.
InitialFileName	Specifies the name of the main database file.
MultipleActiveResultSets	Enables support for the Multiple Active Result Sets (MARS) technology.
FailoverPartner	Specifies the SQL Server name to which SQL Native Client will reconnect when a failover of the principal SQL Server occurs.
TrustServerCertificate	Used to enable traffic encryption without validation.
ApplicationIntent	Used to specify the application workload type when connecting to a server.

See Also

- [Password](#)
- [Username](#)
- [Server](#)
- [Connect](#)

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5.10.1.4.2.3 ConvertEOL Property

Allows customizing line breaks in string fields and parameters.

Class

[TCustomDACConnection](#)

Syntax


```
property ConvertEOL: boolean default False;
```

Remarks

Affects the line break behavior in string fields and parameters. When fetching strings (including the TEXT fields) with ConvertEOL = True, dataset converts their line breaks from the LF to CRLF form. And when posting strings to server with ConvertEOL turned on, their line breaks are converted from CRLF to LF form. By default, strings are not converted.

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5.10.1.4.2.4 InTransaction Property

Indicates whether the transaction is active.

Class

[TCustomDACConnection](#)

Syntax

```
property InTransaction: boolean;
```

Remarks

Examine the InTransaction property at runtime to determine whether user transaction is currently in progress. In other words InTransaction is set to True when user explicitly calls [StartTransaction](#). Calling [Commit](#) or [Rollback](#) sets InTransaction to False. The value of the InTransaction property cannot be changed directly.

See Also

- [StartTransaction](#)
- [Commit](#)
- [Rollback](#)

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5.10.1.4.2.5 LoginPrompt Property

Specifies whether a login dialog appears immediately before opening a new connection.

Class

[TCustomDACConnection](#)

Syntax

```
property LoginPrompt default DefValLoginPrompt;
```

Remarks

Specifies whether a login dialog appears immediately before opening a new connection. If [ConnectDialog](#) is not specified, the default connect dialog will be shown. The connect dialog will appear only if the SdacVcl unit appears to the uses clause.

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5.10.1.4.2.6 Options Property

Specifies the connection behavior.

Class

[TCustomDACConnection](#)

Syntax

```
property Options: TDACConnectionOptions;
```

Remarks

Set the properties of Options to specify the behaviour of the connection.

Descriptions of all options are in the table below.

Option Name	Description
AllowImplicitConnect	Specifies whether to allow or not implicit connection opening.
DefaultSortType	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the

	field name in the TMemDataSet.IndexFieldNames property of a dataset.
DisconnectedMode	Used to open a connection only when needed for performing a server call and closes after performing the operation.
KeepDesignConnected	Used to prevent an application from establishing a connection at the time of startup.
LocalFailover	If True, the OnConnectionLost event occurs and a failover operation can be performed after connection breaks.

See Also

- [Disconnected Mode](#)
- [Working in an Unstable Network](#)

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5.10.1.4.2.7 Password Property

Serves to supply a password for login.

Class

[TCustomDACConnection](#)

Syntax

```
property Password: string stored False;
```

Remarks

Use the Password property to supply a password to handle server's request for a login.

Warning: Storing hard-coded user name and password entries as property values or in code for the OnLogin event handler can compromise server security.

See Also

- [Username](#)

- [Server](#)

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5.10.1.4.2.8 Pooling Property

Enables or disables using connection pool.

Class

[TCustomDACConnection](#)

Syntax

```
property Pooling: boolean default DefValPooling;
```

Remarks

Normally, when TCustomDACConnection establishes connection with the server it takes server memory and time resources for allocating new server connection. For example, pooling can be very useful when using disconnect mode. If an application has wide user activity that forces many connect/disconnect operations, it may spend a lot of time on creating connection and sending requests to the server. TCustomDACConnection has software pool which stores open connections with identical parameters.

Connection pool uses separate thread that validates the pool every 30 seconds. Pool validation consists of checking each connection in the pool. If a connection is broken due to a network problem or another reason, it is deleted from the pool. The validation procedure removes also connections that are not used for a long time even if they are valid from the pool.

Set Pooling to True to enable pooling. Specify correct values for PoolingOptions. Two connections belong to the same pool if they have identical values for the parameters: [MinPoolSize](#), [MaxPoolSize](#), [Validate](#), [ConnectionLifeTime](#), [Server](#), [Username](#), [Password](#), [TCustomMSConnection.Database](#), [TCustomMSConnection.IsolationLevel](#), [TMSConnection.Authentication](#), [QuotedIdentifier](#), [Provider](#), [Language](#), [Encrypt](#), [PersistSecurityInfo](#), [AutoTranslate](#), [NetworkLibrary](#), [ApplicationName](#), [WorkstationID](#), [PacketSize](#).

Note: Using Pooling := True can cause errors with working with temporary tables.

See Also

- [Username](#)
- [Password](#)
- [PoolingOptions](#)
- [Connection Pooling](#)

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5.10.1.4.2.9 PoolingOptions Property

Specifies the behaviour of connection pool.

Class

[TCustomDAConnection](#)

Syntax

```
property PoolingOptions: TPoolingOptions;
```

Remarks

Set the properties of PoolingOptions to specify the behaviour of connection pool.

Descriptions of all options are in the table below.

Option Name	Description
ConnectionLifetime	Used to specify the maximum time during which an open connection can be used by connection pool.
MaxPoolSize	Used to specify the maximum number of connections that can be opened in connection pool.
MinPoolSize	Used to specify the minimum number of connections that can be opened in the connection pool.
PoolId	Used to specify an ID for a connection pool.
Validate	Used for a connection to be validated when it is returned from the pool.

See Also

- [Pooling](#)

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5.10.1.4.2.10 Server Property

Serves to supply the server name for login.

Class

[TCustomDACConnection](#)

Syntax

```
property Server: string;
```

Remarks

Use the Server property to supply server name to handle server's request for a login. If this property is not set, SDAC tries to connect to '(local)'.

If this property is not set, SDAC tries to connect to '(local)'.

See Also

- [Username](#)
- [Password](#)

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5.10.1.4.2.11 Username Property

Used to supply a user name for login.

Class

[TCustomDACConnection](#)

Syntax

```
property Username: string;
```

Remarks

Use the Username property to supply a user name to handle server's request for login. If this property is not set, SDAC tries to connect with the sa user name.

Warning: Storing hard-coded user name and password entries as property values or in code for the OnLogin event handler can compromise server security.

See Also

- [Password](#)
- [Server](#)

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5.10.1.4.3 Methods

Methods of the **TCustomDACConnection** class.

For a complete list of the **TCustomDACConnection** class members, see the [TCustomDACConnection Members](#) topic.

Public

Name	Description
ApplyUpdates	Overloaded. Applies changes in datasets.
Commit	Commits current transaction.
Connect	Establishes a connection to the server.
CreateSQL	Creates a component for queries execution.
Disconnect	Performs disconnect.
ExecProc	Allows to execute stored procedure or function providing its name and parameters.
ExecProcEx	Allows to execute a stored

	procedure or function.
ExecSQL	Executes a SQL statement with parameters.
ExecSQLEx	Executes any SQL statement outside the TQuery or TSQL components.
GetDatabaseNames	Returns a database list from the server.
GetKeyFieldNames	Provides a list of available key field names.
GetStoredProcNames	Returns a list of stored procedures from the server.
GetTableNames	Provides a list of available tables names.
MonitorMessage	Sends a specified message through the TCustomDASQLMonitor component.
Ping	Used to check state of connection to the server.
RemoveFromPool	Marks the connection that should not be returned to the pool after disconnect.
Rollback	Discards all current data changes and ends transaction.
StartTransaction	Begins a new user transaction.

See Also

- [TCustomDAConnection Class](#)
- [TCustomDAConnection Class Members](#)

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5.10.1.4.3.1 ApplyUpdates Method

Applies changes in datasets.

Class

[TCustomDAConnection](#)

Overload List

Name	Description
ApplyUpdates	Applies changes from all active datasets.
ApplyUpdates(const DataSets: array of TCustomDADataSet)	Applies changes from the specified datasets.

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Applies changes from all active datasets.

Class

[TCustomDAConnection](#)

Syntax

```
procedure ApplyUpdates; overload; virtual;
```

Remarks

Call the ApplyUpdates method to write all pending cached updates from all active datasets attached to this connection to a database or from specific datasets. The ApplyUpdates method passes cached data to the database for storage, takes care of committing or rolling back transactions, and clearing the cache when the operation is successful.

Using ApplyUpdates for connection is a preferred method of updating datasets rather than calling each individual dataset's ApplyUpdates method.

See Also

- [TMemDataSet.CachedUpdates](#)
- [TMemDataSet.ApplyUpdates](#)

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Applies changes from the specified datasets.

Class

[TCustomDAConnection](#)

Syntax

```
procedure ApplyUpdates(const DataSets: array of  
TCustomDADataSet); overload; virtual;
```

Parameters

DataSets

A list of datasets changes in which are to be applied.

Remarks

Call the ApplyUpdates method to write all pending cached updates from the specified datasets. The ApplyUpdates method passes cached data to the database for storage, takes care of committing or rolling back transactions and clearing the cache when operation is successful.

Using ApplyUpdates for connection is a preferred method of updating datasets rather than calling each individual dataset's ApplyUpdates method.

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5.10.1.4.3.2 Commit Method

Commits current transaction.

Class

[TCustomDAConnection](#)

Syntax

```
procedure Commit; virtual;
```

Remarks

Call the Commit method to commit current transaction. On commit server writes

permanently all pending data updates associated with the current transaction to the database and then ends the transaction. The current transaction is the last transaction started by calling StartTransaction.

See Also

- [Rollback](#)
- [StartTransaction](#)
- [TCustomMSDataSet.FetchAll](#)

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5.10.1.4.3.3 Connect Method

Establishes a connection to the server.

Class

[TCustomDACConnection](#)

Syntax

```
procedure Connect; overload; procedure Connect(const
ConnectString: string); overload;
```

Remarks

Call the Connect method to establish a connection to the server. Connect sets the Connected property to True. If LoginPrompt is True, Connect prompts user for login information as required by the server, or otherwise tries to establish a connection using values provided in the [Username](#), [Password](#), and [Server](#) properties.

Note, if you would like to use SDAC in service, console or just at a separate thread, you need to call Colnitalize for each thread. Also remember to call CoUnInitialize at the end of a thread.

See Also

- [Disconnect](#)
- [Username](#)
- [Password](#)

- [Server](#)
- [ConnectDialog](#)

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5.10.1.4.3.4 CreateSQL Method

Creates a component for queries execution.

Class

[TCustomDACConnection](#)

Syntax

```
function CreateSQL: TCustomDASQL; virtual;
```

Return Value

A new instance of the class.

Remarks

Call the CreateSQL to return a new instance of the [TCustomDASQL](#) class and associates it with this connection object. In the descendant classes this method should be overridden to create an appropriate descendant of the TCustomDASQL component.

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5.10.1.4.3.5 Disconnect Method

Performs disconnect.

Class

[TCustomDACConnection](#)

Syntax

```
procedure Disconnect;
```

Remarks

Call the Disconnect method to drop a connection to database. Before the connection component is deactivated, all associated datasets are closed. Calling Disconnect is similar to setting the Connected property to False.

In most cases, closing a connection frees system resources allocated to the connection.

If user transaction is active, e.g. the [InTransaction](#) flag is set, calling to Disconnect rolls back the current user transaction.

Note: If a previously active connection is closed and then reopened, any associated datasets must be individually reopened; reopening the connection does not automatically reopen associated datasets.

See Also

- [Connect](#)

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5.10.1.4.3.6 ExecProc Method

Allows to execute stored procedure or function providing its name and parameters.

Class

[TCustomDACConnection](#)

Syntax

```
function ExecProc(const Name: string; const Params: array of
variant): variant; virtual;
```

Parameters

Name

Holds the name of the stored procedure or function.

Params

Holds the parameters of the stored procedure or function.

Return Value

the result of the stored procedure.

Remarks

Allows to execute stored procedure or function providing its name and parameters.

Use the following Name value syntax for executing specific overloaded routine:

"StoredProcName:1" or "StoredProcName:5". The first example executes the first overloaded stored procedure, while the second example executes the fifth overloaded procedure.

Assign parameters' values to the Params array in exactly the same order and number as they appear in the stored procedure declaration. Out parameters of the procedure can be accessed with the ParamByName procedure.

If the value of an input parameter was not included to the Params array, parameter default value is taken. Only parameters at the end of the list can be unincluded to the Params array. If the parameter has no default value, the NULL value is sent.

Note: Stored functions unlike stored procedures return result values that are obtained internally through the RESULT parameter. You will no longer have to provide anonymous value in the Params array to describe the result of the function. The stored function result is obtained from the Params[0] indexed property or with the ParamByName('RESULT') method call.

For further examples of parameter usage see [ExecSQL](#), [ExecSQLEx](#).

Example

For example, having stored function declaration presented in Example 1), you may execute it and retrieve its result with commands presented in Example 2):

```
Example 1)
CREATE procedure MY_SUM (
    A INTEGER,
    B INTEGER)
RETURNS (
    RESULT INTEGER)
as
begin
    Result = a + b;
end;
Example 2)
Label1.Caption:= MyMSConnection1.ExecProc('My_Sum', [10, 20]);
Label2.Caption:= MyMSConnection1.ParamByName('Result').AsString;
```

See Also

- [ExecProcEx](#)
- [ExecSQL](#)

- [ExecSQLEx](#)

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5.10.1.4.3.7 ExecProcEx Method

Allows to execute a stored procedure or function.

Class

[TCustomDACConnection](#)

Syntax

```
function ExecProcEx(const Name: string; const Params: array of variant): variant; virtual;
```

Parameters

Name

Holds the stored procedure name.

Params

Holds an array of pairs of parameters' names and values.

Return Value

the result of the stored procedure.

Remarks

Allows to execute a stored procedure or function. Provide the stored procedure name and its parameters to the call of ExecProcEx.

Use the following Name value syntax for executing specific overloaded routine:

"StoredProcName:1" or "StoredProcName:5". The first example executes the first overloaded stored procedure, while the second example executes the fifth overloaded procedure.

Assign pairs of parameters' names and values to a Params array so that every name comes before its corresponding value when an array is being indexed.

Out parameters of the procedure can be accessed with the ParamByName procedure. If the value for an input parameter was not included to the Params array, the parameter default value is taken. If the parameter has no default value, the NULL value is sent.

Note: Stored functions unlike stored procedures return result values that are obtained

internally through the RESULT parameter. You will no longer have to provide anonymous value in the Params array to describe the result of the function. Stored function result is obtained from the Params[0] indexed property or with the ParamByName('RESULT') method call.

For an example of parameters usage see [ExecSQLEx](#).

Example

If you have some stored procedure accepting four parameters, and you want to provide values only for the first and fourth parameters, you should call ExecProcEx in the following way:

```
Connection.ExecProcEx('Some_Stored_Procedure', ['Param_Name1', 'Param_Value1
```

See Also

- [ExecSQL](#)
- [ExecSQLEx](#)
- [ExecProc](#)

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5.10.1.4.3.8 ExecSQL Method

Executes a SQL statement with parameters.

Class

[TCustomDAConnection](#)

Syntax

```
function ExecSQL(const Text: string): variant;  
overload; function ExecSQL(const Text: string; const Params:  
array of variant): variant; overload; virtual;
```

Parameters

Text

a SQL statement to be executed.

Params

Array of parameter values arranged in the same order as they appear in SQL statement.

Return Value

Out parameter with the name Result will hold the result of function having data type dtString. Otherwise returns Null.

Remarks

Use the ExecSQL method to execute any SQL statement outside the [TCustomDADataSet](#) or [TCustomDASQL](#) components. Supply the Params array with the values of parameters arranged in the same order as they appear in a SQL statement which itself is passed to the Text string parameter.

See Also

- [ExecSQLEx](#)
- [ExecProc](#)

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5.10.1.4.3.9 ExecSQLEx Method

Executes any SQL statement outside the TQuery or TSQL components.

Class

[TCustomDAConnection](#)

Syntax

```
function ExecSQLEx(const Text: string; const Params: array of  
variant): variant; virtual;
```

Parameters

Text

a SQL statement to be executed.

Params

Array of parameter values arranged in the same order as they appear in SQL statement.

Return Value

Out parameter with the name Result will hold the result of a function having data type dtString. Otherwise returns Null.

Remarks

Call the ExecSQLEx method to execute any SQL statement outside the TQuery or TSQL components. Supply the Params array with values arranged in pairs of parameter name and its value. This way each parameter name in the array is found on even index values whereas parameter value is on odd index value but right after its parameter name. The parameter pairs must be arranged according to their occurrence in a SQL statement which itself is passed in the Text string parameter.

The Params array must contain all IN and OUT parameters defined in the SQL statement. For OUT parameters provide any values of valid types so that they are explicitly defined before call to the ExecSQLEx method.

Out parameter with the name Result will hold the result of a function having data type dtString. If neither of the parameters in the Text statement is named Result, ExecSQLEx will return Null.

To get the values of OUT parameters use the ParamByName function.

Example

```
MSConnection.ExecSQLEx('begin :A:= :B + :C; end;',  
    ['A', 0, 'B', 5, 'C', 3]);  
A:= MSConnection.ParamByName('A').AsInteger;
```

See Also

- [ExecSQL](#)

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5.10.1.4.3.10 GetDatabaseNames Method

Returns a database list from the server.

Class

[TCustomDACConnection](#)

Syntax

```
procedure GetDatabaseNames(List: TStrings); virtual;
```

Parameters

List

A TStrings descendant that will be filled with database names.

Remarks

Populates a string list with the names of databases.

Note: Any contents already in the target string list object are eliminated and overwritten by data produced by GetDatabaseNames.

See Also

- [GetTableNames](#)
- [GetStoredProcNames](#)

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5.10.1.4.3.11 GetKeyFieldNames Method

Provides a list of available key field names.

Class

[TCustomDAConnection](#)

Syntax

```
procedure GetKeyFieldNames(const TableName: string; List:  
TStrings); virtual;
```

Parameters

TableName

Holds the table name

List

The list of available key field names

Return Value

Key field name

Remarks

Call the GetKeyFieldNames method to get the names of available key fields. Populates a string list with the names of key fields in tables.

See Also

- [GetTableNames](#)
- [GetStoredProcNames](#)

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5.10.1.4.3.12 GetStoredProcNames Method

Returns a list of stored procedures from the server.

Class

[TCustomDAConnection](#)

Syntax

```
procedure GetStoredProcNames(List: TStrings; AllProcs: boolean = False); virtual;
```

Parameters

List

A TStrings descendant that will be filled with the names of stored procedures in the database.

AllProcs

True, if stored procedures from all schemas or including system procedures (depending on the server) are returned. False otherwise.

Remarks

Call the GetStoredProcNames method to get the names of available stored procedures and functions. GetStoredProcNames populates a string list with the names of stored procs in the database. If AllProcs = True, the procedure returns to the List parameter the names of the stored procedures that belong to all schemas; otherwise, List will contain the names of functions that belong to the current schema.

Note: Any contents already in the target string list object are eliminated and overwritten by data produced by GetStoredProcNames.

See Also

- [GetDatabaseNames](#)
- [GetTableNames](#)

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5.10.1.4.3.13 GetTableNames Method

Provides a list of available tables names.

Class

[TCustomDACConnection](#)

Syntax

```
procedure GetTableNames(List: TStrings; AllTables: boolean =  
False; OnlyTables: boolean = False); virtual;
```

Parameters

List

A TStrings descendant that will be filled with table names.

AllTables

True, if procedure returns all table names including the names of system tables to the List parameter.

OnlyTables

Remarks

Call the GetTableNames method to get the names of available tables. Populates a string list with the names of tables in the database. If AllTables = True, procedure returns all table names including the names of system tables to the List parameter, otherwise List will not contain the names of system tables. If AllTables = True, the procedure returns to the List parameter the names of the tables that belong to all schemas; otherwise, List will contain the names of the tables that belong to the current schema.

Note: Any contents already in the target string list object are eliminated and overwritten by the data produced by GetTableNames.

See Also

- [GetDatabaseNames](#)

- [GetStoredProcNames](#)

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5.10.1.4.3.14 MonitorMessage Method

Sends a specified message through the [TCustomDASQLMonitor](#) component.

Class

[TCustomDAConnection](#)

Syntax

```
procedure MonitorMessage(const Msg: string);
```

Parameters

Msg

Message text that will be sent.

Remarks

Call the MonitorMessage method to output specified message via the [TCustomDASQLMonitor](#) component.

See Also

- [TCustomDASQLMonitor](#)

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5.10.1.4.3.15 Ping Method

Used to check state of connection to the server.

Class

[TCustomDAConnection](#)

Syntax

```
procedure Ping;
```

Remarks

The method is used for checking server connection state.

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5.10.1.4.3.16 RemoveFromPool Method

Marks the connection that should not be returned to the pool after disconnect.

Class

[TCustomDAConnection](#)

Syntax

```
procedure RemoveFromPool;
```

Remarks

Call the RemoveFromPool method to mark the connection that should be deleted after disconnect instead of returning to the connection pool.

See Also

- [Pooling](#)
- [PoolingOptions](#)

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5.10.1.4.3.17 Rollback Method

Discards all current data changes and ends transaction.

Class

[TCustomDAConnection](#)

Syntax

```
procedure Rollback; virtual;
```

Remarks

Call the Rollback method to discard all updates, insertions, and deletions of data associated with the current transaction to the database server and then end the transaction. The current transaction is the last transaction started by calling [StartTransaction](#).

See Also

- [Commit](#)
- [StartTransaction](#)
- [TCustomMSDataSet.FetchAll](#)

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5.10.1.4.3.18 StartTransaction Method

Begins a new user transaction.

Class

[TCustomDACConnection](#)

Syntax

```
procedure StartTransaction; virtual;
```

Remarks

Call the StartTransaction method to begin a new user transaction against the database server. Before calling StartTransaction, an application should check the status of the [InTransaction](#) property. If InTransaction is True, indicating that a transaction is already in progress, a subsequent call to StartTransaction without first calling [Commit](#) or [Rollback](#) to end the current transaction raises EDatabaseError. Calling StartTransaction when connection is closed also raises EDatabaseError.

Updates, insertions, and deletions that take place after a call to StartTransaction are held by the server until an application calls Commit to save the changes, or Rollback to cancel them.

In SQL Server real transaction begins only on the first execute of data modification SQL statement.

Note: In some cases [TCustomMSDataSet.FetchAll](#) may conflict with transaction control ([EOLEDBError](#) 'Cannot create new connection because in manual or distributed transaction mode.') or may cause deadlocking on Post on editing queries with ORDER BY clause.

Also no transactions can be started and there are underfetched datasets within the connection.

See Also

- [Commit](#)
- [Rollback](#)
- [InTransaction](#)
- [TCustomMSConnection.IsolationLevel](#)

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5.10.1.4.4 Events

Events of the **TCustomDACConnection** class.

For a complete list of the **TCustomDACConnection** class members, see the [TCustomDACConnection Members](#) topic.

Public

Name	Description
OnConnectionLost	This event occurs when connection was lost.
OnError	This event occurs when an error has arisen in the connection.

See Also

- [TCustomDACConnection Class](#)
- [TCustomDACConnection Class Members](#)

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5.10.1.4.4.1 OnConnectionLost Event

This event occurs when connection was lost.

Class

[TCustomDACConnection](#)

Syntax

```
property OnConnectionLost: TConnectionLostEvent;
```

Remarks

Write the OnConnectionLost event handler to process fatal errors and perform failover.

Note: To use the OnConnectionLost event handler, you should explicitly add the MemData unit to the 'uses' list and set the TCustomDACConnection.Options.LocalFailover property to True.

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5.10.1.4.4.2 OnError Event

This event occurs when an error has arisen in the connection.

Class

[TCustomDACConnection](#)

Syntax

```
property OnError: TDACConnectionErrorEvent;
```

Remarks

Write the OnError event handler to respond to errors that arise with connection. Check the E parameter to get the error code. Set the Fail parameter to False to prevent an error dialog from being displayed and to raise the EAbort exception to cancel current operation. The default value of Fail is True.

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5.10.1.5 TCustomDADataset Class

Encapsulates general set of properties, events, and methods for working with data accessed through various database engines.

For a list of all members of this type, see [TCustomDADataset](#) members.

Unit

[DBAccess](#)

Syntax

```
TCustomDADataset = class(TMemDataSet);
```

Remarks

TCustomDADataset encapsulates general set of properties, events, and methods for working with data accessed through various database engines. All database-specific features are supported by descendants of TCustomDADataset.

Applications should not use TCustomDADataset objects directly.

Inheritance Hierarchy

[TMemDataSet](#)

TCustomDADataset

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5.10.1.5.1 Members

[TCustomDADataset](#) class overview.

Properties

Name	Description
BaseSQL	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates

	for a dataset.
Conditions	Used to add WHERE conditions to a query
Connection	Used to specify a connection object to use to connect to a data store.
DataTypeMap	Used to set data type mapping rules
Debug	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected	Used to keep dataset opened after connection is closed.
FetchRows	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields	Used to build SQL statements for the SQLDelete, SQLInsert, and

	SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MacroCount	Used to get the number of macros associated with the Macros property.
Macros	Makes it possible to change SQL queries easily.
MasterFields	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource	Used to specify the data source component which binds current dataset to the master one.
Options	Used to specify the behaviour of TCustomDADataset object.
ParamCheck	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount	Used to indicate how many parameters are there in the Params property.
Params	Used to view and set parameter names, values, and data types dynamically.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.

Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions	Used to indicate when the editing record is refreshed.
RowsAffected	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SQL	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional	Used if an application does not need bidirectional access to records in the result set.

UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Methods

Name	Description
AddWhere	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec	Breaks execution of the SQL statement on the server.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
CreateBlobStream	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
DeleteWhere	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.

EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
Execute	Overloaded. Executes a SQL statement on the server.
Executing	Indicates whether SQL statement is still being executed.
Fetched	Used to find out whether TCustomDADataset has fetched all rows.
Fetching	Used to learn whether TCustomDADataset is still fetching rows.
FetchingAll	Used to learn whether TCustomDADataset is fetching all rows to the end.
FindKey	Searches for a record which contains specified field values.
FindMacro	Finds a macro with the specified name.
FindNearest	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam	Determines if a parameter with the specified name exists in a dataset.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject	Returns a multireference shared object from field.
GetFieldPrecision	Retrieves the precision of a number field.

GetFieldScale	Retrieves the scale of a number field.
GetKeyFieldNames	Provides a list of available key field names.
GetOrderBy	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock	Locks the current record.
MacroByName	Finds a macro with the specified name.
ParamByName	Sets or uses parameter information for a specific parameter based on its name.
Prepare	Allocates, opens, and parses cursor for a query.
RefreshRecord	Actualizes field values for the current record.
RestoreSQL	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL	Saves the SQL property value to BaseSQL.

SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved	Determines if the SQL property value was saved to the BaseSQL property.
UnLock	Releases a record lock.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
AfterExecute	Occurs after a component has executed a query to

	database.
AfterFetch	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute	Occurs after executing insert, delete, update, lock and refresh operations.
BeforeFetch	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute	Occurs before executing insert, delete, update, lock, and refresh operations.
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

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5.10.1.5.2 Properties

Properties of the **TCustomDADataset** class.

For a complete list of the **TCustomDADataset** class members, see the [TCustomDADataset Members](#) topic.

Public

Name	Description
BaseSQL	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
Conditions	Used to add WHERE conditions to a query
Connection	Used to specify a

	connection object to use to connect to a data store.
DataTypeMap	Used to set data type mapping rules
Debug	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected	Used to keep dataset opened after connection is closed.
FetchRows	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the

	Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MacroCount	Used to get the number of macros associated with the Macros property.
Macros	Makes it possible to change SQL queries easily.
MasterFields	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource	Used to specify the data source component which binds current dataset to the master one.
Options	Used to specify the behaviour of TCustomDADataset object.
ParamCheck	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount	Used to indicate how many parameters are there in the Params property.
Params	Used to view and set parameter names, values, and data types dynamically.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly	Used to prevent users from updating, inserting, or

	deleting data in the dataset.
RefreshOptions	Used to indicate when the editing record is refreshed.
RowsAffected	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SQL	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional	Used if an application does not need bidirectional access to records in the result set.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.

UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.
--	--

See Also

- [TCustomDADataset Class](#)
- [TCustomDADataset Class Members](#)

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5.10.1.5.2.1 BaseSQL Property

Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.

Class

[TCustomDADataset](#)

Syntax

```
property BaseSQL: string;
```

Remarks

Use the BaseSQL property to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL, only macros are expanded. SQL text with all these changes can be returned by [FinalSQL](#).

See Also

- [FinalSQL](#)
- [AddWhere](#)
- [SaveSQL](#)
- [SQLSaved](#)
- [RestoreSQL](#)

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5.10.1.5.2.2 Conditions Property

Used to add WHERE conditions to a query

Class

[TCustomDADataset](#)

Syntax

```
property Conditions: TDAConditions stored False;
```

See Also

- [TDAConditions](#)

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5.10.1.5.2.3 Connection Property

Used to specify a connection object to use to connect to a data store.

Class

[TCustomDADataset](#)

Syntax

```
property Connection: TCustomDACConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store.

Set at design-time by selecting from the list of provided TCustomDACConnection or its descendant class objects.

At runtime, link an instance of a TCustomDACConnection descendant to the Connection property.

See Also

- [TCustomMSConnection](#)

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5.10.1.5.2.4 DataTypeMap Property

Used to set data type mapping rules

Class

[TCustomDADataset](#)

Syntax

```
property DataTypeMap: TDAMapRules stored IsMapRulesStored;
```

See Also

- [TDAMapRules](#)

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5.10.1.5.2.5 Debug Property

Used to display the statement that is being executed and the values and types of its parameters.

Class

[TCustomDADataset](#)

Syntax

```
property Debug: boolean default False;
```

Remarks

Set the Debug property to True to display the statement that is being executed and the values and types of its parameters.

You should add the SdacVcl unit to the uses clause of any unit in your project to make the Debug property work.

Note: If TMSSQLMonitor is used in the project and the TMSSQLMonitor.Active property is set

to False, the debug window is not displayed.

See Also

- [TCustomDASQL.Debug](#)

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5.10.1.5.2.6 DetailFields Property

Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.

Class

[TCustomDADataset](#)

Syntax

```
property DetailFields: string;
```

Remarks

Use the DetailFields property to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship. DetailFields is a string containing one or more field names in the detail table. Separate field names with semicolons.

Use Field Link Designer to set the value in design time.

See Also

- [MasterFields](#)
- [MasterSource](#)

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5.10.1.5.2.7 Disconnected Property

Used to keep dataset opened after connection is closed.

Class

[TCustomDADataset](#)

Syntax

```
property Disconnected: boolean;
```

Remarks

Set the Disconnected property to True to keep dataset opened after connection is closed.

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5.10.1.5.2.8 FetchRows Property

Used to define the number of rows to be transferred across the network at the same time.

Class

[TCustomDADataset](#)

Syntax

```
property FetchRows: integer default 25;
```

Remarks

The number of rows that will be transferred across the network at the same time. This property can have a great impact on performance. So it is preferable to choose the optimal value of the FetchRows property for each SQL statement and software/hardware configuration experimentally.

The default value is 25.

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5.10.1.5.2.9 FilterSQL Property

Used to change the WHERE clause of SELECT statement and reopen a query.

Class

[TCustomDADataset](#)

Syntax

```
property FilterSQL: string;
```

Remarks

The FilterSQL property is similar to the Filter property, but it changes the WHERE clause of SELECT statement and reopens query. Syntax is the same to the WHERE clause.

Note: the FilterSQL property adds a value to the WHERE condition as is. If you expect this value to be enclosed in brackets, you should bracket it explicitly.

Example

```
query1.FilterSQL := 'Dept >= 20 and DName LIKE 'M%'';
```

See Also

- [AddWhere](#)

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5.10.1.5.2.10 FinalSQL Property

Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.

Class

[TCustomDADataset](#)

Syntax

```
property FinalSQL: string;
```

Remarks

Use FinalSQL to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros. This is the exact statement that will be passed on to the database server.

See Also

- [FinalSQL](#)
- [AddWhere](#)
- [SaveSQL](#)
- [SQLSaved](#)
- [RestoreSQL](#)
- [BaseSQL](#)

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5.10.1.5.2.11 IsQuery Property

Used to check whether SQL statement returns rows.

Class

[TCustomDADataset](#)

Syntax

```
property IsQuery: boolean;
```

Remarks

After the TCustomDADataset component is prepared, the IsQuery property returns True if SQL statement is a SELECT query.

Use the IsQuery property to check whether the SQL statement returns rows or not.

IsQuery is a read-only property. Reading IsQuery on unprepared dataset raises an exception.

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5.10.1.5.2.12 KeyFields Property

Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.

Class

[TCustomDADataset](#)

Syntax

```
property KeyFields: string;
```

Remarks

TCustomDADataset uses the KeyFields property to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database. For this feature KeyFields may hold a list of semicolon-delimited field names. If KeyFields is not defined before opening a dataset, TCustomDADataset uses the metainformation sent by the server together with data.

See Also

- [SQLDelete](#)
- [SQLInsert](#)
- [SQLRefresh](#)
- [SQLUpdate](#)

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5.10.1.5.2.13 MacroCount Property

Used to get the number of macros associated with the Macros property.

Class

[TCustomDADataset](#)

Syntax

```
property MacroCount: word;
```

Remarks

Use the MacroCount property to get the number of macros associated with the Macros property.

See Also

- [Macros](#)

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5.10.1.5.2.14 Macros Property

Makes it possible to change SQL queries easily.

Class

[TCustomDADataset](#)

Syntax

```
property Macros: TMacros stored False;
```

Remarks

With the help of macros you can easily change SQL query text at design- or runtime. Macros extend abilities of parameters and allow to change conditions in a WHERE clause or sort order in an ORDER BY clause. You just insert &MacroName in the SQL query text and change value of macro in the Macro property editor at design time or call the MacroByName function at run time. At the time of opening the query macro is replaced by its value.

Example

```
MSQuery.SQL.Text := 'SELECT * FROM Dept ORDER BY &Order';  
MSQuery.MacroByName('Order').Value := 'DeptNo';  
MSQuery.Open;
```

See Also

- [TMacro](#)
- [MacroByName](#)
- [Params](#)

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5.10.1.5.2.15 MasterFields Property

Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.

Class

[TCustomDADataset](#)

Syntax

```
property MasterFields: string;
```

Remarks

Use the MasterFields property after setting the [MasterSource](#) property to specify the names of one or more fields that are used as foreign keys for this dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.

MasterFields is a string containing one or more field names in the master table. Separate field names with semicolons.

Each time the current record in the master table changes, the new values in these fields are used to select corresponding records in this table for display.

Use Field Link Designer to set the values at design time after setting the MasterSource property.

See Also

- [DetailFields](#)
- [MasterSource](#)
- [Master/Detail Relationships](#)

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5.10.1.5.2.16 MasterSource Property

Used to specify the data source component which binds current dataset to the master one.

Class

[TCustomDADataset](#)

Syntax

```
property MasterSource: TDataSource;
```

Remarks

The MasterSource property specifies the data source component which binds current dataset to the master one.

TCustomDADataset uses MasterSource to extract foreign key fields values from the master dataset when building master/detail relationship between two datasets. MasterSource must point to another dataset; it cannot point to this dataset component.

When MasterSource is not **nil** dataset fills parameter values with corresponding field values from the current record of the master dataset.

Note: Do not set the DataSource property when building master/detail relationships. Although it points to the same object as the MasterSource property, it may lead to undesirable results.

See Also

- [MasterFields](#)
- [DetailFields](#)
- [Master/Detail Relationships](#)

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5.10.1.5.2.17 Options Property

Used to specify the behaviour of TCustomDADataset object.

Class

[TCustomDADataset](#)

Syntax

property Options: [TDADatasetOptions](#);

Remarks

Set the properties of Options to specify the behaviour of a TCustomDADataset object.

Descriptions of all options are in the table below.

Option Name	Description
AutoPrepare	Used to execute automatic Prepare on the query execution.
CacheCalcFields	Used to enable caching of the TField.Calculated and TField.Lookup fields.
CompressBlobMode	Used to store values of the BLOB fields in compressed form.
DefaultValues	Used to request default values/expressions from the server and assign them to the DefaultExpression property.
DetailDelay	Used to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset.
FieldsOrigin	Used for TCustomDADataset to fill the Origin property of the TField objects by appropriate value when opening a dataset.
FlatBuffers	Used to control how a dataset treats data of the ftString and ftVarBytes fields.
InsertAllSetFields	Used to include all set dataset fields in the generated INSERT statement
LocalMasterDetail	Used for TCustomDADataset to use local filtering to establish master/detail relationship for detail dataset and does not refer to the server.
LongStrings	Used to represent string fields with the length that is greater than 255 as TStringField.
MasterFieldsNullable	Allows to use NULL values in the fields by which the relation is built, when generating the query for the Detail tables (when this option is enabled, the performance can get worse).
NumberRange	Used to set the MaxValue and MinValue

	properties of TIntegerField and TFloatField to appropriate values.
QueryRecCount	Used for TCustomDADataset to perform additional query to get the record count for this SELECT, so the RecordCount property reflects the actual number of records.
QuoteNames	Used for TCustomDADataset to quote all database object names in autogenerated SQL statements such as update SQL.
RemoveOnRefresh	Used for a dataset to locally remove a record that can not be found on the server.
RequiredFields	Used for TCustomDADataset to set the Required property of the TField objects for the NOT NULL fields.
ReturnParams	Used to return the new value of fields to dataset after insert or update.
SetFieldsReadOnly	Used for a dataset to set the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated.
StrictUpdate	Used for TCustomDADataset to raise an exception when the number of updated or deleted records is not equal 1.
TrimFixedChar	Specifies whether to discard all trailing spaces in the string fields of a dataset.
UpdateAllFields	Used to include all dataset fields in the generated UPDATE and INSERT statements.
UpdateBatchSize	Used to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch.

See Also

- [Master/Detail Relationships](#)
- [TMemDataSet.CachedUpdates](#)

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5.10.1.5.2.18 ParamCheck Property

Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.

Class

[TCustomDADataset](#)

Syntax

```
property ParamCheck: boolean default True;
```

Remarks

Use the ParamCheck property to specify whether parameters for the Params property are generated automatically after the SQL property was changed.

Set ParamCheck to True to let dataset automatically generate the Params property for the dataset based on a SQL statement.

Setting ParamCheck to False can be used if the dataset component passes to a server the DDL statements that contain, for example, declarations of stored procedures which themselves will accept parameterized values. The default value is True.

See Also

- [Params](#)

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5.10.1.5.2.19 ParamCount Property

Used to indicate how many parameters are there in the Params property.

Class

[TCustomDADataset](#)

Syntax

```
property ParamCount: word;
```

Remarks

Use the ParamCount property to determine how many parameters are there in the Params property.

See Also

- [Params](#)

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5.10.1.5.2.20 Params Property

Used to view and set parameter names, values, and data types dynamically.

Class

[TCustomDADataset](#)

Syntax

```
property Params: TDAParams stored False;
```

Remarks

Contains the parameters for a query's SQL statement.

Access Params at runtime to view and set parameter names, values, and data types dynamically (at design time use the Parameters editor to set the parameter information).

Params is a zero-based array of parameter records. Index specifies the array element to access.

An easier way to set and retrieve parameter values when the name of each parameter is known is to call ParamByName.

See Also

- [ParamByName](#)
- [Macros](#)

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5.10.1.5.2.21 ReadOnly Property

Used to prevent users from updating, inserting, or deleting data in the dataset.

Class

[TCustomDADataset](#)

Syntax

```
property ReadOnly: boolean default False;
```

Remarks

Use the ReadOnly property to prevent users from updating, inserting, or deleting data in the dataset. By default, ReadOnly is False, meaning that users can potentially alter data stored in the dataset.

To guarantee that users cannot modify or add data to a dataset, set ReadOnly to True.

When ReadOnly is True, the dataset's CanModify property is False.

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5.10.1.5.2.22 RefreshOptions Property

Used to indicate when the editing record is refreshed.

Class

[TCustomDADataset](#)

Syntax

```
property RefreshOptions: TRefreshOptions default [];
```

Remarks

Use the RefreshOptions property to determine when the editing record is refreshed.

Refresh is performed by the [RefreshRecord](#) method.

It queries the current record and replaces one in the dataset. Refresh record is useful when the table has triggers or the table fields have default values. Use roBeforeEdit to get actual

data before editing.

The default value is [].

See Also

- [RefreshRecord](#)

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5.10.1.5.2.23 RowsAffected Property

Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.

Class

[TCustomDADataset](#)

Syntax

```
property RowsAffected: integer;
```

Remarks

Check RowsAffected to determine how many rows were inserted, updated, or deleted during the last query operation. If RowsAffected is -1, the query has not inserted, updated, or deleted any rows.

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5.10.1.5.2.24 SQL Property

Used to provide a SQL statement that a query component executes when its Open method is called.

Class

[TCustomDADataset](#)

Syntax

property SQL: TStrings;

Remarks

Use the SQL property to provide a SQL statement that a query component executes when its Open method is called. At the design time the SQL property can be edited by invoking the String List editor in Object Inspector.

When SQL is changed, TCustomDADataset calls Close and UnPrepare.

See Also

- [SQLInsert](#)
- [SQLUpdate](#)
- [SQLDelete](#)
- [SQLRefresh](#)

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5.10.1.5.2.25 SQLDelete Property

Used to specify a SQL statement that will be used when applying a deletion to a record.

Class

[TCustomDADataset](#)

Syntax

property SQLDelete: TStrings;

Remarks

Use the SQLDelete property to specify the SQL statement that will be used when applying a deletion to a record. Statements can be parameterized queries.

To create a SQLDelete statement at design-time, use the query statements editor.

Example

```
DELETE FROM Orders
WHERE
```



```
orderID = :old_orderID
```

See Also

- [SQL](#)
- [SQLInsert](#)
- [SQLUpdate](#)
- [SQLRefresh](#)

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5.10.1.5.2.26 SQLInsert Property

Used to specify the SQL statement that will be used when applying an insertion to a dataset.

Class

[TCustomDADataset](#)

Syntax

```
property SQLInsert: TStrings;
```

Remarks

Use the SQLInsert property to specify the SQL statement that will be used when applying an insertion to a dataset. Statements can be parameterized queries. Names of the parameters should be the same as field names. Parameters prefixed with OLD_ allow using current values of fields prior to the actual operation.

Use ReturnParam to return OUT parameters back to dataset.

To create a SQLInsert statement at design-time, use the query statements editor.

If you specify SQLInsert not depending on TCustomMSDataSet.Options.QueryIdentity, the value of the Identity field won't be returned on execution Insert(Append).Post. To avoid the problem, you should add the following code in the end of SQLInsert:

```
INSERT INTO Orders  
    (Shipname)  
VALUES  
    (:Shipname)
```

See Also

- [SQL](#)
- [SQLUpdate](#)
- [SQLDelete](#)
- [SQLRefresh](#)

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5.10.1.5.2.27 SQLLock Property

Used to specify a SQL statement that will be used to perform a record lock.

Class

[TCustomDADataset](#)

Syntax

```
property SQLLock: TStrings;
```

Remarks

Use the SQLLock property to specify a SQL statement that will be used to perform a record lock. Statements can be parameterized queries. Names of the parameters should be the same as field names. The parameters prefixed with OLD_ allow to use current values of fields prior to the actual operation.

To create a SQLLock statement at design-time, the use query statement editor.

See Also

- [SQL](#)
- [SQLInsert](#)
- [SQLUpdate](#)
- [SQLDelete](#)
- [SQLRefresh](#)

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5.10.1.5.2.28 SQLRecCount Property

Used to specify the SQL statement that is used to get the record count when opening a dataset.

Class

[TCustomDADataset](#)

Syntax

```
property SQLRecCount: TStrings;
```

Remarks

Use the SQLRecCount property to specify the SQL statement that is used to get the record count when opening a dataset. The SQL statement is used if the TDADatasetOptions.QueryRecCount property is True, and the TCustomDADataset.FetchAll property is False. Is not used if the FetchAll property is True.

To create a SQLRecCount statement at design-time, use the query statements editor.

See Also

- [SQLInsert](#)
- [SQLUpdate](#)
- [SQLDelete](#)
- [SQLRefresh](#)
- [TDADatasetOptions](#)
- [FetchingAll](#)

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5.10.1.5.2.29 SQLRefresh Property

Used to specify a SQL statement that will be used to refresh current record by calling the [RefreshRecord](#) procedure.

Class

[TCustomDADataset](#)

Syntax

```
property SQLRefresh: TStrings;
```

Remarks

Use the SQLRefresh property to specify a SQL statement that will be used to refresh current record by calling the [RefreshRecord](#) procedure.

Different behavior is observed when the SQLRefresh property is assigned with a single WHERE clause that holds frequently altered search condition. In this case the WHERE clause from SQLRefresh is combined with the same clause of the SELECT statement in a SQL property and this final query is then sent to the database server.

To create a SQLRefresh statement at design-time, use the query statements editor.

Example

```
SELECT Shipname FROM Orders
WHERE
    OrderID = :OrderID
```

See Also

- [RefreshRecord](#)
- [SQL](#)
- [SQLInsert](#)
- [SQLUpdate](#)
- [SQLDelete](#)

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5.10.1.5.2.30 SQLUpdate Property

Used to specify a SQL statement that will be used when applying an update to a dataset.

Class

[TCustomDADataset](#)

Syntax

```
property SQLUpdate: TStrings;
```

Remarks

Use the SQLUpdate property to specify a SQL statement that will be used when applying an update to a dataset. Statements can be parameterized queries. Names of the parameters should be the same as field names. The parameters prefixed with OLD_ allow to use current values of fields prior to the actual operation.

Use ReturnParam to return OUT parameters back to the dataset.

To create a SQLUpdate statement at design-time, use the query statement editor.

Example

```
UPDATE Orders
  set
    ShipName = :ShipName
WHERE
  OrderID = :Old_OrderID
```

See Also

- [SQL](#)
- [SQLInsert](#)
- [SQLDelete](#)
- [SQLRefresh](#)

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5.10.1.5.2.31 UniDirectional Property

Used if an application does not need bidirectional access to records in the result set.

Class

[TCustomDADataset](#)

Syntax

```
property UniDirectional: boolean default False;
```

Remarks

Traditionally SQL cursors are unidirectional. They can travel only forward through a dataset. TCustomDADataset, however, permits bidirectional travelling by caching records. If an application does not need bidirectional access to the records in the result set, set UniDirectional to True. When UniDirectional is True, an application requires less memory and performance is improved. However, UniDirectional datasets cannot be modified. In FetchAll=False mode data is fetched on demand. When UniDirectional is set to True, data is fetched on demand as well, but obtained rows are not cached except for the current row. In case if the Unidirectional property is True, the FetchAll property will be automatically set to False. And if the FetchAll property is True, the Unidirectional property will be automatically set to False. The default value of UniDirectional is False, enabling forward and backward navigation.

Note: Pay attention to the specificity of using the FetchAll property=False

See Also

- [TMSQuery.FetchAll](#)

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5.10.1.5.3 Methods

Methods of the **TCustomDADataset** class.

For a complete list of the **TCustomDADataset** class members, see the [TCustomDADataset Members](#) topic.

Public

Name	Description
AddWhere	Adds condition to the WHERE clause of SELECT statement in the SQL property.

ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec	Breaks execution of the SQL statement on the server.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
CreateBlobStream	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
DeleteWhere	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
Execute	Overloaded. Executes a SQL statement on the server.
Executing	Indicates whether SQL statement is still being executed.
Fetched	Used to find out whether TCustomDADataset has fetched all rows.
Fetching	Used to learn whether TCustomDADataset is still

	fetching rows.
FetchingAll	Used to learn whether TCustomDADataset is fetching all rows to the end.
FindKey	Searches for a record which contains specified field values.
FindMacro	Finds a macro with the specified name.
FindNearest	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam	Determines if a parameter with the specified name exists in a dataset.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject	Returns a multireference shared object from field.
GetFieldPrecision	Retrieves the precision of a number field.
GetFieldScale	Retrieves the scale of a number field.
GetKeyFieldNames	Provides a list of available key field names.
GetOrderBy	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on

	it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock	Locks the current record.
MacroByName	Finds a macro with the specified name.
ParamByName	Sets or uses parameter information for a specific parameter based on its name.
Prepare	Allocates, opens, and parses cursor for a query.
RefreshRecord	Actualizes field values for the current record.
RestoreSQL	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.

SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved	Determines if the SQL property value was saved to the BaseSQL property.
UnLock	Releases a record lock.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

See Also

- [TCustomDADataset Class](#)
- [TCustomDADataset Class Members](#)

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5.10.1.5.3.1 AddWhere Method

Adds condition to the WHERE clause of SELECT statement in the SQL property.

Class

[TCustomDADataset](#)

Syntax

```
procedure AddWhere(const Condition: string);
```

Parameters

Condition

Holds the condition that will be added to the WHERE clause.

Remarks

Call the AddWhere method to add a condition to the WHERE clause of SELECT statement in the SQL property.

If SELECT has no WHERE clause, AddWhere creates it.

Note: the AddWhere method is implicitly called by [RefreshRecord](#). The AddWhere method works for the SELECT statements only.

Note: the AddWhere method adds a value to the WHERE condition as is. If you expect this value to be enclosed in brackets, you should bracket it explicitly.

See Also

- [DeleteWhere](#)

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5.10.1.5.3.2 BreakExec Method

Breaks execution of the SQL statement on the server.

Class

[TCustomDADataset](#)

Syntax

```
procedure BreakExec; virtual;
```

Remarks

Call the BreakExec method to break execution of the SQL statement on the server. It makes sense to only call BreakExec from another thread.

Note that calling BreakExec to interrupt dataset opening in the NonBlocking mode may not have any effect if fetching has already begun (this happens when BreakExec executes between two fetch operations).

See Also

- [TCustomDADataset.Execute](#)
- [TCustomDASQL.BreakExec](#)
- [TMSConnection.OnInfoMessage](#)

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5.10.1.5.3.3 CreateBlobStream Method

Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.

Class

[TCustomDADataset](#)

Syntax

```
function CreateBlobStream(Field: TField; Mode: TBlobStreamMode):  
TStream; override;
```

Parameters

Field

Holds the BLOB field for reading data from or writing data to from a stream.

Mode

Holds the stream mode, for which the stream will be used.

Return Value

The BLOB Stream.

Remarks

Call the CreateBlobStream method to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter. It must be a TBlobField component. You can specify whether the stream will be used for reading, writing, or updating the contents of the field with the Mode parameter.

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5.10.1.5.3.4 DeleteWhere Method

Removes WHERE clause from the SQL property and assigns the BaseSQL property.

Class

[TCustomDADataset](#)

Syntax

```
procedure Deletewhere;
```

Remarks

Call the DeleteWhere method to remove WHERE clause from the the SQL property and assign BaseSQL.

See Also

- [AddWhere](#)
- [BaseSQL](#)

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5.10.1.5.3.5 Execute Method

Executes a SQL statement on the server.

Class

[TCustomDADataset](#)

Overload List

Name	Description
Execute	Executes a SQL statement on the server.
Execute(Itrs: integer; Offset: integer)	Used to perform Batch operations .

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Executes a SQL statement on the server.

Class

[TCustomDADataset](#)

Syntax

```
procedure Execute; overload; virtual;
```

Remarks

Call the Execute method to execute an SQL statement on the server. If SQL statement is a SELECT query, Execute calls the Open method.

Execute implicitly prepares SQL statement by calling the [TCustomDADataset.Prepare](#) method if the [TCustomDADataset.Options](#) option is set to True and the statement has not been prepared yet. To speed up the performance in case of multiple Execute calls, an application should call Prepare before calling the Execute method for the first time.

See Also

- [TCustomDADataset.AfterExecute](#)
- [TCustomDADataset.Executing](#)
- [TCustomDADataset.Prepare](#)

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Used to perform [Batch operations](#) .

Class

[TCustomDADataset](#)

Syntax

```
procedure Execute(Iter: integer; Offset: integer = 0); overload;  
virtual;
```

Parameters

Iter

Specifies the number of inserted rows.

Offset

Points the array element, which the Batch operation starts from. 0 by default.

Remarks

The Execute method executes the specified batch SQL query. See the [Batch operations](#) article for samples.

See Also

- [Batch operations](#)

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5.10.1.5.3.6 Executing Method

Indicates whether SQL statement is still being executed.

Class

[TCustomDADataset](#)

Syntax

```
function Executing: boolean;
```

Return Value

True, if SQL statement is still being executed.

Remarks

Check Executing to learn whether TCustomDADataset is still executing SQL statement. Use the Executing method if NonBlocking is True.

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5.10.1.5.3.7 Fetched Method

Used to find out whether TCustomDADataset has fetched all rows.

Class

[TCustomDADataset](#)

Syntax

```
function Fetched: boolean; virtual;
```

Return Value

True, if all rows have been fetched.

Remarks

Call the Fetched method to find out whether TCustomDADataset has fetched all rows.

See Also

- [Fetching](#)

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5.10.1.5.3.8 Fetching Method

Used to learn whether TCustomDADataset is still fetching rows.

Class

[TCustomDADataset](#)

Syntax

```
function Fetching: boolean;
```

Return Value

True, if TCustomDADataset is still fetching rows.

Remarks

Check Fetching to learn whether TCustomDADataset is still fetching rows. Use the Fetching method if NonBlocking is True.

See Also

- [Executing](#)

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5.10.1.5.3.9 FetchingAll Method

Used to learn whether TCustomDADataset is fetching all rows to the end.

Class

[TCustomDADataset](#)

Syntax

```
function FetchingAll: boolean;
```

Return Value

True, if TCustomDADataset is fetching all rows to the end.

Remarks

Check FetchingAll to learn whether TCustomDADataset is fetching all rows to the end.

See Also

- [Executing](#)

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5.10.1.5.3.10 FindKey Method

Searches for a record which contains specified field values.

Class

[TCustomDADataset](#)

Syntax

```
function Findkey(const keyValues: array of System.TVarRec):  
boolean;
```

Parameters

KeyValues

Holds a key.

Remarks

Call the FindKey method to search for a specific record in a dataset. KeyValues holds a comma-delimited array of field values, that is called a key.

This function is provided for BDE compatibility only. It is recommended to use functions [TMemDataSet.Locate](#) and [TMemDataSet.LocateEx](#) for the record search.

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5.10.1.5.3.11 FindMacro Method

Finds a macro with the specified name.

Class

[TCustomDADataset](#)

Syntax

```
function FindMacro(const value: string): TMacro;
```

Parameters

Value

Holds the name of a macro to search for.

Return Value

TMacro object if a match is found, nil otherwise.

Remarks

Call the FindMacro method to find a macro with the specified name. If a match is found, FindMacro returns the macro. Otherwise, it returns nil. Use this method instead of a direct reference to the [TMacros.Items](#) property to avoid depending on the order of the items.

See Also

- [TMacro](#)
- [Macros](#)
- [MacroByName](#)

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5.10.1.5.3.12 FindNearest Method

Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.

Class

[TCustomDADataset](#)

Syntax

```
procedure FindNearest(const KeyValues: array of System.TVarRec);
```

Parameters

KeyValues

Holds the values of the record key fields to which the cursor should be moved.

Remarks

Call the FindNearest method to move the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter. If there are no records that match or exceed the specified criteria, the cursor will not move.

This function is provided for BDE compatibility only. It is recommended to use functions [TMemDataSet.Locate](#) and [TMemDataSet.LocateEx](#) for the record search.

See Also

- [TMemDataSet.Locate](#)
- [TMemDataSet.LocateEx](#)
- [FindKey](#)

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5.10.1.5.3.13 FindParam Method

Determines if a parameter with the specified name exists in a dataset.

Class

[TCustomDADataset](#)

Syntax

```
function FindParam(const value: string): TDAParam;
```

Parameters

Value

Holds the name of the param for which to search.

Return Value

the TDAParam object for the specified Name. Otherwise it returns nil.

Remarks

Call the FindParam method to determine if a specified param component exists in a dataset. Name is the name of the param for which to search. If FindParam finds a param with a matching name, it returns a TDAParam object for the specified Name. Otherwise it returns nil.

See Also

- [Params](#)
- [ParamByName](#)

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5.10.1.5.3.14 GetDataType Method

Returns internal field types defined in the MemData and accompanying modules.

Class

[TCustomDADataset](#)

Syntax

```
function GetDataType(const FieldName: string): integer; virtual;
```

Parameters

FieldName

Holds the name of the field.

Return Value

internal field types defined in MemData and accompanying modules.

Remarks

Call the `GetDataType` method to return internal field types defined in the `MemData` and accompanying modules. Internal field data types extend the `TFieldType` type of VCL by specific database server data types. For example, `ftString`, `ftFile`, `ftObject`.

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5.10.1.5.3.15 GetFieldObject Method

Returns a multireference shared object from field.

Class

[TCustomDADataset](#)

Syntax

```
function GetFieldObject(Field: TField): TSharedObject;  
overload;function GetFieldObject(Field: TField; RecBuf: TRecordBuffer): TSharedObject; overload;function GetFieldObject(FieldDesc: TFieldDesc): TSharedObject;  
overload;function GetFieldObject(FieldDesc: TFieldDesc; RecBuf: TRecordBuffer): TSharedObject; overload;function GetFieldObject(const FieldName: string): TSharedObject; overload;
```

Parameters

FieldName

Holds the field name.

Return Value

multireference shared object.

Remarks

Call the `GetFieldObject` method to return a multireference shared object from field. If field does not hold one of the `TSharedObject` descendants, `GetFieldObject` raises an exception.

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5.10.1.5.3.16 GetFieldPrecision Method

Retrieves the precision of a number field.

Class

[TCustomDADataset](#)

Syntax

```
function GetFieldPrecision(const FieldName: string): integer;
```

Parameters

FieldName

Holds the existing field name.

Return Value

precision of number field.

Remarks

Call the GetFieldPrecision method to retrieve the precision of a number field. FieldName is the name of an existing field.

See Also

- [GetFieldScale](#)

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5.10.1.5.3.17 GetFieldScale Method

Retrieves the scale of a number field.

Class

[TCustomDADataset](#)

Syntax

```
function GetFieldScale(const FieldName: string): integer;
```

Parameters

FieldName

Holds the existing field name.

Return Value

the scale of the number field.

Remarks

Call the GetFieldScale method to retrieve the scale of a number field. FieldName is the name of an existing field.

See Also

- [GetFieldPrecision](#)

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5.10.1.5.3.18 GetKeyFieldNames Method

Provides a list of available key field names.

Class

[TCustomDADataset](#)

Syntax

```
procedure GetKeyFieldNames(List: TStrings);
```

Parameters

List

The list of available key field names

Return Value

Key field name

Remarks

Call the GetKeyFieldNames method to get the names of available key fields. Populates a string list with the names of key fields in tables.

See Also

- [TCustomDAConnection.GetTableNames](#)
- [TCustomDAConnection.GetStoredProcNames](#)

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5.10.1.5.3.19 GetOrderBy Method

Retrieves an ORDER BY clause from a SQL statement.

Class

[TCustomDADataset](#)

Syntax

```
function GetOrderBy: string;
```

Return Value

an ORDER BY clause from the SQL statement.

Remarks

Call the GetOrderBy method to retrieve an ORDER BY clause from a SQL statement.

Note: GetOrderBy and SetOrderBy methods serve to process only quite simple queries and don't support, for example, subqueries.

See Also

- [SetOrderBy](#)

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5.10.1.5.3.20 GotoCurrent Method

Sets the current record in this dataset similar to the current record in another dataset.

Class

[TCustomDADataset](#)

Syntax

```
procedure GotoCurrent(DataSet: TCustomDADataset);
```

Parameters

DataSet

Holds the TCustomDADataset descendant to synchronize the record position with.

Remarks

Call the GotoCurrent method to set the current record in this dataset similar to the current record in another dataset. The key fields in both these DataSets must be coincident.

See Also

- [TMemDataSet.Locate](#)
- [TMemDataSet.LocateEx](#)

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5.10.1.5.3.21 Lock Method

Locks the current record.

Class

[TCustomDADataset](#)

Syntax

```
procedure Lock; virtual;
```

Remarks

Call the Lock method to lock the current record by executing the statement that is defined in the SQLLock property.

The Lock method sets the savepoint with the name LOCK_ + <component_name>.

See Also

- [UnLock](#)

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5.10.1.5.3.22 MacroByName Method

Finds a macro with the specified name.

Class

[TCustomDADataset](#)

Syntax

```
function MacroByName(const Value: string): TMacro;
```

Parameters

Value

Holds the name of a macro to search for.

Return Value

TMacro object if a match is found.

Remarks

Call the MacroByName method to find a macro with the specified name. If a match is found, MacroByName returns the macro. Otherwise, an exception is raised. Use this method instead of a direct reference to the [TMacros.Items](#) property to avoid depending on the order of the items.

To locate a parameter by name without raising an exception if the parameter is not found, use the FindMacro method.

To set a value to a macro, use the [TMacro.Value](#) property.

Example

```
MSQuery.SQL := 'SELECT * FROM Scott.Dept ORDER BY &Order';  
MSQuery.MacroByName('Order').Value := 'DeptNo';  
MSQuery.Open;
```

See Also

- [TMacro](#)
- [Macros](#)
- [FindMacro](#)

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5.10.1.5.3.23 ParamByName Method

Sets or uses parameter information for a specific parameter based on its name.

Class

[TCustomDADataset](#)

Syntax

```
function ParamByName(const Value: string): TDAParam;
```

Parameters

Value

Holds the name of the parameter for which to retrieve information.

Return Value

a TDAParam object.

Remarks

Call the ParamByName method to set or use parameter information for a specific parameter based on its name. Name is the name of the parameter for which to retrieve information. ParamByName is used to set a parameter's value at runtime and returns a [TDAParam](#) object.

Example

The following statement retrieves the current value of a parameter called "Contact" into an edit box:

```
Edit1.Text := Query1.ParamsByName('Contact').AsString;
```

See Also

- [Params](#)
- [FindParam](#)

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5.10.1.5.3.24 Prepare Method

Allocates, opens, and parses cursor for a query.

Class

[TCustomDADataset](#)

Syntax

```
procedure Prepare; override;
```

Remarks

Call the Prepare method to allocate, open, and parse cursor for a query. Calling Prepare before executing a query improves application performance.

SQL statements which have output parameters and aren't stored procedures calls or some of system functions such as sp_setapprole, should be executed without prior call to the Prepare method.

The UnPrepare method unprepares a query.

Note: When you change the text of a query at runtime, the query is automatically closed and unprepared.

See Also

- [TMemDataSet.Prepared](#)
- [TMemDataSet.UnPrepare](#)
- [Options](#)

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5.10.1.5.3.25 RefreshRecord Method

Actualizes field values for the current record.

Class

[TCustomDADataset](#)

Syntax

```
procedure RefreshRecord;
```

Remarks

Call the RefreshRecord method to actualize field values for the current record.

RefreshRecord performs query to database and refetches new field values from the returned cursor.

See Also

- [RefreshOptions](#)
- [SQLRefresh](#)

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5.10.1.5.3.26 RestoreSQL Method

Restores the SQL property modified by AddWhere and SetOrderBy.

Class

[TCustomDADataset](#)

Syntax

```
procedure RestoreSQL;
```

Remarks

Call the RestoreSQL method to restore the SQL property modified by AddWhere and SetOrderBy.

See Also

- [AddWhere](#)
- [SetOrderBy](#)
- [SaveSQL](#)
- [SQLSaved](#)

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5.10.1.5.3.27 SaveSQL Method

Saves the SQL property value to BaseSQL.

Class

[TCustomDADataset](#)

Syntax

```
procedure SaveSQL;
```

Remarks

Call the SaveSQL method to save the SQL property value to the BaseSQL property.

See Also

- [SQLSaved](#)
- [RestoreSQL](#)
- [BaseSQL](#)

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5.10.1.5.3.28 SetOrderBy Method

Builds an ORDER BY clause of a SELECT statement.

Class

[TCustomDADataset](#)

Syntax

```
procedure SetOrderBy(const Fields: string);
```

Parameters

Fields

Holds the names of the fields which will be added to the ORDER BY clause.

Remarks

Call the `SetOrderBy` method to build an ORDER BY clause of a SELECT statement. The fields are identified by the comma-delimited field names.

Note: The `GetOrderBy` and `SetOrderBy` methods serve to process only quite simple queries and don't support, for example, subqueries.

Example

```
Query1.SetOrderBy('DeptNo;DName');
```

See Also

- [GetOrderBy](#)

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5.10.1.5.3.29 SQLSaved Method

Determines if the [SQL](#) property value was saved to the [BaseSQL](#) property.

Class

[TCustomDADataset](#)

Syntax

```
function SQLSaved: boolean;
```

Return Value

True, if the SQL property value was saved to the BaseSQL property.

Remarks

Call the `SQLSaved` method to know whether the [SQL](#) property value was saved to the [BaseSQL](#) property.

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5.10.1.5.3.30 UnLock Method

Releases a record lock.

Class

[TCustomDADataset](#)

Syntax

```
procedure UnLock;
```

Remarks

Call the Unlock method to release the record lock made by the [Lock](#) method before.

Unlock is performed by rolling back to the savepoint set by the Lock method.

See Also

- [Lock](#)

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5.10.1.5.4 Events

Events of the **TCustomDADataset** class.

For a complete list of the **TCustomDADataset** class members, see the [TCustomDADataset Members](#) topic.

Public

Name	Description
AfterExecute	Occurs after a component has executed a query to database.
AfterFetch	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute	Occurs after executing insert, delete, update, lock and refresh operations.
BeforeFetch	Occurs before dataset is going to fetch block of

	records from the server.
BeforeUpdateExecute	Occurs before executing insert, delete, update, lock, and refresh operations.
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

See Also

- [TCustomDADataset Class](#)
- [TCustomDADataset Class Members](#)

5.10.1.5.4.1 AfterExecute Event

Occurs after a component has executed a query to database.

Class

[TCustomDADataset](#)

Syntax

```
property AfterExecute: TAfterExecuteEvent;
```

Remarks

Occurs after a component has executed a query to database.

See Also

- [TCustomDADataset.Execute](#)

5.10.1.5.4.2 AfterFetch Event

Occurs after dataset finishes fetching data from server.

Class

[TCustomDADataset](#)

Syntax

```
property AfterFetch: TAfterFetchEvent;
```

Remarks

The AfterFetch event occurs after dataset finishes fetching data from server.

Note: In [TCustomMSDataSet.Options](#) mode this event occurs in context of calling thread.

See Also

- [BeforeFetch](#)
- [TMSDataSetOptions.NonBlocking](#)

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5.10.1.5.4.3 AfterUpdateExecute Event

Occurs after executing insert, delete, update, lock and refresh operations.

Class

[TCustomDADataset](#)

Syntax

```
property AfterUpdateExecute: TUpdateExecuteEvent;
```

Remarks

Occurs after executing insert, delete, update, lock, and refresh operations. You can use AfterUpdateExecute to set the parameters of corresponding statements.

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5.10.1.5.4.4 BeforeFetch Event

Occurs before dataset is going to fetch block of records from the server.

Class

[TCustomDADataset](#)

Syntax

```
property BeforeFetch: TBeforeFetchEvent;
```

Remarks

The BeforeFetch event occurs every time before dataset is going to fetch a block of records from the server. Set Cancel to True to abort current fetch operation.

Note: In [TCustomMSDataSet.Options](#) mode event handler is called from the fetching thread. Therefore, if you have set NonBlocking property to True, you should use thread synchronization mechanisms in the code of BeforeFetch event handler.

See Also

- [AfterFetch](#)
- [TMSDataSetOptions.NonBlocking](#)

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5.10.1.5.4.5 BeforeUpdateExecute Event

Occurs before executing insert, delete, update, lock, and refresh operations.

Class

[TCustomDADataset](#)

Syntax

```
property BeforeUpdateExecute: TUpdateExecuteEvent;
```

Remarks

Occurs before executing insert, delete, update, lock, and refresh operations. You can use `BeforeUpdateExecute` to set the parameters of corresponding statements.

See Also

- [AfterUpdateExecute](#)

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5.10.1.6 TCustomDASQL Class

A base class for components executing SQL statements that do not return result sets.

For a list of all members of this type, see [TCustomDASQL](#) members.

Unit

[DBAccess](#)

Syntax

```
TCustomDASQL = class(TComponent);
```

Remarks

TCustomDASQL is a base class that defines functionality for descendant classes which access database using SQL statements. Applications never use TCustomDASQL objects directly. Instead they use descendants of TCustomDASQL.

Use TCustomDASQL when client application must execute SQL statement or call stored procedure on the database server. The SQL statement should not retrieve rows from the database.

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5.10.1.6.1 Members

[TCustomDASQL](#) class overview.

Properties

Name	Description
ChangeCursor	Enables or disables changing screen cursor when executing commands in the NonBlocking mode.
Connection	Used to specify a connection object to use to connect to a data store.
Debug	Used to display the statement that is being executed and the values and types of its parameters.
FinalSQL	Used to return a SQL statement with expanded macros.
MacroCount	Used to get the number of macros associated with the Macros property.
Macros	Makes it possible to change SQL queries easily.
ParamCheck	Used to specify whether parameters for the Params property are implicitly generated when the SQL property is being changed.
ParamCount	Indicates the number of parameters in the Params property.
Params	Used to contain parameters for a SQL statement.
ParamValues	Used to get or set the values of individual field parameters that are identified by name.
Prepared	Used to indicate whether a query is prepared for execution.
RowsAffected	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SQL	Used to provide a SQL statement that a TCustomDASQL

	component executes when the Execute method is called.
--	---

Methods

Name	Description
BreakExec	Breaks execution of an SQL statement on the server.
Execute	Overloaded. Executes a SQL statement on the server.
Executing	Checks whether TCustomDASQL still executes a SQL statement.
FindMacro	Finds a macro with the specified name.
FindParam	Finds a parameter with the specified name.
MacroByName	Finds a macro with the specified name.
ParamByName	Finds a parameter with the specified name.
Prepare	Allocates, opens, and parses cursor for a query.
UnPrepare	Frees the resources allocated for a previously prepared query on the server and client sides.
WaitExecuting	Waits until TCustomDASQL executes a SQL statement.

Events

Name	Description
AfterExecute	Occurs after a SQL statement has been executed.

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5.10.1.6.2 Properties

Properties of the **TCustomDASQL** class.

For a complete list of the **TCustomDASQL** class members, see the [TCustomDASQL Members](#) topic.

Public

Name	Description
ChangeCursor	Enables or disables changing screen cursor when executing commands in the NonBlocking mode.
Connection	Used to specify a connection object to use to connect to a data store.
Debug	Used to display the statement that is being executed and the values and types of its parameters.
FinalSQL	Used to return a SQL statement with expanded macros.
MacroCount	Used to get the number of macros associated with the Macros property.
Macros	Makes it possible to change SQL queries easily.
ParamCheck	Used to specify whether parameters for the Params property are implicitly generated when the SQL property is being changed.
ParamCount	Indicates the number of parameters in the Params property.
Params	Used to contain parameters for a SQL statement.
ParamValues	Used to get or set the values of individual field parameters that are identified by name.
Prepared	Used to indicate whether a

	query is prepared for execution.
RowsAffected	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SQL	Used to provide a SQL statement that a TCustomDASQL component executes when the Execute method is called.

See Also

- [TCustomDASQL Class](#)
- [TCustomDASQL Class Members](#)

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5.10.1.6.2.1 ChangeCursor Property

Enables or disables changing screen cursor when executing commands in the NonBlocking mode.

Class

[TCustomDASQL](#)

Syntax

```
property ChangeCursor: boolean;
```

Remarks

Set the ChangeCursor property to False to prevent the screen cursor from changing to crSQLArrow when executing commands in the NonBlocking mode. The default value is True.

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5.10.1.6.2.2 Connection Property

Used to specify a connection object to use to connect to a data store.

Class

[TCustomDASQL](#)

Syntax

```
property Connection: TCustomDAConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store.

Set at design-time by selecting from the list of provided TCustomDAConnection or its descendant class objects.

At runtime, link an instance of a TCustomDAConnection descendant to the Connection property.

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5.10.1.6.2.3 Debug Property

Used to display the statement that is being executed and the values and types of its parameters.

Class

[TCustomDASQL](#)

Syntax

```
property Debug: boolean default False;
```

Remarks

Set the Debug property to True to display the statement that is being executed and the values and types of its parameters.

You should add the SdacVcl unit to the uses clause of any unit in your project to make the Debug property work.

Note: If TMSSQLMonitor is used in the project and the TMSSQLMonitor.Active property is set to False, the debug window is not displayed.

See Also

- [TCustomDADataset.Debug](#)

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5.10.1.6.2.4 FinalSQL Property

Used to return a SQL statement with expanded macros.

Class

[TCustomDASQL](#)

Syntax

```
property FinalSQL: string;
```

Remarks

Read the FinalSQL property to return a SQL statement with expanded macros. This is the exact statement that will be passed on to the database server.

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5.10.1.6.2.5 MacroCount Property

Used to get the number of macros associated with the Macros property.

Class

[TCustomDASQL](#)

Syntax

```
property MacroCount: word;
```

Remarks

Use the MacroCount property to get the number of macros associated with the Macros property.

See Also

- [Macros](#)

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5.10.1.6.2.6 Macros Property

Makes it possible to change SQL queries easily.

Class

[TCustomDASQL](#)

Syntax

```
property Macros: TMacros stored False;
```

Remarks

With the help of macros you can easily change SQL query text at design- or runtime. Marcos extend abilities of parameters and allow to change conditions in a WHERE clause or sort order in an ORDER BY clause. You just insert &MacroName in the SQL query text and change value of macro in the Macro property editor at design time or call the MacroByName function at run time. At the time of opening the query macro is replaced by its value.

See Also

- [TMacro](#)
- [MacroByName](#)
- [Params](#)

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5.10.1.6.2.7 ParamCheck Property

Used to specify whether parameters for the Params property are implicitly generated when the SQL property is being changed.

Class

[TCustomDASQL](#)

Syntax

```
property ParamCheck: boolean default True;
```

Remarks

Use the ParamCheck property to specify whether parameters for the Params property are implicitly generated when the SQL property is being changed.

Set ParamCheck to True to let TCustomDASQL generate the Params property for the dataset based on a SQL statement automatically.

Setting ParamCheck to False can be used if the dataset component passes to a server the DDL statements that contain, for example, declarations of the stored procedures that will accept parameterized values themselves. The default value is True.

See Also

- [Params](#)

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5.10.1.6.2.8 ParamCount Property

Indicates the number of parameters in the Params property.

Class

[TCustomDASQL](#)

Syntax

```
property ParamCount: word;
```

Remarks

Use the ParamCount property to determine how many parameters are there in the Params property.

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5.10.1.6.2.9 Params Property

Used to contain parameters for a SQL statement.

Class

[TCustomDASQL](#)

Syntax

```
property Params: TDAParams stored False;
```

Remarks

Access the Params property at runtime to view and set parameter names, values, and data types dynamically (at design-time use the Parameters editor to set parameter properties).

Params is a zero-based array of parameter records. Index specifies the array element to access. An easier way to set and retrieve parameter values when the name of each parameter is known is to call ParamByName.

Example

Setting parameters at runtime:

```
procedure TForm1.Button1Click(Sender: TObject);  
begin  
  with MSSQL do  
    begin  
      SQL.Clear;  
      SQL.Add('INSERT INTO Temp_Table(Id, Name)');  
      SQL.Add('VALUES (:id, :Name)');  
      ParamByName('Id').AsInteger := 55;  
      Params[1].AsString := 'Green';  
      Execute;  
    end;  
end;
```

See Also

- [TDAParam](#)
- [FindParam](#)
- [Macros](#)

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5.10.1.6.2.10 ParamValues Property(Indexer)

Used to get or set the values of individual field parameters that are identified by name.

Class

[TCustomDASQL](#)

Syntax

```
property ParamValues[const ParamName: string]: Variant; default;
```

Parameters

ParamName

Holds parameter names separated by semicolon.

Remarks

Use the ParamValues property to get or set the values of individual field parameters that are identified by name.

Setting ParamValues sets the Value property for each parameter listed in the ParamName string. Specify the values as Variants.

Getting ParamValues retrieves an array of variants, each of which represents the value of one of the named parameters.

Note: The Params array is generated implicitly if ParamCheck property is set to True. If ParamName includes a name that does not match any of the parameters in Items, an exception is raised.

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5.10.1.6.2.11 Prepared Property

Used to indicate whether a query is prepared for execution.

Class

[TCustomDASQL](#)

Syntax

```
property Prepared: boolean;
```

Remarks

Check the Prepared property to determine if a query is already prepared for execution. True means that the query has already been prepared. As a rule prepared queries are executed faster, but the preparation itself also takes some time. One of the proper cases for using preparation is parametrized queries that are executed several times.

See Also

- [Prepare](#)

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5.10.1.6.2.12 Row sAffected Property

Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.

Class

[TCustomDASQL](#)

Syntax

```
property RowsAffected: integer;
```

Remarks

Check RowsAffected to determine how many rows were inserted, updated, or deleted during the last query operation. If RowsAffected is -1, the query has not inserted, updated, or deleted any rows.

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5.10.1.6.2.13 SQL Property

Used to provide a SQL statement that a TCustomDASQL component executes when the Execute method is called.

Class

[TCustomDASQL](#)

Syntax

```
property SQL: TStrings;
```

Remarks

Use the SQL property to provide a SQL statement that a TCustomDASQL component executes when the Execute method is called. At design time the SQL property can be edited by invoking the String List editor in Object Inspector.

See Also

- [FinalSQL](#)
- [TCustomDASQL.Execute](#)

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5.10.1.6.3 Methods

Methods of the **TCustomDASQL** class.

For a complete list of the **TCustomDASQL** class members, see the [TCustomDASQL Members](#) topic.

Public

Name	Description
BreakExec	Breaks execution of an SQL statement on the server.

Execute	Overloaded. Executes a SQL statement on the server.
Executing	Checks whether TCustomDASQL still executes a SQL statement.
FindMacro	Finds a macro with the specified name.
FindParam	Finds a parameter with the specified name.
MacroByName	Finds a macro with the specified name.
ParamByName	Finds a parameter with the specified name.
Prepare	Allocates, opens, and parses cursor for a query.
UnPrepare	Frees the resources allocated for a previously prepared query on the server and client sides.
WaitExecuting	Waits until TCustomDASQL executes a SQL statement.

See Also

- [TCustomDASQL Class](#)
- [TCustomDASQL Class Members](#)

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5.10.1.6.3.1 BreakExec Method

Breaks execution of an SQL statement on the server.

Class

[TCustomDASQL](#)

Syntax

```
procedure BreakExec;
```

Remarks

Call the BreakExec method to break execution of an SQL statement on the server. It makes sense to call BreakExec only from another thread. Useful when NonBlocking is True.

See Also

- [TCustomDASQL.Execute](#)
- [TCustomDADataset.BreakExec](#)

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5.10.1.6.3.2 Execute Method

Executes a SQL statement on the server.

Class

[TCustomDASQL](#)

Overload List

Name	Description
Execute	Executes a SQL statement on the server.
Execute(Iters: integer; Offset: integer)	Used to perform Batch operations .

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Executes a SQL statement on the server.

Class

[TCustomDASQL](#)

Syntax

```
procedure Execute; overload; virtual;
```

Remarks

Call the Execute method to execute a SQL statement on the server. If the SQL statement has OUT parameters, use the [TCustomDASQL.ParamByName](#) method or the [TCustomDASQL.Params](#) property to get their values. Iters argument specifies the number of times this statement is executed for the DML array operations.

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Used to perform [Batch operations](#) .

Class

[TCustomDASQL](#)

Syntax

```
procedure Execute(Iters: integer; Offset: integer = 0); overload;  
virtual;
```

Parameters

Iters

Specifies the number of inserted rows.

Offset

Points the array element, which the Batch operation starts from. 0 by default.

Remarks

The Execute method executes the specified batch SQL query. See the [Batch operations](#) article for samples.

See Also

- [Batch operations](#)

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5.10.1.6.3.3 Executing Method

Checks whether TCustomDASQL still executes a SQL statement.

Class

[TCustomDASQL](#)

Syntax

```
function Executing: boolean;
```

Return Value

True, if a SQL statement is still being executed by TCustomDASQL.

Remarks

Check Executing to find out whether TCustomDASQL still executes a SQL statement. The Executing method is used for nonblocking execution.

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5.10.1.6.3.4 FindMacro Method

Finds a macro with the specified name.

Class

[TCustomDASQL](#)

Syntax

```
function FindMacro(const value: string): TMacro;
```

Parameters

Value

Holds the name of a macro to search for.

Return Value

TMacro object if a match is found, nil otherwise.

Remarks

Call the FindMacro method to find a macro with the specified name. If a match is found, FindMacro returns the macro. Otherwise, it returns nil. Use this method instead of a direct reference to the [TMacros.Items](#) property to avoid depending on the order of the items.

See Also

- [TMacro](#)

- [Macros](#)
- [MacroByName](#)

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5.10.1.6.3.5 FindParam Method

Finds a parameter with the specified name.

Class

[TCustomDASQL](#)

Syntax

```
function FindParam(const value: string): TDAParm;
```

Parameters

Value

Holds the parameter name to search for.

Return Value

a TDAParm object, if a parameter with the specified name has been found. If it has not, returns nil.

Remarks

Call the FindParam method to find a parameter with the specified name in a dataset.

See Also

- [ParamByName](#)

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5.10.1.6.3.6 MacroByName Method

Finds a macro with the specified name.

Class

[TCustomDASQL](#)

Syntax

```
function MacroByName(const Value: string): TMacro;
```

Parameters

Value

Holds the name of a macro to search for.

Return Value

TMacro object if a match is found.

Remarks

Call the MacroByName method to find a macro with the specified name. If a match is found, MacroByName returns the macro. Otherwise, an exception is raised. Use this method instead of a direct reference to the [TMacros.Items](#) property to avoid depending on the order of the items.

To locate a parameter by name without raising an exception if the parameter is not found, use the FindMacro method.

To set a value to a macro, use the [TMacro.Value](#) property.

See Also

- [TMacro](#)
- [Macros](#)
- [FindMacro](#)

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5.10.1.6.3.7 ParamByName Method

Finds a parameter with the specified name.

Class

[TCustomDASQL](#)

Syntax

```
function ParamByName(const Value: string): TDAParam;
```

Parameters

Value

Holds the name of the parameter to search for.

Return Value

a TDAParam object, if a match was found. Otherwise, an exception is raised.

Remarks

Use the ParamByName method to find a parameter with the specified name. If no parameter with the specified name found, an exception is raised.

Example

```
MSSQL.Execute;  
Edit1.Text := MSSQL.ParamsByName('Contact').AsString;
```

See Also

- [FindParam](#)

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5.10.1.6.3.8 Prepare Method

Allocates, opens, and parses cursor for a query.

Class

[TCustomDASQL](#)

Syntax

```
procedure Prepare; virtual;
```

Remarks

Call the Prepare method to allocate, open, and parse cursor for a query. Calling Prepare before executing a query improves application performance.

SQL statements which have output parameters and aren't stored procedures calls or some of system functions such as sp_setapprole, should be executed without prior call to the Prepare method.

The UnPrepare method unprepares a query.

Note: When you change the text of a query at runtime, the query is automatically closed and unprepared.

See Also

- [Prepare](#)
- [UnPrepare](#)

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5.10.1.6.3.9 UnPrepare Method

Frees the resources allocated for a previously prepared query on the server and client sides.

Class

[TCustomDASQL](#)

Syntax

```
procedure UnPrepare; virtual;
```

Remarks

Call the UnPrepare method to free resources allocated for a previously prepared query on the server and client sides.

See Also

- [Prepare](#)

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5.10.1.6.3.10 WaitExecuting Method

Waits until TCustomDASQL executes a SQL statement.

Class

[TCustomDASQL](#)

Syntax

```
function WaitExecuting(Timeout: integer = 0): boolean;
```

Parameters

Timeout

Holds the time in seconds to wait while TCustomDASQL executes the SQL statement. Zero means infinite time.

Return Value

True, if the execution of a SQL statement was completed in the preset time.

Remarks

Call the WaitExecuting method to wait until TCustomDASQL executes a SQL statement. Use the WaitExecuting method for nonblocking execution.

See Also

- [Executing](#)

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5.10.1.6.4 Events

Events of the **TCustomDASQL** class.

For a complete list of the **TCustomDASQL** class members, see the [TCustomDASQL Members](#) topic.

Public

Name	Description
AfterExecute	Occurs after a SQL statement has been executed.

See Also

- [TCustomDASQL Class](#)
- [TCustomDASQL Class Members](#)

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5.10.1.6.4.1 AfterExecute Event

Occurs after a SQL statement has been executed.

Class

[TCustomDASQL](#)

Syntax

```
property AfterExecute: TAfterExecuteEvent;
```

Remarks

Occurs after a SQL statement has been executed. This event may be used for descendant components which use multithreaded environment.

See Also

- [TCustomDASQL.Execute](#)

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5.10.1.7 TCustomDAUpdateSQL Class

A base class for components that provide DML statements for more flexible control over data modifications.

For a list of all members of this type, see [TCustomDAUpdateSQL](#) members.

Unit

[DBAccess](#)

Syntax

```
TCustomDAUpdateSQL = class (TComponent);
```

Remarks

TCustomDAUpdateSQL is a base class for components that provide DML statements for

more flexible control over data modifications. Besides providing BDE compatibility, this component allows to associate a separate component for each update command.

See Also

- [TCustomMSDataSet.UpdateObject](#)

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5.10.1.7.1 Members

[TCustomDAUpdateSQL](#) class overview.

Properties

Name	Description
DataSet	Used to hold a reference to the TCustomDADataset object that is being updated.
DeleteObject	Provides ability to perform advanced adjustment of the delete operations.
DeleteSQL	Used when deleting a record.
InsertObject	Provides ability to perform advanced adjustment of insert operations.
InsertSQL	Used when inserting a record.
LockObject	Provides ability to perform advanced adjustment of lock operations.
LockSQL	Used to lock the current record.
ModifyObject	Provides ability to perform advanced adjustment of modify operations.
ModifySQL	Used when updating a record.
RefreshObject	Provides ability to perform advanced adjustment of refresh operations.

RefreshSQL	Used to specify an SQL statement that will be used for refreshing the current record by TCustomDADataset.RefreshRecord procedure.
SQL	Used to return a SQL statement for one of the ModifySQL, InsertSQL, or DeleteSQL properties.

Methods

Name	Description
Apply	Sets parameters for a SQL statement and executes it to update a record.
ExecSQL	Executes a SQL statement.

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5.10.1.7.2 Properties

Properties of the **TCustomDAUpdateSQL** class.

For a complete list of the **TCustomDAUpdateSQL** class members, see the [TCustomDAUpdateSQL Members](#) topic.

Public

Name	Description
DataSet	Used to hold a reference to the TCustomDADataset object that is being updated.
SQL	Used to return a SQL statement for one of the ModifySQL, InsertSQL, or DeleteSQL properties.

Published

Name	Description
DeleteObject	Provides ability to perform advanced adjustment of the delete operations.
DeleteSQL	Used when deleting a record.
InsertObject	Provides ability to perform advanced adjustment of insert operations.
InsertSQL	Used when inserting a record.
LockObject	Provides ability to perform advanced adjustment of lock operations.
LockSQL	Used to lock the current record.
ModifyObject	Provides ability to perform advanced adjustment of modify operations.
ModifySQL	Used when updating a record.
RefreshObject	Provides ability to perform advanced adjustment of refresh operations.
RefreshSQL	Used to specify an SQL statement that will be used for refreshing the current record by TCustomDADataSet.RefreshRecord procedure.

See Also

- [TCustomDAUpdateSQL Class](#)
- [TCustomDAUpdateSQL Class Members](#)

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5.10.1.7.2.1 DataSet Property

Used to hold a reference to the TCustomDADataset object that is being updated.

Class

[TCustomDAUpdateSQL](#)

Syntax

```
property DataSet: TCustomDADataset;
```

Remarks

The DataSet property holds a reference to the TCustomDADataset object that is being updated. Generally it is not used directly.

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5.10.1.7.2.2 DeleteObject Property

Provides ability to perform advanced adjustment of the delete operations.

Class

[TCustomDAUpdateSQL](#)

Syntax

```
property DeleteObject: TComponent;
```

Remarks

Assign SQL component or a TCustomMSDataSet descendant to this property to perform advanced adjustment of the delete operations. In some cases this can give some additional performance. Use the same principle to set the SQL property of an object as for setting the [DeleteSQL](#) property.

See Also

- [DeleteSQL](#)

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5.10.1.7.2.3 DeleteSQL Property

Used when deleting a record.

Class

[TCustomDAUpdatesQL](#)

Syntax

```
property DeleteSQL: TStrings;
```

Remarks

Set the DeleteSQL property to a DELETE statement to use when deleting a record. Statements can be parameterized queries with parameter names corresponding to the dataset field names.

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5.10.1.7.2.4 InsertObject Property

Provides ability to perform advanced adjustment of insert operations.

Class

[TCustomDAUpdatesQL](#)

Syntax

```
property InsertObject: TComponent;
```

Remarks

Assign SQL component or TCustomMSDataSet descendant to this property to perform advanced adjustment of insert operations. In some cases this can give some additional performance. Set the SQL property of the object in the same way as used for the [InsertSQL](#) property.

See Also

- [InsertSQL](#)

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5.10.1.7.2.5 InsertSQL Property

Used when inserting a record.

Class

[TCustomDAUpdatesQL](#)

Syntax

```
property InsertSQL: TStrings;
```

Remarks

Set the InsertSQL property to an INSERT INTO statement to use when inserting a record. Statements can be parameterized queries with parameter names corresponding to the dataset field names.

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5.10.1.7.2.6 LockObject Property

Provides ability to perform advanced adjustment of lock operations.

Class

[TCustomDAUpdatesQL](#)

Syntax

```
property LockObject: TComponent;
```

Remarks

Assign a SQL component or TCustomMSDataSet descendant to this property to perform advanced adjustment of lock operations. In some cases that can give some additional performance. Set the SQL property of an object in the same way as used for the [LockSQL](#)

property.

See Also

- [LockSQL](#)

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5.10.1.7.2.7 LockSQL Property

Used to lock the current record.

Class

[TCustomDAUpdatesQL](#)

Syntax

```
property LockSQL: TStrings;
```

Remarks

Use the LockSQL property to lock the current record. Statements can be parameterized queries with parameter names corresponding to the dataset field names.

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5.10.1.7.2.8 ModifyObject Property

Provides ability to perform advanced adjustment of modify operations.

Class

[TCustomDAUpdatesQL](#)

Syntax

```
property ModifyObject: TComponent;
```

Remarks

Assign a SQL component or TCustomMSDataSet descendant to this property to perform

advanced adjustment of modify operations. In some cases this can give some additional performance. Set the SQL property of the object in the same way as used for the [ModifySQL](#) property.

See Also

- [ModifySQL](#)

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5.10.1.7.2.9 ModifySQL Property

Used when updating a record.

Class

[TCustomDAUpdatesQL](#)

Syntax

```
property ModifySQL: TStrings;
```

Remarks

Set ModifySQL to an UPDATE statement to use when updating a record. Statements can be parameterized queries with parameter names corresponding to the dataset field names.

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5.10.1.7.2.10 RefreshObject Property

Provides ability to perform advanced adjustment of refresh operations.

Class

[TCustomDAUpdatesQL](#)

Syntax

```
property RefreshObject: TComponent;
```

Remarks

Assign a SQL component or TCustomMSDataSet descendant to this property to perform advanced adjustment of refresh operations. In some cases that can give some additional performance. Set the SQL property of the object in the same way as used for the [RefreshSQL](#) property.

See Also

- [RefreshSQL](#)

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5.10.1.7.2.11 RefreshSQL Property

Used to specify an SQL statement that will be used for refreshing the current record by [TCustomDADataset.RefreshRecord](#) procedure.

Class

[TCustomDAUpdatesQL](#)

Syntax

```
property RefreshSQL: TStrings;
```

Remarks

Use the RefreshSQL property to specify a SQL statement that will be used for refreshing the current record by the [TCustomDADataset.RefreshRecord](#) procedure.

You can assign to SQLRefresh a WHERE clause only. In such a case it is added to SELECT defined by the SQL property by [TCustomDADataset.AddWhere](#).

To create a RefreshSQL statement at design time, use the query statements editor.

See Also

- [TCustomDADataset.RefreshRecord](#)

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5.10.1.7.2.12 SQL Property(Indexer)

Used to return a SQL statement for one of the ModifySQL, InsertSQL, or DeleteSQL properties.

Class

[TCustomDAUpdateSQL](#)

Syntax

```
property SQL[UpdateKind: TUpdateKind]: TStrings;
```

Parameters

UpdateKind

Specifies which of update SQL statements to return.

Remarks

Returns a SQL statement for one of the ModifySQL, InsertSQL, or DeleteSQL properties, depending on the value of the UpdateKind index.

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5.10.1.7.3 Methods

Methods of the **TCustomDAUpdateSQL** class.

For a complete list of the **TCustomDAUpdateSQL** class members, see the [TCustomDAUpdateSQL Members](#) topic.

Public

Name	Description
Apply	Sets parameters for a SQL statement and executes it to update a record.
ExecSQL	Executes a SQL statement.

See Also

- [TCustomDAUpdateSQL Class](#)

- [TCustomDAUpdateSQL Class Members](#)

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5.10.1.7.3.1 Apply Method

Sets parameters for a SQL statement and executes it to update a record.

Class

[TCustomDAUpdateSQL](#)

Syntax

```
procedure Apply(UpdateKind: TUpdateKind); virtual;
```

Parameters

UpdateKind

Specifies which of update SQL statements to execute.

Remarks

Call the Apply method to set parameters for a SQL statement and execute it to update a record. UpdateKind indicates which SQL statement to bind and execute.

Apply is primarily intended for manually executing update statements from an OnUpdateRecord event handler.

Note: If a SQL statement does not contain parameters, it is more efficient to call ExecSQL instead of Apply.

See Also

- [ExecSQL](#)

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5.10.1.7.3.2 ExecSQL Method

Executes a SQL statement.

Class

[TCustomDAUpdateSQL](#)

Syntax

```
procedure ExecSQL(UpdateKind: TUpdateKind);
```

Parameters

UpdateKind

Specifies the kind of update statement to be executed.

Remarks

Call the ExecSQL method to execute a SQL statement, necessary for updating the records belonging to a read-only result set when cached updates is enabled. UpdateKind specifies the statement to execute.

ExecSQL is primarily intended for manually executing update statements from the OnUpdateRecord event handler.

Note: To both bind parameters and execute a statement, call [Apply](#).

See Also

- [Apply](#)

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5.10.1.8 TDACondition Class

Represents a condition from the [TDAConditions](#) list.

For a list of all members of this type, see [TDACondition](#) members.

Unit

[DBAccess](#)

Syntax

```
TDACondition = class(TCollectionItem);
```

Remarks

Manipulate conditions using [TDAConditions](#).

See Also

- [TDAConditions](#)

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5.10.1.8.1 Members

[TDACondition](#) class overview.

Properties

Name	Description
Enabled	Indicates whether the condition is enabled or not
Name	The name of the condition
Value	The value of the condition

Methods

Name	Description
Disable	Disables the condition
Enable	Enables the condition

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5.10.1.8.2 Properties

Properties of the **TDACondition** class.

For a complete list of the **TDACondition** class members, see the [TDACondition Members](#) topic.

Published

Name	Description
------	-------------

Enabled	Indicates whether the condition is enabled or not
Name	The name of the condition
Value	The value of the condition

See Also

- [TDACondition Class](#)
- [TDACondition Class Members](#)

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5.10.1.8.2.1 Enabled Property

Indicates whether the condition is enabled or not

Class

[TDACondition](#)

Syntax

```
property Enabled: Boolean default True;
```

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5.10.1.8.2.2 Name Property

The name of the condition

Class

[TDACondition](#)

Syntax

```
property Name: string;
```

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5.10.1.8.2.3 Value Property

The value of the condition

Class

[TDACondition](#)

Syntax

```
property value: string;
```

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5.10.1.8.3 Methods

Methods of the **TDACondition** class.

For a complete list of the **TDACondition** class members, see the [TDACondition Members](#) topic.

Public

Name	Description
Disable	Disables the condition
Enable	Enables the condition

See Also

- [TDACondition Class](#)
- [TDACondition Class Members](#)

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5.10.1.8.3.1 Disable Method

Disables the condition

Class

[TDACondition](#)

Syntax

```
procedure Disable;
```

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5.10.1.8.3.2 Enable Method

Enables the condition

Class

[TDACondition](#)

Syntax

```
procedure Enable;
```

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5.10.1.9 TDAConditions Class

Holds a collection of [TDACondition](#) objects.

For a list of all members of this type, see [TDAConditions](#) members.

Unit

[DBAccess](#)

Syntax

```
TDAConditions = class(TCollection);
```

Remarks

The given example code

```
UniTable1.Conditions.Add('1','JOB="MANAGER"');  
UniTable1.Conditions.Add('2','SAL>2500');  
UniTable1.Conditions.Enable;  
UniTable1.Open;
```

will return the following SQL:

```
SELECT * FROM EMP
WHERE (JOB="MANAGER")
and
(SAL<2500)
```

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5.10.1.9.1 Members

[TDAConditions](#) class overview.

Properties

Name	Description
Condition	Used to iterate through all the conditions.
Enabled	Indicates whether the condition is enabled
Items	Used to iterate through all conditions.
Text	The property returns condition names and values as CONDITION_NAME=CONDITION
WhereSQL	Returns the SQL WHERE condition added in the Conditions property.

Methods

Name	Description
Add	Overloaded. Adds a condition to the WHERE clause of the query.
Delete	Deletes the condition
Disable	Disables the condition
Enable	Enables the condition
Find	Search for TDACondition (the condition) by its name. If

	found, the TDACondition object is returned, otherwise - nil.
Get	Retrieving a TDACondition object by its name. If found, the TDACondition object is returned, otherwise - an exception is raised.
IndexOf	Retrieving condition index by its name. If found, this condition index is returned, otherwise - the method returns -1.
Remove	Removes the condition

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5.10.1.9.2 Properties

Properties of the **TDAConditions** class.

For a complete list of the **TDAConditions** class members, see the [TDAConditions Members](#) topic.

Public

Name	Description
Condition	Used to iterate through all the conditions.
Enabled	Indicates whether the condition is enabled
Items	Used to iterate through all conditions.
Text	The property returns condition names and values as CONDITION_NAME=CONDITION
WhereSQL	Returns the SQL WHERE condition added in the Conditions property.

See Also

- [TDAConditions Class](#)
- [TDAConditions Class Members](#)

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5.10.1.9.2.1 Condition Property(Indexer)

Used to iterate through all the conditions.

Class

[TDAConditions](#)

Syntax

property Condition[Index: Integer]: [TDACondition](#);

Parameters

Index

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5.10.1.9.2.2 Enabled Property

Indicates whether the condition is enabled

Class

[TDAConditions](#)

Syntax

property Enabled: Boolean;

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5.10.1.9.2.3 Items Property(Indexer)

Used to iterate through all conditions.

Class

[TDAConditions](#)

Syntax

```
property Items[Index: Integer]: TDACondition; default;
```

Parameters

Index

Holds an index in the range 0..Count - 1.

Remarks

Use the Items property to iterate through all conditions. Index identifies the index in the range 0..Count - 1. Items can reference a particular condition by its index, but the [Condition](#) property is preferred in order to avoid depending on the order of the conditions.

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5.10.1.9.2.4 Text Property

The property returns condition names and values as CONDITION_NAME=CONDITION

Class

[TDAConditions](#)

Syntax

```
property Text: string;
```

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5.10.1.9.2.5 WhereSQL Property

Returns the SQL WHERE condition added in the Conditions property.

Class

[TDAConditions](#)

Syntax

```
property whereSQL: string;
```

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5.10.1.9.3 Methods

Methods of the **TDAConditions** class.

For a complete list of the **TDAConditions** class members, see the [TDAConditions Members](#) topic.

Public

Name	Description
Add	Overloaded. Adds a condition to the WHERE clause of the query.
Delete	Deletes the condition
Disable	Disables the condition
Enable	Enables the condition
Find	Search for TDACondition (the condition) by its name. If found, the TDACondition object is returned, otherwise - nil.
Get	Retrieving a TDACondition object by its name. If found, the TDACondition object is returned, otherwise - an exception is raised.
IndexOf	Retrieving condition index by its name. If found, this condition index is returned, otherwise - the method returns -1.
Remove	Removes the condition

See Also

- [TDAConditions Class](#)
- [TDAConditions Class Members](#)

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5.10.1.9.3.1 Add Method

Adds a condition to the WHERE clause of the query.

Class

[TDAConditions](#)

Overload List

Name	Description
Add(const Value: string; Enabled: Boolean)	Adds a condition to the WHERE clause of the query.
Add(const Name: string; const Value: string; Enabled: Boolean)	Adds a condition to the WHERE clause of the query.

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Adds a condition to the WHERE clause of the query.

Class

[TDAConditions](#)

Syntax

```
function Add(const value: string; Enabled: Boolean = True):  
TDACondition; overload;
```

Parameters

Value
The value of the condition

Enabled

Indicates that the condition is enabled

Remarks

If you want then to access the condition, you should use [Add](#) and its name in the Name parameter.

The given example code will return the following SQL:

```
SELECT * FROM EMP
WHERE (JOB="MANAGER")
and
(SAL<2500)
```

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Adds a condition to the WHERE clause of the query.

Class

[TDAConditions](#)

Syntax

```
function Add(const Name: string; const Value: string; Enabled:
Boolean = True): TDACondition; overload;
```

Parameters

Name

Sets the name of the condition

Value

The value of the condition

Enabled

Indicates that the condition is enabled

Remarks

The given example code will return the following SQL:

```
SELECT * FROM EMP
WHERE (JOB="MANAGER")
and
(SAL<2500)
```

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5.10.1.9.3.2 Delete Method

Deletes the condition

Class

[TDAConditions](#)

Syntax

```
procedure Delete(Index: integer);
```

Parameters

Index

Index of the condition

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5.10.1.9.3.3 Disable Method

Disables the condition

Class

[TDAConditions](#)

Syntax

```
procedure Disable;
```

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5.10.1.9.3.4 Enable Method

Enables the condition

Class

[TDAConditions](#)

Syntax

```
procedure Enable;
```

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5.10.1.9.3.5 Find Method

Search for TDACondition (the condition) by its name. If found, the TDACondition object is returned, otherwise - nil.

Class

[TDAConditions](#)

Syntax

```
function Find(const Name: string): TDACondition;
```

Parameters

Name

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5.10.1.9.3.6 Get Method

Retrieving a TDACondition object by its name. If found, the TDACondition object is returned, otherwise - an exception is raised.

Class

[TDAConditions](#)

Syntax

```
function Get(const Name: string): TDACondition;
```

Parameters

Name

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5.10.1.9.3.7 IndexOf Method

Retrieving condition index by its name. If found, this condition index is returned, otherwise - the method returns -1.

Class

[TDAConditions](#)

Syntax

```
function IndexOf(const Name: string): Integer;
```

Parameters

Name

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5.10.1.9.3.8 Remove Method

Removes the condition

Class

[TDAConditions](#)

Syntax

```
procedure Remove(const Name: string);
```

Parameters

Name

Specifies the name of the removed condition

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5.10.1.10 TDAConnectionOptions Class

This class allows setting up the behaviour of the TDAConnection class.

For a list of all members of this type, see [TDAConnectionOptions](#) members.

Unit

[DBAccess](#)

Syntax

```
TDACconnectionOptions = class(TPersistent);
```

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5.10.1.10.1 Members

[TDACconnectionOptions](#) class overview.

Properties

Name	Description
AllowImplicitConnect	Specifies whether to allow or not implicit connection opening.
DefaultSortType	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
DisconnectedMode	Used to open a connection only when needed for performing a server call and closes after performing the operation.
KeepDesignConnected	Used to prevent an application from establishing a connection at the time of startup.
LocalFailover	If True, the TCustomDACConnection.OnConnectionLost event occurs and a failover operation can be performed after connection breaks.

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5.10.1.10.2 Properties

Properties of the **TDACConnectionOptions** class.

For a complete list of the **TDACConnectionOptions** class members, see the [TDACConnectionOptions Members](#) topic.

Public

Name	Description
DefaultSortType	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
DisconnectedMode	Used to open a connection only when needed for performing a server call and closes after performing the operation.
KeepDesignConnected	Used to prevent an application from establishing a connection at the time of startup.
LocalFailover	If True, the TCustomDAConnection.OnConnectionLost event occurs and a failover operation can be performed after connection breaks.

Published

Name	Description
AllowImplicitConnect	Specifies whether to allow or not implicit connection opening.

See Also

- [TDAConnectionOptions Class](#)
- [TDAConnectionOptions Class Members](#)

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5.10.1.10.2.1 Allow ImplicitConnect Property

Specifies whether to allow or not implicit connection opening.

Class

[TDAConnectionOptions](#)

Syntax

```
property AllowImplicitConnect: boolean default True;
```

Remarks

Use the AllowImplicitConnect property to specify whether allow or not implicit connection opening.

If a closed connection has AllowImplicitConnect set to True and a dataset that uses the connection is opened, the connection is opened implicitly to allow opening the dataset.

If a closed connection has AllowImplicitConnect set to False and a dataset that uses the connection is opened, an exception is raised.

The default value is True.

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5.10.1.10.2.2 DefaultSortType Property

Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the [TMemDataSet.IndexFieldNames](#) property of a dataset.

Class

[TDAConnectionOptions](#)

Syntax

```
property DefaultSortType: TSortType default stCaseSensitive;
```

Remarks

Use the DefaultSortType property to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the [TMemDataSet.IndexFieldNames](#) property of a dataset.

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5.10.1.10.2.3 DisconnectedMode Property

Used to open a connection only when needed for performing a server call and closes after performing the operation.

Class

[TDACConnectionOptions](#)

Syntax

```
property DisconnectedMode: boolean default False;
```

Remarks

If True, connection opens only when needed for performing a server call and closes after performing the operation. Datasets remain opened when connection closes. May be useful to save server resources and operate in unstable or expensive network. Drawback of using disconnect mode is that each connection establishing requires some time for authorization. If connection is often closed and opened it can slow down the application work. See the [Disconnected Mode](#) topic for more information.

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5.10.1.10.2.4 KeepDesignConnected Property

Used to prevent an application from establishing a connection at the time of startup.

Class

[TDACconnectionOptions](#)

Syntax

```
property KeepDesignConnected: boolean default True;
```

Remarks

At the time of startup prevents application from establishing a connection even if the Connected property was set to True at design-time. Set KeepDesignConnected to False to initialize the connected property to False, even if it was True at design-time.

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5.10.1.10.2.5 LocalFailover Property

If True, the [TCustomDACConnection.OnConnectionLost](#) event occurs and a failover operation can be performed after connection breaks.

Class

[TDACconnectionOptions](#)

Syntax

```
property LocalFailover: boolean default False;
```

Remarks

If True, the [TCustomDACConnection.OnConnectionLost](#) event occurs and a failover operation can be performed after connection breaks. Read the [Working in an Unstable Network](#) topic for more information about using failover.

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5.10.1.11 TDAConnectionSSLOptions Class

This class is used to set up the SSL options.

For a list of all members of this type, see [TDAConnectionSSLOptions](#) members.

Unit

[DBAccess](#)

Syntax

```
TDAConnectionSSLOptions = class(TPersistent);
```

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5.10.1.11.1 Members

[TDAConnectionSSLOptions](#) class overview.

Properties

Name	Description
CACert	Holds the path to the certificate authority file.
Cert	Holds the path to the client certificate.
CipherList	Holds the list of allowed SSL ciphers.
Key	Holds the path to the private client key.

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5.10.1.11.2 Properties

Properties of the **TDAConnectionSSLOptions** class.

For a complete list of the **TDAConnectionSSLOptions** class members, see the [TDAConnectionSSLOptions Members](#) topic.

Published

Name	Description
CACert	Holds the path to the certificate authority file.
Cert	Holds the path to the client certificate.
CipherList	Holds the list of allowed SSL ciphers.
Key	Holds the path to the private client key.

See Also

- [TDAConnectionSSLOptions Class](#)
- [TDAConnectionSSLOptions Class Members](#)

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5.10.1.11.2.1 CACert Property

Holds the path to the certificate authority file.

Class

[TDAConnectionSSLOptions](#)

Syntax

```
property CACert: string;
```

Remarks

Use the CACert property to specify the path to the certificate authority file.

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5.10.1.11.2.2 Cert Property

Holds the path to the client certificate.

Class

[TDACConnectionSSLOptions](#)

Syntax

```
property Cert: string;
```

Remarks

Use the Cert property to specify the path to the client certificate.

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5.10.1.11.2.3 CipherList Property

Holds the list of allowed SSL ciphers.

Class

[TDACConnectionSSLOptions](#)

Syntax

```
property CipherList: string;
```

Remarks

Use the CipherList property to specify the list of allowed SSL ciphers.

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5.10.1.11.2.4 Key Property

Holds the path to the private client key.

Class

[TDACConnectionSSLOptions](#)

Syntax

```
property Key: string;
```

Remarks

Use the Key property to specify the path to the private client key.

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5.10.1.12 TDADatasetOptions Class

This class allows setting up the behaviour of the TDADataset class.

For a list of all members of this type, see [TDADatasetOptions](#) members.

Unit

[DBAccess](#)

Syntax

```
TDADatasetOptions = class(TPersistent);
```

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5.10.1.12.1 Members

[TDADatasetOptions](#) class overview.

Properties

Name	Description
AutoPrepare	Used to execute automatic TCustomDADataset.Prepare on the query execution.
CacheCalcFields	Used to enable caching of the TField.Calculated and TField.Lookup fields.
CompressBlobMode	Used to store values of the BLOB fields in compressed form.
DefaultValues	Used to request default values/expressions from the server and assign them to the DefaultExpression property.
DetailDelay	Used to get or set a delay in

	milliseconds before refreshing detail dataset while navigating master dataset.
FieldsOrigin	Used for TCustomDADataset to fill the Origin property of the TField objects by appropriate value when opening a dataset.
FlatBuffers	Used to control how a dataset treats data of the ftString and ftVarBytes fields.
InsertAllSetFields	Used to include all set dataset fields in the generated INSERT statement
LocalMasterDetail	Used for TCustomDADataset to use local filtering to establish master/detail relationship for detail dataset and does not refer to the server.
LongStrings	Used to represent string fields with the length that is greater than 255 as TStringField.
MasterFieldsNullable	Allows to use NULL values in the fields by which the relation is built, when generating the query for the Detail tables (when this option is enabled, the performance can get worse).
NumberRange	Used to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.
QueryRecCount	Used for TCustomDADataset to perform additional query to get the record count for this SELECT, so the

	RecordCount property reflects the actual number of records.
QuoteNames	Used for TCustomDADataset to quote all database object names in autogenerated SQL statements such as update SQL.
RemoveOnRefresh	Used for a dataset to locally remove a record that can not be found on the server.
RequiredFields	Used for TCustomDADataset to set the Required property of the TField objects for the NOT NULL fields.
ReturnParams	Used to return the new value of fields to dataset after insert or update.
SetFieldsReadOnly	Used for a dataset to set the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated.
StrictUpdate	Used for TCustomDADataset to raise an exception when the number of updated or deleted records is not equal 1.
TrimFixedChar	Specifies whether to discard all trailing spaces in the string fields of a dataset.
UpdateAllFields	Used to include all dataset fields in the generated UPDATE and INSERT statements.
UpdateBatchSize	Used to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch.

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5.10.1.12.2 Properties

Properties of the **TDADatasetOptions** class.

For a complete list of the **TDADatasetOptions** class members, see the [TDADatasetOptions Members](#) topic.

Public

Name	Description
AutoPrepare	Used to execute automatic TCustomDADataset.Prepare on the query execution.
CacheCalcFields	Used to enable caching of the TField.Calculated and TField.Lookup fields.
CompressBlobMode	Used to store values of the BLOB fields in compressed form.
DefaultValues	Used to request default values/expressions from the server and assign them to the DefaultExpression property.
DetailDelay	Used to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset.
FieldsOrigin	Used for TCustomDADataset to fill the Origin property of the TField objects by appropriate value when opening a dataset.
FlatBuffers	Used to control how a dataset treats data of the ftString and ftVarBytes fields.
InsertAllSetFields	Used to include all set dataset fields in the

	generated INSERT statement
LocalMasterDetail	Used for TCustomDADataset to use local filtering to establish master/detail relationship for detail dataset and does not refer to the server.
LongStrings	Used to represent string fields with the length that is greater than 255 as TStringField.
MasterFieldsNullable	Allows to use NULL values in the fields by which the relation is built, when generating the query for the Detail tables (when this option is enabled, the performance can get worse).
NumberRange	Used to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.
QueryRecCount	Used for TCustomDADataset to perform additional query to get the record count for this SELECT, so the RecordCount property reflects the actual number of records.
QuoteNames	Used for TCustomDADataset to quote all database object names in autogenerated SQL statements such as update SQL.
RemoveOnRefresh	Used for a dataset to locally remove a record that can not be found on the server.
RequiredFields	Used for TCustomDADataset to set the Required property of the TField objects for the NOT

	NULL fields.
ReturnParams	Used to return the new value of fields to dataset after insert or update.
SetFieldsReadOnly	Used for a dataset to set the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated.
StrictUpdate	Used for TCustomDADataset to raise an exception when the number of updated or deleted records is not equal 1.
TrimFixedChar	Specifies whether to discard all trailing spaces in the string fields of a dataset.
UpdateAllFields	Used to include all dataset fields in the generated UPDATE and INSERT statements.
UpdateBatchSize	Used to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch.

See Also

- [TDADatasetOptions Class](#)
- [TDADatasetOptions Class Members](#)

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5.10.1.12.2.1 AutoPrepare Property

Used to execute automatic [TCustomDADataset.Prepare](#) on the query execution.

Class

[TDADatasetOptions](#)

Syntax

```
property AutoPrepare: boolean default False;
```

Remarks

Use the AutoPrepare property to execute automatic [TCustomDADataset.Prepare](#) on the query execution. Makes sense for cases when a query will be executed several times, for example, in Master/Detail relationships.

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5.10.1.12.2.2 CacheCalcFields Property

Used to enable caching of the TField.Calculated and TField.Lookup fields.

Class

[TDADatasetOptions](#)

Syntax

```
property CacheCalcFields: boolean default False;
```

Remarks

Use the CacheCalcFields property to enable caching of the TField.Calculated and TField.Lookup fields. It can be useful for reducing CPU usage for calculated fields. Using caching of calculated and lookup fields increases memory usage on the client side.

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5.10.1.12.2.3 CompressBlobMode Property

Used to store values of the BLOB fields in compressed form.

Class

[TDADatasetOptions](#)

Syntax

```
property CompressBlobMode: TCompressBlobMode default cbNone;
```

Remarks

Use the CompressBlobMode property to store values of the BLOB fields in compressed form. Add the MemData unit to uses list to use this option. Compression rate greatly depends on stored data, for example, usually graphic data compresses badly unlike text.

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5.10.1.12.2.4 DefaultValues Property

Used to request default values/expressions from the server and assign them to the DefaultExpression property.

Class

[TDADatasetOptions](#)

Syntax

```
property DefaultValues: boolean default False;
```

Remarks

If True, the default values/expressions are requested from the server and assigned to the DefaultExpression property of TField objects replacing already existent values.

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5.10.1.12.2.5 DetailDelay Property

Used to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset.

Class

[TDADatasetOptions](#)

Syntax

```
property DetailDelay: integer default 0;
```

Remarks

Use the DetailDelay property to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset. If DetailDelay is 0 (the default value) then refreshing of detail dataset occurs immediately. The DetailDelay option should be used for detail dataset.

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5.10.1.12.2.6 FieldsOrigin Property

Used for TCustomDADataset to fill the Origin property of the TField objects by appropriate value when opening a dataset.

Class

[TDADatasetOptions](#)

Syntax

```
property FieldsOrigin: boolean;
```

Remarks

If True, TCustomDADataset fills the Origin property of the TField objects by appropriate value when opening a dataset.

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5.10.1.12.2.7 FlatBuffers Property

Used to control how a dataset treats data of the ftString and ftVarBytes fields.

Class

[TDADatasetOptions](#)

Syntax

```
property FlatBuffers: boolean default False;
```

Remarks

Use the FlatBuffers property to control how a dataset treats data of the ftString and ftVarBytes fields. When set to True, all data fetched from the server is stored in record pdata without unused tails.

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5.10.1.12.2.8 InsertAllSetFields Property

Used to include all set dataset fields in the generated INSERT statement

Class

[TDADatasetOptions](#)

Syntax

```
property InsertAllSetFields: boolean default False;
```

Remarks

If True, all set dataset fields, including those set to NULL explicitly, will be included in the generated INSERT statements. Otherwise, only set fields containing not NULL values will be included to the generated INSERT statement.

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5.10.1.12.2.9 LocalMasterDetail Property

Used for TCustomDADataset to use local filtering to establish master/detail relationship for detail dataset and does not refer to the server.

Class

[TDADatasetOptions](#)

Syntax

```
property LocalMasterDetail: boolean default False;
```

Remarks

If True, for detail dataset in master-detail relationship TCustomDADataset uses local filtering for establishing master/detail relationship and does not refer to the server. Otherwise detail dataset performs query each time a record is selected in master dataset. This option is useful for reducing server calls number, server resources economy. It can be useful for slow connection. The [TMemDataSet.CachedUpdates](#) mode can be used for detail dataset only when this option is set to true. Setting the LocalMasterDetail option to True is not recommended when detail table contains too many rows, because when it is set to False, only records that correspond to the current record in master dataset are fetched.

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5.10.1.12.2.10 LongStrings Property

Used to represent string fields with the length that is greater than 255 as TStringField.

Class

[TDADatasetOptions](#)

Syntax

```
property LongStrings: boolean default True;
```

Remarks

Use the LongStrings property to represent string fields with the length that is greater than 255 as TStringField, not as TMemoField.

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5.10.1.12.2.11 MasterFieldsNullable Property

Allows to use NULL values in the fields by which the relation is built, when generating the query for the Detail tables (when this option is enabled, the performance can get worse).

Class

[TDADatasetOptions](#)

Syntax

```
property MasterFieldsNullable: boolean default False;
```

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5.10.1.12.2.12 NumberRange Property

Used to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.

Class

[TDADatasetOptions](#)

Syntax

```
property NumberRange: boolean default False;
```

Remarks

Use the NumberRange property to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.

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5.10.1.12.2.13 QueryRecCount Property

Used for TCustomDADataset to perform additional query to get the record count for this SELECT, so the RecordCount property reflects the actual number of records.

Class

[TDADatasetOptions](#)

Syntax

```
property QueryRecCount: boolean default False;
```

Remarks

If True, and the FetchAll property is False, TCustomDADataset performs additional query to

get the record count for this SELECT, so the RecordCount property reflects the actual number of records. Does not have any effect if the FetchAll property is True.

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5.10.1.12.2.14 QuoteNames Property

Used for TCustomDADataset to quote all database object names in autogenerated SQL statements such as update SQL.

Class

[TDADatasetOptions](#)

Syntax

```
property QuoteNames: boolean default False;
```

Remarks

If True, TCustomDADataset quotes all database object names in autogenerated SQL statements such as update SQL.

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5.10.1.12.2.15 RemoveOnRefresh Property

Used for a dataset to locally remove a record that can not be found on the server.

Class

[TDADatasetOptions](#)

Syntax

```
property RemoveOnRefresh: boolean default True;
```

Remarks

When the RefreshRecord procedure can't find necessary record on the server and RemoveOnRefresh is set to True, dataset removes the record locally. Usually

RefreshRecord can't find necessary record when someone else dropped the record or changed the key value of it.

This option makes sense only if the StrictUpdate option is set to False. If the StrictUpdate option is True, error will be generated regardless of the RemoveOnRefresh option value.

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5.10.1.12.2.16 RequiredFields Property

Used for TCustomDADataset to set the Required property of the TField objects for the NOT NULL fields.

Class

[TDADatasetOptions](#)

Syntax

```
property RequiredFields: boolean default True;
```

Remarks

If True, TCustomDADataset sets the Required property of the TField objects for the NOT NULL fields. It is useful when table has a trigger which updates the NOT NULL fields.

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5.10.1.12.2.17 ReturnParams Property

Used to return the new value of fields to dataset after insert or update.

Class

[TDADatasetOptions](#)

Syntax

```
property ReturnParams: boolean default False;
```

Remarks

Use the ReturnParams property to return the new value of fields to dataset after insert or update. The actual value of field after insert or update may be different from the value stored in the local memory if the table has a trigger. When ReturnParams is True, OUT parameters of the SQLInsert and SQLUpdate statements is assigned to the corresponding fields.

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5.10.1.12.2.18 SetFieldsReadOnly Property

Used for a dataset to set the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated.

Class

[TDADatasetOptions](#)

Syntax

```
property SetFieldsReadOnly: boolean default True;
```

Remarks

If True, dataset sets the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated. Set this option for datasets that use automatic generation of the update SQL statements only.

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5.10.1.12.2.19 StrictUpdate Property

Used for TCustomDADataset to raise an exception when the number of updated or deleted records is not equal 1.

Class

[TDADatasetOptions](#)

Syntax

```
property StrictUpdate: boolean default True;
```

Remarks

If True, TCustomDADataset raises an exception when the number of updated or deleted records is not equal 1. Setting this option also causes the exception if the RefreshRecord procedure returns more than one record. The exception does not occur when you execute SQL query, that doesn't return resultset.

Note: There can be problems if this option is set to True and triggers for UPDATE, DELETE, REFRESH commands that are defined for the table. So it is recommended to disable (set to False) this option with triggers.

TrimFixedChar specifies whether to discard all trailing spaces in the string fields of a dataset.

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5.10.1.12.2.20 TrimFixedChar Property

Specifies whether to discard all trailing spaces in the string fields of a dataset.

Class

[TDADatasetOptions](#)

Syntax

```
property TrimFixedChar: boolean default True;
```

Remarks

Specifies whether to discard all trailing spaces in the string fields of a dataset.

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5.10.1.12.2.21 UpdateAllFields Property

Used to include all dataset fields in the generated UPDATE and INSERT statements.

Class

[TDADatasetOptions](#)

Syntax

```
property updateAllFields: boolean default False;
```

Remarks

If True, all dataset fields will be included in the generated UPDATE and INSERT statements. Unspecified fields will have NULL value in the INSERT statements. Otherwise, only updated fields will be included to the generated update statements.

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5.10.1.12.22 UpdateBatchSize Property

Used to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch.

Class

[TDADataSetOptions](#)

Syntax

```
property UpdateBatchSize: Integer default 1;
```

Remarks

Use the UpdateBatchSize property to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch. Takes effect only when updating dataset in the [TMemDataSet.CachedUpdates](#) mode. The default value is 1.

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5.10.1.13 TDAEncryption Class

Used to specify the options of the data encryption in a dataset.

For a list of all members of this type, see [TDAEncryption](#) members.

Unit

[DBAccess](#)

Syntax

```
TDAEncryption = class(TPersistent);
```

Remarks

Set the properties of Encryption to specify the options of the data encryption in a dataset.

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5.10.1.13.1 Members

[TDAEncryption](#) class overview.

Properties

Name	Description
Encryptor	Used to specify the encryptor class that will perform the data encryption.
Fields	Used to set field names for which encryption will be performed.

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5.10.1.13.2 Properties

Properties of the **TDAEncryption** class.

For a complete list of the **TDAEncryption** class members, see the [TDAEncryption Members](#) topic.

Public

Name	Description
Encryptor	Used to specify the encryptor class that will perform the data encryption.

Published

Name	Description
Fields	Used to set field names for which encryption will be performed.

See Also

- [TDAEncryption Class](#)
- [TDAEncryption Class Members](#)

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5.10.1.13.2.1 Encryptor Property

Used to specify the encryptor class that will perform the data encryption.

Class

[TDAEncryption](#)

Syntax

```
property Encryptor: TCREncryptor;
```

Remarks

Use the Encryptor property to specify the encryptor class that will perform the data encryption.

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5.10.1.13.2.2 Fields Property

Used to set field names for which encryption will be performed.

Class

[TDAEncryption](#)

Syntax

```
property Fields: string;
```

Remarks

Used to set field names for which encryption will be performed. Field names must be separated by semicolons.

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5.10.1.14 TDAMapRule Class

Class that formes rules for Data Type Mapping.

For a list of all members of this type, see [TDAMapRule](#) members.

Unit

[DBAccess](#)

Syntax

```
TDAMapRule = class(TMapRule);
```

Remarks

Using properties of this class, it is possible to change parameter values of the specified rules from the TDAMapRules set.

Inheritance Hierarchy

TMapRule

TDAMapRule

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5.10.1.14.1 Members

[TDAMapRule](#) class overview.

Properties

Name	Description
DBLengthMax	Maximum DB field length, until which the rule is applied.
DBLengthMin	Minimum DB field length, starting from which the rule is applied.
DBScaleMax	Maximum DB field scale, until which the rule is applied to the specified DB field.
DBScaleMin	Minimum DB field Scale, starting from which the rule is applied to the specified DB field.
DBType	DB field type, that the rule is applied to.
FieldLength	The resultant field length in Delphi.
FieldName	DataSet field name, for which the rule is applied.
FieldScale	The resultant field Scale in Delphi.
FieldType	Delphi field type, that the specified DB type or DataSet field will be mapped to.
IgnoreErrors	Ignoring errors when converting data from DB to Delphi type.

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5.10.1.14.2 Properties

Properties of the **TDAMapRule** class.

For a complete list of the **TDAMapRule** class members, see the [TDAMapRule Members](#) topic.

Published

Name	Description
DBLengthMax	Maximum DB field length, until which the rule is applied.
DBLengthMin	Minimum DB field length, starting from which the rule is applied.
DBScaleMax	Maximum DB field scale, until which the rule is applied to the specified DB field.
DBScaleMin	Minimum DB field Scale, starting from which the rule is applied to the specified DB field.
DBType	DB field type, that the rule is applied to.
FieldLength	The resultant field length in Delphi.
FieldName	DataSet field name, for which the rule is applied.
FieldScale	The resultant field Scale in Delphi.
FieldType	Delphi field type, that the specified DB type or DataSet field will be mapped to.
IgnoreErrors	Ignoring errors when converting data from DB to Delphi type.

See Also

- [TDAMapRule Class](#)
- [TDAMapRule Class Members](#)

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5.10.1.14.2.1 DBLengthMax Property

Maximum DB field length, until which the rule is applied.

Class

[TDAMapRule](#)

Syntax

```
property DBLengthMax: Integer default r1Any;
```

Remarks

Setting maximum DB field length, until which the rule is applied to the specified DB field.

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5.10.1.14.2.2 DBLengthMin Property

Minimum DB field length, starting from which the rule is applied.

Class

[TDAMapRule](#)

Syntax

```
property DBLengthMin: Integer default r1Any;
```

Remarks

Setting minimum DB field length, starting from which the rule is applied to the specified DB field.

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5.10.1.14.2.3 DBScaleMax Property

Maximum DB field scale, until which the rule is applied to the specified DB field.

Class

[TDAMapRule](#)

Syntax

```
property DBScaleMax: Integer default r1Any;
```

Remarks

Setting maximum DB field scale, until which the rule is applied to the specified DB field.

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5.10.1.14.2.4 DBScaleMin Property

Minimum DB field Scale, starting from which the rule is applied to the specified DB field.

Class

[TDAMapRule](#)

Syntax

```
property DBScaleMin: Integer default r1Any;
```

Remarks

Setting minimum DB field Scale, starting from which the rule is applied to the specified DB field.

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5.10.1.14.2.5 DBType Property

DB field type, that the rule is applied to.

Class

[TDAMapRule](#)

Syntax

```
property DBType: word default dtUnknown;
```

Remarks

Setting DB field type, that the rule is applied to. If the current rule is set for Connection, the rule will be applied to all fields of the specified type in all DataSets related to this Connection.

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5.10.1.14.2.6 FieldLength Property

The resultant field length in Delphi.

Class

[TDAMapRule](#)

Syntax

```
property FieldLength: Integer default r1Any;
```

Remarks

Setting the Delphi field length after conversion.

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5.10.1.14.2.7 FieldName Property

DataSet field name, for which the rule is applied.

Class

[TDAMapRule](#)

Syntax

```
property FieldName: string;
```

Remarks

Specifies the DataSet field name, that the rule is applied to. If the current rule is set for Connection, the rule will be applied to all fields with such name in DataSets related to this Connection.

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5.10.1.14.2.8 FieldScale Property

The resultant field Scale in Delphi.

Class

[TDAMapRule](#)

Syntax

```
property FieldScale: Integer default r1Any;
```

Remarks

Setting the Delphi field Scale after conversion.

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5.10.1.14.2.9 FieldType Property

Delphi field type, that the specified DB type or DataSet field will be mapped to.

Class

[TDAMapRule](#)

Syntax

```
property FieldType: TFieldType stored IsFieldTypeStored default  
ftUnknown;
```

Remarks

Setting Delphi field type, that the specified DB type or DataSet field will be mapped to.

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5.10.1.14.2.10 IgnoreErrors Property

Ignoring errors when converting data from DB to Delphi type.

Class

[TDAMapRule](#)

Syntax

```
property IgnoreErrors: Boolean default False;
```

Remarks

Allows to ignore errors while data conversion in case if data or DB data format cannot be recorded to the specified Delphi field type. The default value is false.

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5.10.1.15 TDAMapRules Class

Used for adding rules for DataSet fields mapping with both identifying by field name and by field type and Delphi field types.

For a list of all members of this type, see [TDAMapRules](#) members.

Unit

[DBAccess](#)

Syntax

```
TDAMapRules = class(TMapRules);
```

Inheritance Hierarchy

TMapRules

TDAMapRules

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5.10.1.15.1 Members

[TDAMapRules](#) class overview.

Properties

Name	Description
IgnoreInvalidRules	Used to avoid raising exception on mapping rules that can't be applied.

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5.10.1.15.2 Properties

Properties of the **TDAMapRules** class.

For a complete list of the **TDAMapRules** class members, see the [TDAMapRules Members](#) topic.

Published

Name	Description
IgnoreInvalidRules	Used to avoid raising exception on mapping rules that can't be applied.

See Also

- [TDAMapRules Class](#)
- [TDAMapRules Class Members](#)

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5.10.1.15.2.1 IgnoreInvalidRules Property

Used to avoid raising exception on mapping rules that can't be applied.

Class

[TDAMapRules](#)

Syntax

```
property IgnoreInvalidRules: boolean default False;
```


Remarks

Allows to ignore errors (not to raise exception) during data conversion in case if the data or DB data format cannot be recorded to the specified Delphi field type. The default value is false.

Note: In order to ignore errors occurring during data conversion, use the [TDAMapRule.IgnoreErrors](#) property

See Also

- [TDAMapRule.IgnoreErrors](#)

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5.10.1.16 TDAMetaData Class

A class for retrieving metainformation of the specified database objects in the form of dataset.

For a list of all members of this type, see [TDAMetaData](#) members.

Unit

[DBAccess](#)

Syntax

```
TDAMetaData = class (TMemDataSet);
```

Remarks

TDAMetaData is a TDataSet descendant standing for retrieving metainformation of the specified database objects in the form of dataset. First of all you need to specify which kind of metainformation you want to see. For this you need to assign the [TDAMetaData.MetaDataKind](#) property. Provide one or more conditions in the [TDAMetaData.Restrictions](#) property to diminish the size of the resultset and get only information you are interested in.

Use the [TDAMetaData.GetMetaDataKinds](#) method to get the full list of supported kinds of meta data. With the [TDAMetaData.GetRestrictions](#) method you can find out what restrictions are applicable to the specified MetaDataKind.

Example

The code below demonstrates how to get information about columns of the 'emp' table:

```
MetaData.Connection := Connection;  
MetaData.MetaDataKind := 'Columns';  
MetaData.Restrictions.Values['TABLE_NAME'] := 'Emp';  
MetaData.Open;
```

Inheritance Hierarchy

[TMemDataSet](#)

TDAMetaData

See Also

- [TDAMetaData.MetaDataKind](#)
- [TDAMetaData.Restrictions](#)
- [TDAMetaData.GetMetaDataKinds](#)
- [TDAMetaData.GetRestrictions](#)

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5.10.1.16.1 Members

[TDAMetaData](#) class overview.

Properties

Name	Description
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
Connection	Used to specify a connection object to use to connect to a data store.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.

LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MetaDataKind	Used to specify which kind of metainformation to show.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
Restrictions	Used to provide one or more conditions restricting the list of objects to be described.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Methods

Name	Description
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.

EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetMetaDataKinds	Used to get values acceptable in the MetaDataKind property.
GetRestrictions	Used to find out which restrictions are applicable to a certain MetaDataKind.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from TMemDataSet)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.

SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

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5.10.1.16.2 Properties

Properties of the **TDAMetaData** class.

For a complete list of the **TDAMetaData** class members, see the [TDAMetaData Members](#) topic.

Public

Name	Description
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
Connection	Used to specify a connection object to use to connect to a data store.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MetaDataKind	Used to specify which kind of metainformation to show.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
Restrictions	Used to provide one or more conditions restricting the list of objects to be described.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

See Also

- [TDAMetaData Class](#)

- [TDAMetaData Class Members](#)

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5.10.1.16.2.1 Connection Property

Used to specify a connection object to use to connect to a data store.

Class

[TDAMetaData](#)

Syntax

```
property Connection: TCustomDACConnection;
```

Remarks

Use the Connection property to specify a connection object to use to connect to a data store.

Set at design-time by selecting from the list of provided TCustomDACConnection or its descendant class objects.

At runtime, set the Connection property to reference an instantiated TCustomDACConnection object.

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5.10.1.16.2.2 MetaDataKind Property

Used to specify which kind of metainformation to show.

Class

[TDAMetaData](#)

Syntax

```
property MetaDataKind: string;
```

Remarks

This string property specifies which kind of metainformation to show. The value of this property should be assigned before activating the component. If `MetaDataKind` equals to an empty string (the default value), the full value list that this property accepts will be shown.

They are described in the table below:

MetaDataKind	Description
Columns	show metainformation about columns of existing tables
Constraints	show metainformation about the constraints defined in the database
IndexColumns	show metainformation about indexed columns
Indexes	show metainformation about indexes in a database
MetaDataKinds	show the acceptable values of this property. You will get the same result if the <code>MetadadataKind</code> property is an empty string
ProcedureParameters	show metainformation about parameters of existing procedures
Procedures	show metainformation about existing procedures
Restrictions	generates a dataset that describes which restrictions are applicable to each <code>MetaDataKind</code>
Tables	show metainformation about existing tables
Databases	show metainformation about existing databases

If you provide a value that equals neither of the values described in the table, an error will be raised.

See Also

- [Restrictions](#)

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5.10.1.16.2.3 Restrictions Property

Used to provide one or more conditions restricting the list of objects to be described.

Class

[TDAMetaData](#)

Syntax

```
property Restrictions: TStrings;
```


Remarks

Use the Restriction list to provide one or more conditions restricting the list of objects to be described. To see the full list of restrictions and to which metadata kinds they are applicable, you should assign the Restrictions value to the MetadataKind property and view the result.

See Also

- [MetadataKind](#)

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5.10.1.16.3 Methods

Methods of the **TDAMetaData** class.

For a complete list of the **TDAMetaData** class members, see the [TDAMetaData Members](#) topic.

Public

Name	Description
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.

EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetMetaDataKinds	Used to get values acceptable in the MetaDataKind property.
GetRestrictions	Used to find out which restrictions are applicable to a certain MetaDataKind.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from TMemDataSet)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the

	dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

See Also

- [TDAMetaData Class](#)
- [TDAMetaData Class Members](#)

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5.10.1.16.3.1 GetMetaDataKinds Method

Used to get values acceptable in the MetaDataKind property.

Class

[TDAMetaData](#)

Syntax

```
procedure GetMetaDataKinds(List: TStrings);
```

Parameters

List

Holds the object that will be filled with metadata kinds (restrictions).

Remarks

Call the `GetMetaDataKinds` method to get values acceptable in the `MetaDataKind` property. The `List` parameter will be cleared and then filled with values.

See Also

- [MetaDataKind](#)

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5.10.1.16.3.2 GetRestrictions Method

Used to find out which restrictions are applicable to a certain `MetaDataKind`.

Class

[TDAMetaData](#)

Syntax

```
procedure GetRestrictions(List: TStrings; const MetaDataKind:  
string);
```

Parameters

List

Holds the object that will be filled with metadata kinds (restrictions).

MetaDataKind

Holds the metadata kind for which restrictions are returned.

Remarks

Call the `GetRestrictions` method to find out which restrictions are applicable to a certain `MetaDataKind`. The `List` parameter will be cleared and then filled with values.

See Also

- [Restrictions](#)
- [GetMetaDataKinds](#)

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5.10.1.17 TDAParam Class

A class that forms objects to represent the values of the [parameters set](#).

For a list of all members of this type, see [TDAParam](#) members.

Unit

[DBAccess](#)

Syntax

```
TDAParam = class(TParam);
```

Remarks

Use the properties of TDAParam to set the value of a parameter. Objects that use parameters create TDAParam objects to represent these parameters. For example, TDAParam objects are used by TCustomDASQL, TCustomDADataset.

TDAParam shares many properties with TField, as both describe the value of a field in a dataset. However, a TField object has several properties to describe the field binding and the way the field is displayed, edited, or calculated, that are not needed in a TDAParam object. Conversely, TDAParam includes properties that indicate how the field value is passed as a parameter.

See Also

- [TCustomDADataset](#)
- [TCustomDASQL](#)
- [TDAParams](#)

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5.10.1.17.1 Members

[TDAParam](#) class overview.

Properties

Name	Description
------	-------------

AsBlob	Used to set and read the value of the BLOB parameter as string.
AsBlobRef	Used to set and read the value of the BLOB parameter as a TBlob object.
AsFloat	Used to assign the value for a float field to a parameter.
AsInteger	Used to assign the value for an integer field to the parameter.
AsLargeInt	Used to assign the value for a LargeInteger field to the parameter.
AsMemo	Used to assign the value for a memo field to the parameter.
AsMemoRef	Used to set and read the value of the memo parameter as a TBlob object.
AsSQLTimeStamp	Used to specify the value of the parameter when it represents a SQL timestamp field.
AsString	Used to assign the string value to the parameter.
AsWideString	Used to assign the Unicode string value to the parameter.
DataType	Indicates the data type of the parameter.
IsNull	Used to indicate whether the value assigned to a parameter is NULL.
ParamType	Used to indicate the type of use for a parameter.
Size	Specifies the size of a string type parameter.
Value	Used to represent the value of the parameter as Variant.

Methods

Name	Description
AssignField	Assigns field name and field value to a param.
AssignFieldValue	Assigns the specified field properties and value to a parameter.
LoadFromFile	Places the content of a specified file into a TDAParam object.
LoadFromStream	Places the content from a stream into a TDAParam object.
SetBlobData	Overloaded. Writes the data from a specified buffer to BLOB.

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5.10.1.17.2 Properties

Properties of the **TDAParam** class.

For a complete list of the **TDAParam** class members, see the [TDAParam Members](#) topic.

Public

Name	Description
AsBlob	Used to set and read the value of the BLOB parameter as string.
AsBlobRef	Used to set and read the value of the BLOB parameter as a TBlob object.
AsFloat	Used to assign the value for a float field to a parameter.
AsInteger	Used to assign the value for an integer field to the parameter.
AsLargeInt	Used to assign the value for a LargeInteger field to the parameter.

AsMemo	Used to assign the value for a memo field to the parameter.
AsMemoRef	Used to set and read the value of the memo parameter as a TBlob object.
AsSQLTimeStamp	Used to specify the value of the parameter when it represents a SQL timestamp field.
AsString	Used to assign the string value to the parameter.
AsWideString	Used to assign the Unicode string value to the parameter.
IsNull	Used to indicate whether the value assigned to a parameter is NULL.

Published

Name	Description
DataType	Indicates the data type of the parameter.
ParamType	Used to indicate the type of use for a parameter.
Size	Specifies the size of a string type parameter.
Value	Used to represent the value of the parameter as Variant.

See Also

- [TDAParam Class](#)
- [TDAParam Class Members](#)

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5.10.1.17.2.1 AsBlob Property

Used to set and read the value of the BLOB parameter as string.

Class

[TDAParam](#)

Syntax

```
property AsBlob: TBlobData;
```

Remarks

Use the AsBlob property to set and read the value of the BLOB parameter as string. Setting AsBlob will set the DataType property to ftBlob.

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5.10.1.17.2.2 AsBlobRef Property

Used to set and read the value of the BLOB parameter as a TBlob object.

Class

[TDAParam](#)

Syntax

```
property AsBlobRef: TBlob;
```

Remarks

Use the AsBlobRef property to set and read the value of the BLOB parameter as a TBlob object. Setting AsBlobRef will set the DataType property to ftBlob.

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5.10.1.17.2.3 AsFloat Property

Used to assign the value for a float field to a parameter.

Class

[TDAParam](#)

Syntax

```
property AsFloat: double;
```

Remarks

Use the AsFloat property to assign the value for a float field to the parameter. Setting AsFloat will set the DataType property to dtFloat.

Read the AsFloat property to determine the value that was assigned to an output parameter, represented as Double. The value of the parameter will be converted to the Double value if possible.

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5.10.1.17.2.4 AsInteger Property

Used to assign the value for an integer field to the parameter.

Class

[TDAParam](#)

Syntax

```
property AsInteger: LongInt;
```

Remarks

Use the AsInteger property to assign the value for an integer field to the parameter. Setting AsInteger will set the DataType property to dtInteger.

Read the AsInteger property to determine the value that was assigned to an output parameter, represented as a 32-bit integer. The value of the parameter will be converted to the Integer value if possible.

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5.10.1.17.2.5 AsLargeInt Property

Used to assign the value for a LargeInteger field to the parameter.

Class

[TDAParam](#)

Syntax

```
property AsLargeInt: Int64;
```

Remarks

Set the AsLargeInt property to assign the value for an Int64 field to the parameter. Setting AsLargeInt will set the DataType property to dtLargeint.

Read the AsLargeInt property to determine the value that was assigned to an output parameter, represented as a 64-bit integer. The value of the parameter will be converted to the Int64 value if possible.

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5.10.1.17.2.6 AsMemo Property

Used to assign the value for a memo field to the parameter.

Class

[TDAParam](#)

Syntax

```
property AsMemo: string;
```

Remarks

Use the AsMemo property to assign the value for a memo field to the parameter. Setting AsMemo will set the DataType property to ftMemo.

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5.10.1.17.2.7 AsMemoRef Property

Used to set and read the value of the memo parameter as a TBlob object.

Class

[TDAParam](#)

Syntax

```
property AsMemoRef: TBlob;
```

Remarks

Use the AsMemoRef property to set and read the value of the memo parameter as a TBlob object. Setting AsMemoRef will set the DataType property to ftMemo.

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5.10.1.17.2.8 AsSQLTimeStamp Property

Used to specify the value of the parameter when it represents a SQL timestamp field.

Class

[TDAParam](#)

Syntax

```
property AsSQLTimeStamp: TSQLTimeStamp;
```

Remarks

Set the AsSQLTimeStamp property to assign the value for a SQL timestamp field to the parameter. Setting AsSQLTimeStamp sets the DataType property to ftTimeStamp.

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5.10.1.17.2.9 AsString Property

Used to assign the string value to the parameter.

Class

[TDAParam](#)

Syntax

```
property AsString: string;
```

Remarks

Use the AsString property to assign the string value to the parameter. Setting AsString will set the DataType property to ftString.

Read the AsString property to determine the value that was assigned to an output parameter represented as a string. The value of the parameter will be converted to a string.

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5.10.1.17.2.10 AsWideString Property

Used to assign the Unicode string value to the parameter.

Class

[TDAParam](#)

Syntax

```
property AswideString: string;
```

Remarks

Set AsWideString to assign the Unicode string value to the parameter. Setting AsWideString will set the DataType property to ftWideString.

Read the AsWideString property to determine the value that was assigned to an output parameter, represented as a Unicode string. The value of the parameter will be converted to a Unicode string.

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5.10.1.17.2.11 DataType Property

Indicates the data type of the parameter.

Class

[TDAParam](#)

Syntax

```
property DataType: TFieldType stored IsDataTypeStored;
```

Remarks

DataType is set automatically when a value is assigned to a parameter. Do not set DataType for bound fields, as this may cause the assigned value to be misinterpreted.

Read DataType to learn the type of data that was assigned to the parameter. Every possible value of DataType corresponds to the type of a database field.

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5.10.1.17.2.12 IsNull Property

Used to indicate whether the value assigned to a parameter is NULL.

Class

[TDAParam](#)

Syntax

```
property IsNull: boolean;
```

Remarks

Use the IsNull property to indicate whether the value assigned to a parameter is NULL.

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5.10.1.17.2.13 ParamType Property

Used to indicate the type of use for a parameter.

Class

[TDAParam](#)

Syntax

```
property ParamType default DB . ptUnknown;
```

Remarks

Objects that use TDAParam objects to represent field parameters set ParamType to indicate the type of use for a parameter.

To learn the description of TParamType refer to Delphi Help.

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5.10.1.17.2.14 Size Property

Specifies the size of a string type parameter.

Class

[TDAParam](#)

Syntax

```
property Size: integer default 0;
```

Remarks

Use the Size property to indicate the maximum number of characters the parameter may contain. Use the Size property only for Output parameters of the **ftString**, **ftFixedChar**, **ftBytes**, **ftVarBytes**, or **ftWideString** type.

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5.10.1.17.2.15 Value Property

Used to represent the value of the parameter as Variant.

Class

[TDAParam](#)

Syntax

```
property value: variant stored IsValueStored;
```

Remarks

The Value property represents the value of the parameter as Variant.

Use Value in generic code that manipulates the values of parameters without the need to know the field type the parameter represent.

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5.10.1.17.3 Methods

Methods of the **TDAParam** class.

For a complete list of the **TDAParam** class members, see the [TDAParam Members](#) topic.

Public

Name	Description
AssignField	Assigns field name and field value to a param.
AssignFieldValue	Assigns the specified field properties and value to a parameter.
LoadFromFile	Places the content of a specified file into a TDAParam object.
LoadFromStream	Places the content from a stream into a TDAParam object.
SetBlobData	Overloaded. Writes the data from a specified buffer to BLOB.

See Also

- [TDAParam Class](#)
- [TDAParam Class Members](#)

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5.10.1.17.3.1 AssignField Method

Assigns field name and field value to a param.

Class

[TDAParam](#)

Syntax

```
procedure AssignField(Field: TField);
```

Parameters

Field

Holds the field which name and value should be assigned to the param.

Remarks

Call the AssignField method to assign field name and field value to a param.

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5.10.1.17.3.2 AssignFieldValue Method

Assigns the specified field properties and value to a parameter.

Class

[TDAParam](#)

Syntax

```
procedure AssignFieldValue(Field: TField; const value: Variant);  
virtual;
```

Parameters

Field

Holds the field the properties of which will be assigned to the parameter.

Value

Holds the value for the parameter.

Remarks

Call the AssignFieldValue method to assign the specified field properties and value to a parameter.

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5.10.1.17.3.3 LoadFromFile Method

Places the content of a specified file into a TDAParam object.

Class

[TDAParam](#)

Syntax

```
procedure LoadFromFile(const FileName: string; BlobType:  
TBlobType);
```

Parameters

FileName

Holds the name of the file.

BlobType

Holds a value that modifies the DataType property so that this TDAParam object now holds the BLOB value.

Remarks

Use the LoadFromFile method to place the content of a file specified by FileName into a TDAParam object. The BlobType value modifies the DataType property so that this TDAParam object now holds the BLOB value.

See Also

- [LoadFromStream](#)

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5.10.1.17.3.4 LoadFromStream Method

Places the content from a stream into a TDAParam object.

Class

[TDAParam](#)

Syntax

```
procedure LoadFromStream(Stream: TStream; BlobType: TBlobType);  
virtual;
```

Parameters

Stream

Holds the stream to copy content from.

BlobType

Holds a value that modifies the DataType property so that this TDAParam object now holds the BLOB value.

Remarks

Call the LoadFromStream method to place the content from a stream into a TDAParam object. The BlobType value modifies the DataType property so that this TDAParam object now holds the BLOB value.

See Also

- [LoadFromFile](#)

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5.10.1.17.3.5 SetBlobData Method

Writes the data from a specified buffer to BLOB.

Class

[TDAParam](#)

Overload List

Name	Description
SetBlobData(Buffer: TValueBuffer)	Writes the data from a specified buffer to BLOB.
SetBlobData(Buffer: IntPtr; Size: Integer)	Writes the data from a specified buffer to BLOB.

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Writes the data from a specified buffer to BLOB.

Class

[TDAParam](#)

Syntax

```
procedure SetBlobData(Buffer: TValueBuffer); overload;
```

Parameters

Buffer
Holds the pointer to the data.

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Writes the data from a specified buffer to BLOB.

Class

[TDAParam](#)

Syntax

```
procedure SetBlobData(Buffer: IntPtr; Size: Integer); overload;
```

Parameters

Buffer
Holds the pointer to data.

Size
Holds the number of bytes to read from the buffer.

Remarks

Call the SetBlobData method to write data from a specified buffer to BLOB.

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5.10.1.18 TDAParams Class

This class is used to manage a list of TDAParam objects for an object that uses field parameters.

For a list of all members of this type, see [TDAParams](#) members.

Unit

[DBAccess](#)

Syntax

```
TDAParams = class(TParams);
```

Remarks

Use TDAParams to manage a list of TDAParam objects for an object that uses field parameters. For example, TCustomDADataset objects and TCustomDASQL objects use TDAParams objects to create and access their parameters.

See Also

- [TCustomDADataset.Params](#)
- [TCustomDASQL.Params](#)
- [TDAParam](#)

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5.10.1.18.1 Members

[TDAParams](#) class overview.

Properties

Name	Description
Items	Used to iterate through all parameters.

Methods

Name	Description
FindParam	Searches for a parameter with the specified name.
ParamByName	Searches for a parameter with the specified name.

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5.10.1.18.2 Properties

Properties of the **TDAParams** class.

For a complete list of the **TDAParams** class members, see the [TDAParams Members](#) topic.

Public

Name	Description
Items	Used to iterate through all parameters.

See Also

- [TDAParams Class](#)
- [TDAParams Class Members](#)

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5.10.1.18.2.1 Items Property(Indexer)

Used to iterate through all parameters.

Class

[TDAParams](#)

Syntax

property Items[Index: integer]: [TDAParam](#); **default**;

Parameters

Index

Holds an index in the range 0..Count - 1.

Remarks

Use the Items property to iterate through all parameters. Index identifies the index in the range 0..Count - 1. Items can reference a particular parameter by its index, but the ParamByName method is preferred in order to avoid depending on the order of the parameters.

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5.10.1.18.3 Methods

Methods of the **TDAParams** class.

For a complete list of the **TDAParams** class members, see the [TDAParams Members](#) topic.

Public

Name	Description
FindParam	Searches for a parameter with the specified name.
ParamByName	Searches for a parameter with the specified name.

See Also

- [TDAParams Class](#)
- [TDAParams Class Members](#)

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5.10.1.18.3.1 FindParam Method

Searches for a parameter with the specified name.

Class

[TDAParams](#)

Syntax

```
function FindParam(const value: string): TDAParam;
```

Parameters

Value

Holds the parameter name.

Return Value

a parameter, if a match was found. Nil otherwise.

Remarks

Use the FindParam method to find a parameter with the name passed in Value. If a match is found, FindParam returns the parameter. Otherwise, it returns nil. Use this method rather than a direct reference to the Items property to avoid depending on the order of the entries.

To locate more than one parameter at a time by name, use the GetParamList method instead. To get only the value of a named parameter, use the ParamValues property.

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5.10.1.18.3.2 ParamByName Method

Searches for a parameter with the specified name.

Class

[TDAParams](#)

Syntax

```
function ParamByName(const value: string): TDAParam;
```

Parameters

Value

Holds the parameter name.

Return Value

a parameter, if the match was found. otherwise an exception is raised.

Remarks

Use the ParamByName method to find a parameter with the name passed in Value. If a match was found, ParamByName returns the parameter. Otherwise, an exception is raised. Use this method rather than a direct reference to the [Items](#) property to avoid depending on the order of the entries.

To locate a parameter by name without raising an exception if the parameter is not found, use the FindParam method.

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5.10.1.19 TDATransaction Class

A base class that implements functionality for controlling transactions.

For a list of all members of this type, see [TDATransaction](#) members.

Unit

[DBAccess](#)

Syntax

```
TDATransaction = class(TComponent);
```

Remarks

TDATransaction is a base class for components implementing functionality for managing transactions.

Do not create instances of TDATransaction. Use descendants of the TDATransaction class instead.

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5.10.1.19.1 Members

[TDATransaction](#) class overview.

Properties

Name	Description
Active	Used to determine if the transaction is active.
DefaultCloseAction	Used to specify the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.

Methods

Name	Description
Commit	Commits the current transaction.
Rollback	Discards all modifications of data associated with the current transaction and ends the transaction.
StartTransaction	Begins a new transaction.

Events

Name	Description
OnCommit	Occurs after the transaction has been successfully committed.
OnCommitRetaining	Occurs after CommitRetaining has been executed.
OnError	Used to process errors that occur during executing a transaction.
OnRollback	Occurs after the transaction has been successfully rolled back.

OnRollbackRetaining	Occurs after RollbackRetaining has been executed.
-------------------------------------	---

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5.10.1.19.2 Properties

Properties of the **TDATransaction** class.

For a complete list of the **TDATransaction** class members, see the [TDATransaction Members](#) topic.

Public

Name	Description
Active	Used to determine if the transaction is active.
DefaultCloseAction	Used to specify the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.

See Also

- [TDATransaction Class](#)
- [TDATransaction Class Members](#)

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5.10.1.19.2.1 Active Property

Used to determine if the transaction is active.

Class

[TDATransaction](#)

Syntax

```
property Active: boolean;
```

Remarks

Indicates whether the transaction is active. This property is read-only.

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5.10.1.19.2.2 DefaultCloseAction Property

Used to specify the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.

Class

[TDATransaction](#)

Syntax

```
property DefaultCloseAction: TCRTransactionAction default  
taRollback;
```

Remarks

Use DefaultCloseAction to specify the transaction behaviour when it is destroyed while being active, or when one of its connections is closed with the active transaction.

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5.10.1.19.3 Methods

Methods of the **TDATransaction** class.

For a complete list of the **TDATransaction** class members, see the [TDATransaction Members](#) topic.

Public

Name	Description
Commit	Commits the current transaction.

Rollback	Discards all modifications of data associated with the current transaction and ends the transaction.
StartTransaction	Begins a new transaction.

See Also

- [TDATransaction Class](#)
- [TDATransaction Class Members](#)

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5.10.1.19.3.1 Commit Method

Commits the current transaction.

Class

[TDATransaction](#)

Syntax

```
procedure Commit; virtual;
```

Remarks

Call the Commit method to commit the current transaction. On commit server writes permanently all pending data updates associated with the current transaction to the database, and then finishes the transaction.

See Also

- [Rollback](#)
- [StartTransaction](#)

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5.10.1.19.3.2 Rollback Method

Discards all modifications of data associated with the current transaction and ends the transaction.

Class

[TDATransaction](#)

Syntax

```
procedure Rollback; virtual;
```

Remarks

Call Rollback to cancel all data modifications made within the current transaction across all database connections, and finish the transaction.

See Also

- [Commit](#)
- [StartTransaction](#)

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5.10.1.19.3.3 StartTransaction Method

Begins a new transaction.

Class

[TDATransaction](#)

Syntax

```
procedure StartTransaction; virtual;
```

Remarks

Call the StartTransaction method to begin a new transaction against the database server. Before calling StartTransaction, an application should check the [Active](#) property. If TDATransaction.Active is True, indicating that a transaction is already in progress, a

subsequent call to `StartTransaction` will raise `EDatabaseError`. An active transaction must be finished by call to [Commit](#) or [Rollback](#) before call to `StartTransaction`. Call to `StartTransaction` when connection is closed also will raise `EDatabaseError`.

Updates, insertions, and deletions that take place after a call to `StartTransaction` are held by the server until the application calls [Commit](#) to save the changes, or [Rollback](#) to cancel them.

See Also

- [Commit](#)
- [Rollback](#)

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5.10.1.19.4 Events

Events of the **TDATransaction** class.

For a complete list of the **TDATransaction** class members, see the [TDATransaction Members](#) topic.

Public

Name	Description
OnCommit	Occurs after the transaction has been successfully committed.
OnCommitRetaining	Occurs after <code>CommitRetaining</code> has been executed.
OnError	Used to process errors that occur during executing a transaction.
OnRollback	Occurs after the transaction has been successfully rolled back.
OnRollbackRetaining	Occurs after <code>RollbackRetaining</code> has been executed.

See Also

- [TDATransaction Class](#)
- [TDATransaction Class Members](#)

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5.10.1.19.4.1 OnCommit Event

Occurs after the transaction has been successfully committed.

Class

[TDATransaction](#)

Syntax

```
property OnCommit: TNotifyEvent;
```

Remarks

The OnCommit event fires when the M:Devart.Dac.TDATransaction.Commit method is executed, just after the transaction is successfully committed. In order to respond to the M:Devart.Sdac.TMSTransaction.CommitRetaining() method execution, the [OnCommitRetaining](#) event is used. When an error occurs during commit, the [OnError](#) event fires.

See Also

- [Commit](#)
- [OnError](#)

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5.10.1.19.4.2 OnCommitRetaining Event

Occurs after CommitRetaining has been executed.

Class

[TDATransaction](#)

Syntax

```
property OnCommitRetaining: TNotifyEvent;
```

Remarks

The OnCommitRetaining event fires when the CommitRetaining method is executed, just after the transaction is successfully committed. In order to respond to the M:Devart.Dac.TDATransaction.Commit method execution, the [OnCommit](#) event is used.

When an error occurs during commit, the [OnError](#) event fired.

See Also

- [Commit](#)
- [OnCommit](#)
- [OnError](#)

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5.10.1.19.4.3 OnError Event

Used to process errors that occur during executing a transaction.

Class

[TDATransaction](#)

Syntax

```
property OnError: TDATransactionErrorEvent;
```

Remarks

Add a handler to the OnError event to process errors that occur during executing a transaction control statements such as [Commit](#), [Rollback](#). Check the E parameter to get the error code.

See Also

- [Commit](#)

- [Rollback](#)
- [StartTransaction](#)

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5.10.1.19.4.4 OnRollback Event

Occurs after the transaction has been successfully rolled back.

Class

[TDATransaction](#)

Syntax

```
property OnRollback: TNotifyEvent;
```

Remarks

The OnRollback event fires when the M:Devart.Dac.TDATransaction.Rollback method is executed, just after the transaction is successfully rolled back. In order to respond to the M:Devart.Sdac.TMSTransaction.RollbackRetaining() method execution, the [OnRollbackRetaining](#) event is used.

When an error occurs during rollback, the [OnError](#) event fired.

See Also

- [Rollback](#)
- [OnError](#)

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5.10.1.19.4.5 OnRollbackRetaining Event

Occurs after RollbackRetaining has been executed.

Class

[TDATransaction](#)

Syntax

```
property OnRollbackRetaining: TNotifyEvent;
```

Remarks

The OnRollbackRetaining event fires when the RollbackRetaining method is executed, just after the transaction is successfully rolled back. In order to respond to the [Rollback](#) method execution, the [OnRollback](#) event is used. When an error occurs during rollback, the [OnError](#) event fired.

See Also

- [Rollback](#)
- [OnRollback](#)
- [OnError](#)

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5.10.1.20 TMacro Class

Object that represents the value of a macro.

For a list of all members of this type, see [TMacro](#) members.

Unit

[DBAccess](#)

Syntax

```
TMacro = class(TCollectionItem);
```

Remarks

TMacro object represents the value of a macro. Macro is a variable that holds string value. You just insert **&** MacroName in a SQL query text and change the value of macro by the Macro property editor at design time or the Value property at run time. At the time of opening query macro is replaced by its value.

If by any reason it is not convenient for you to use the ' **&** ' symbol as a character of macro

replacement, change the value of the MacroChar variable.

See Also

- [TMacros](#)

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5.10.1.20.1 Members

[TMacro](#) class overview.

Properties

Name	Description
Active	Used to determine if the macro should be expanded.
AsDateTime	Used to set the TDateTime value to a macro.
AsFloat	Used to set the float value to a macro.
AsInteger	Used to set the integer value to a macro.
AsString	Used to assign the string value to a macro.
Name	Used to identify a particular macro.
Value	Used to set the value to a macro.

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5.10.1.20.2 Properties

Properties of the **TMacro** class.

For a complete list of the **TMacro** class members, see the [TMacro Members](#) topic.

Public

Name	Description
------	-------------

AsDateTime	Used to set the TDateTime value to a macro.
AsFloat	Used to set the float value to a macro.
AsInteger	Used to set the integer value to a macro.
AsString	Used to assign the string value to a macro.

Published

Name	Description
Active	Used to determine if the macro should be expanded.
Name	Used to identify a particular macro.
Value	Used to set the value to a macro.

See Also

- [TMacro Class](#)
- [TMacro Class Members](#)

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5.10.1.20.2.1 Active Property

Used to determine if the macro should be expanded.

Class

[TMacro](#)

Syntax

```
property Active: boolean default True;
```

Remarks

When set to True, the macro will be expanded, otherwise macro definition is replaced by null

string. You can use the Active property to modify the SQL property.

The default value is True.

Example

```
MSQuery.SQL.Text := 'SELECT * FROM Dept WHERE DeptNo > 20 &Cond1';  
MSQuery.Macros[0].Value := 'and DName is NULL';  
MSQuery.Macros[0].Active:= False;
```

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5.10.1.20.2.2 AsDateTime Property

Used to set the TDateTime value to a macro.

Class

[TMacro](#)

Syntax

```
property AsDateTime: TDateTime;
```

Remarks

Use the AsDateTime property to set the TDateTime value to a macro.

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5.10.1.20.2.3 AsFloat Property

Used to set the float value to a macro.

Class

[TMacro](#)

Syntax

```
property AsFloat: double;
```

Remarks

Use the AsFloat property to set the float value to a macro.

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5.10.1.20.2.4 AsInteger Property

Used to set the integer value to a macro.

Class

[TMacro](#)

Syntax

```
property AsInteger: integer;
```

Remarks

Use the AsInteger property to set the integer value to a macro.

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5.10.1.20.2.5 AsString Property

Used to assign the string value to a macro.

Class

[TMacro](#)

Syntax

```
property AsString: string;
```

Remarks

Use the AsString property to assign the string value to a macro. Read the AsString property to determine the value of macro represented as a string.

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5.10.1.20.2.6 Name Property

Used to identify a particular macro.

Class

[TMacro](#)

Syntax

```
property Name: string;
```

Remarks

Use the Name property to identify a particular macro.

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5.10.1.20.2.7 Value Property

Used to set the value to a macro.

Class

[TMacro](#)

Syntax

```
property value: string;
```

Remarks

Use the Value property to set the value to a macro.

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5.10.1.21 TMacros Class

Controls a list of TMacro objects for the [TCustomDASQL.Macros](#) or [TCustomDADataset](#) components.

For a list of all members of this type, see [TMacros](#) members.

Unit

[DBAccess](#)

Syntax

```
TMacros = class(TCollection);
```

Remarks

Use TMacros to manage a list of TMacro objects for the [TCustomDASQL](#) or [TCustomDADataset](#) components.

See Also

- [TMacro](#)

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5.10.1.21.1 Members

[TMacros](#) class overview.

Properties

Name	Description
Items	Used to iterate through all the macros parameters.

Methods

Name	Description
AssignValues	Copies the macros values and properties from the specified source.
Expand	Changes the macros in the passed SQL statement to their values.
FindMacro	Finds a macro with the specified name.
IsEqual	Compares itself with another TMacro object.

MacroByName	Used to search for a macro with the specified name.
Scan	Creates a macros from the passed SQL statement.

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5.10.1.21.2 Properties

Properties of the **TMacros** class.

For a complete list of the **TMacros** class members, see the [TMacros Members](#) topic.

Public

Name	Description
Items	Used to iterate through all the macros parameters.

See Also

- [TMacros Class](#)
- [TMacros Class Members](#)

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5.10.1.21.2.1 Items Property(Indexer)

Used to iterate through all the macros parameters.

Class

[TMacros](#)

Syntax

```
property Items[Index: integer]: TMacro; default;
```

Parameters

Index

Holds the index in the range 0..Count - 1.

Remarks

Use the `Items` property to iterate through all macros parameters. Index identifies the index in the range 0..Count - 1.

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5.10.1.21.3 Methods

Methods of the **TMacros** class.

For a complete list of the **TMacros** class members, see the [TMacros Members](#) topic.

Public

Name	Description
AssignValues	Copies the macros values and properties from the specified source.
Expand	Changes the macros in the passed SQL statement to their values.
FindMacro	Finds a macro with the specified name.
IsEqual	Compares itself with another TMacro object.
MacroByName	Used to search for a macro with the specified name.
Scan	Creates a macros from the passed SQL statement.

See Also

- [TMacros Class](#)
- [TMacros Class Members](#)

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5.10.1.21.3.1 AssignValues Method

Copies the macros values and properties from the specified source.

Class

[TMacros](#)

Syntax

```
procedure AssignValues(Value: TMacros);
```

Parameters

Value

Holds the source to copy the macros values and properties from.

Remarks

The Assign method copies the macros values and properties from the specified source. Macros are not recreated. Only the values of macros with matching names are assigned.

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5.10.1.21.3.2 Expand Method

Changes the macros in the passed SQL statement to their values.

Class

[TMacros](#)

Syntax

```
procedure Expand(var SQL: string);
```

Parameters

SQL

Holds the passed SQL statement.

Remarks

Call the Expand method to change the macros in the passed SQL statement to their values.

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5.10.1.21.3.3 FindMacro Method

Finds a macro with the specified name.

Class

[TMacros](#)

Syntax

```
function FindMacro(const value: string): TMacro;
```

Parameters

Value

Holds the value of a macro to search for.

Return Value

TMacro object if a match is found, nil otherwise.

Remarks

Call the FindMacro method to find a macro with the specified name. If a match is found, FindMacro returns the macro. Otherwise, it returns nil. Use this method instead of a direct reference to the [Items](#) property to avoid depending on the order of the items.

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5.10.1.21.3.4 IsEqual Method

Compares itself with another TMacro object.

Class

[TMacros](#)

Syntax

```
function IsEqual(Value: TMacros): boolean;
```

Parameters

Value

Holds the values of TMacro objects.

Return Value

True, if the number of TMacro objects and the values of all TMacro objects are equal.

Remarks

Call the IsEqual method to compare itself with another TMacro object. Returns True if the number of TMacro objects and the values of all TMacro objects are equal.

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5.10.1.21.3.5 MacroByName Method

Used to search for a macro with the specified name.

Class

[TMacros](#)

Syntax

```
function MacroByName(const value: string): TMacro;
```

Parameters*Value*

Holds a name of the macro to search for.

Return Value

TMacro object, if a macro with specified name was found.

Remarks

Call the MacroByName method to find a Macro with the name passed in Value. If a match is found, MacroByName returns the Macro. Otherwise, an exception is raised. Use this method instead of a direct reference to the [Items](#) property to avoid depending on the order of the items.

To locate a macro by name without raising an exception if the parameter is not found, use the [FindMacro](#) method.

To set a value to a macro, use the [TMacro.Value](#) property.

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5.10.1.21.3.6 Scan Method

Creates a macros from the passed SQL statement.

Class

[TMacros](#)

Syntax

```
procedure Scan(const SQL: string);
```

Parameters

SQL

Holds the passed SQL statement.

Remarks

Call the Scan method to create a macros from the passed SQL statement. On that all existing TMacro objects are cleared.

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5.10.1.22 TPoolingOptions Class

This class allows setting up the behaviour of the connection pool.

For a list of all members of this type, see [TPoolingOptions](#) members.

Unit

[DBAccess](#)

Syntax

```
TPoolingOptions = class(TPersistent);
```

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5.10.1.22.1 Members

[TPoolingOptions](#) class overview.

Properties

Name	Description
ConnectionLifetime	Used to specify the maximum time during which an open connection can be used by connection pool.
MaxPoolSize	Used to specify the maximum number of connections that can be opened in connection pool.
MinPoolSize	Used to specify the minimum number of connections that can be opened in the connection pool.
PoolId	Used to specify an ID for a connection pool.
Validate	Used for a connection to be validated when it is returned from the pool.

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5.10.1.22.2 Properties

Properties of the **TPoolingOptions** class.

For a complete list of the **TPoolingOptions** class members, see the [TPoolingOptions Members](#) topic.

Published

Name	Description
ConnectionLifetime	Used to specify the maximum time during which an open connection can be used by connection pool.
MaxPoolSize	Used to specify the maximum number of connections that can be opened in connection pool.

MinPoolSize	Used to specify the minimum number of connections that can be opened in the connection pool.
PoolId	Used to specify an ID for a connection pool.
Validate	Used for a connection to be validated when it is returned from the pool.

See Also

- [TPoolingOptions Class](#)
- [TPoolingOptions Class Members](#)

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5.10.1.22.2.1 ConnectionLifetime Property

Used to specify the maximum time during which an open connection can be used by connection pool.

Class

[TPoolingOptions](#)

Syntax

```
property ConnectionLifetime: integer default  
DefaultConnectionLifetime;
```

Remarks

Use the ConnectionLifeTime property to specify the maximum time during which an open connection can be used by connection pool. Measured in milliseconds. Pool deletes connections with exceeded connection lifetime when [TCustomDACConnection](#) is about to close. If ConnectionLifetime is set to 0 (by default), then the lifetime of connection is infinite. ConnectionLifetime concerns only inactive connections in the pool.

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5.10.1.22.2.2 MaxPoolSize Property

Used to specify the maximum number of connections that can be opened in connection pool.

Class

[TPoolingOptions](#)

Syntax

```
property MaxPoolSize: integer default DefValMaxPoolSize;
```

Remarks

Specifies the maximum number of connections that can be opened in connection pool. Once this value is reached, no more connections are opened. The valid values are 1 and higher.

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5.10.1.22.2.3 MinPoolSize Property

Used to specify the minimum number of connections that can be opened in the connection pool.

Class

[TPoolingOptions](#)

Syntax

```
property MinPoolSize: integer default DefValMinPoolSize;
```

Remarks

Use the MinPoolSize property to specify the minimum number of connections that can be opened in the connection pool.

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5.10.1.22.2.4 PoolId Property

Used to specify an ID for a connection pool.

Class

[TPoolingOptions](#)

Syntax

```
property PoolId: Integer default DefValPoolId;
```

Remarks

Use the PoolId property to make a group of connections use a specific connection pool.

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5.10.1.22.2.5 Validate Property

Used for a connection to be validated when it is returned from the pool.

Class

[TPoolingOptions](#)

Syntax

```
property validate: boolean default DefValValidate;
```

Remarks

If the Validate property is set to True, connection will be validated when it is returned from the pool. By default this option is set to False and pool does not validate connection when it is returned to be used by a TCustomDACConnection component.

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5.10.1.23 TSmartFetchOptions Class

Smart fetch options are used to set up the behavior of the SmartFetch mode.

For a list of all members of this type, see [TSmartFetchOptions](#) members.

Unit

[DBAccess](#)

Syntax

```
TSmartFetchOptions = class(TPersistent);
```

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5.10.1.23.1 Members

[TSmartFetchOptions](#) class overview.

Properties

Name	Description
Enabled	Sets SmartFetch mode enabled or not.
LiveBlock	Used to minimize memory consumption.
PrefetchedFields	List of fields additional to key fields that will be read from the database on dataset open.
SQLGetKeyValues	SQL query for the read key and prefetched fields from the database.

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5.10.1.23.2 Properties

Properties of the **TSmartFetchOptions** class.

For a complete list of the **TSmartFetchOptions** class members, see the

[TSmartFetchOptions Members](#) topic.

Published

Name	Description
------	-------------

Enabled	Sets SmartFetch mode enabled or not.
LiveBlock	Used to minimize memory consumption.
PrefetchedFields	List of fields additional to key fields that will be read from the database on dataset open.
SQLGetKeyValues	SQL query for the read key and prefetched fields from the database.

See Also

- [TSmartFetchOptions Class](#)
- [TSmartFetchOptions Class Members](#)

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5.10.1.23.2.1 Enabled Property

Sets SmartFetch mode enabled or not.

Class

[TSmartFetchOptions](#)

Syntax

```
property Enabled: Boolean default False;
```

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5.10.1.23.2.2 LiveBlock Property

Used to minimize memory consumption.

Class

[TSmartFetchOptions](#)

Syntax

```
property LiveBlock: Boolean default True;
```

Remarks

If LiveBlock is True, then on navigating through a dataset forward or backward, memory will be allocated for records count defined in the the FetchRows property, and no additional memory will be allocated. But if you return records that were read from the database before, they will be read from the database again, because when you left block with these records, memory was free. So the LiveBlock mode minimizes memory consumption, but can decrease performance, because it can lead to repeated data reading from the database.

The default value of LiveBlock is False.

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5.10.1.23.2.3 PrefetchedFields Property

List of fields additional to key fields that will be read from the database on dataset open.

Class

[TSmartFetchOptions](#)

Syntax

```
property PrefetchedFields: string;
```

Remarks

If you are going to use locate, filter or sort by some fields, then these fields should be added to the prefetched fields list to avoid excessive reading from the database.

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5.10.1.23.2.4 SQLGetKeyValues Property

SQL query for the read key and prefetched fields from the database.

Class

[TSmartFetchOptions](#)

Syntax

```
property SQLGetKeyValues: TStrings;
```

Remarks

SQLGetKeyValues is used when the basic SQL query is complex and the query for reading the key and prefetched fields can't be generated automatically.

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5.10.2 Types

Types in the **DBAccess** unit.

Types

Name	Description
TAfterExecuteEvent	This type is used for the TCustomDADataset.AfterExecute and TCustomDASQL.AfterExecute events.
TAfterFetchEvent	This type is used for the TCustomDADataset.AfterFetch event.
TBeforeFetchEvent	This type is used for the TCustomDADataset.BeforeFetch event.
TConnectionLostEvent	This type is used for the TCustomDAConnection.OnConnectionLost event.
TDAConnectionErrorEvent	This type is used for the TCustomDAConnection.OnError event.
TDATransactionErrorEvent	This type is used for the TDATransaction.OnError event.
TRefreshOptions	Represents the set of TRefreshOption .

TUpdateExecuteEvent	This type is used for the TCustomDADataset.AfterUpdateExecute and TCustomDADataset.BeforeUpdateExecute events.
-------------------------------------	--

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5.10.2.1 TAfterExecuteEvent Procedure Reference

This type is used for the [TCustomDADataset.AfterExecute](#) and [TCustomDASQL.AfterExecute](#) events.

Unit

[DBAccess](#)

Syntax

```
TAfterExecuteEvent = procedure (Sender: TObject; Result: boolean)
of object;
```

Parameters

Sender

An object that raised the event.

Result

The result is True if SQL statement is executed successfully. False otherwise.

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5.10.2.2 TAfterFetchEvent Procedure Reference

This type is used for the [TCustomDADataset.AfterFetch](#) event.

Unit

[DBAccess](#)

Syntax

```
TAfterFetchEvent = procedure (DataSet: TCustomDADataset) of
```



```
object;
```

Parameters

DataSet

Holds the TCustomDADataset descendant to synchronize the record position with.

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5.10.2.3 TBeforeFetchEvent Procedure Reference

This type is used for the [TCustomDADataset.BeforeFetch](#) event.

Unit

[DBAccess](#)

Syntax

```
TBeforeFetchEvent = procedure (DataSet: TCustomDADataset; var  
Cancel: boolean) of object;
```

Parameters

DataSet

Holds the TCustomDADataset descendant to synchronize the record position with.

Cancel

True, if the current fetch operation should be aborted.

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5.10.2.4 TConnectionLostEvent Procedure Reference

This type is used for the [TCustomDACConnection.OnConnectionLost](#) event.

Unit

[DBAccess](#)

Syntax

```
TConnectionLostEvent = procedure (Sender: TObject; Component:  
TComponent; ConnLostCause: TConnLostCause; var RetryMode:  
TRetryMode) of object;
```

Parameters*Sender*

An object that raised the event.

*Component**ConnLostCause*

The reason of the connection loss.

RetryMode

The application behavior when connection is lost.

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5.10.2.5 TDAConnectionErrorEvent Procedure Reference

This type is used for the [TCustomDACConnection.OnError](#) event.

Unit

[DBAccess](#)

Syntax

```
TDAConnectionErrorEvent = procedure (Sender: TObject; E: EDAError;  
var Fail: boolean) of object;
```

Parameters*Sender*

An object that raised the event.

E

The error information.

Fail

False, if an error dialog should be prevented from being displayed and EAbort exception should be raised to cancel current operation .

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5.10.2.6 TDATransactionErrorEvent Procedure Reference

This type is used for the [TDATransaction.OnError](#) event.

Unit

[DBAccess](#)

Syntax

```
TDATransactionErrorEvent = procedure (Sender: TObject; E: EDAError; var Fail: boolean) of object;
```

Parameters

Sender

An object that raised the event.

E

The error code.

Fail

False, if an error dialog should be prevented from being displayed and EAbort exception to cancel the current operation should be raised.

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5.10.2.7 TRefreshOptions Set

Represents the set of [TRefreshOption](#).

Unit

[DBAccess](#)

Syntax

```
TRefreshOptions = set of TRefreshOption;
```

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5.10.2.8 TUpdateExecuteEvent Procedure Reference

This type is used for the TCustomDADataset.AfterUpdateExecute and TCustomDADataset.BeforeUpdateExecute events.

Unit

[DBAccess](#)

Syntax

```
TUpdateExecuteEvent = procedure (Sender: TDataSet; StatementTypes: TStatementTypes; Params: TDAParams) of object;
```

Parameters

Sender

An object that raised the event.

StatementTypes

Holds the type of the SQL statement being executed.

Params

Holds the parameters with which the SQL statement will be executed.

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5.10.3 Enumerations

Enumerations in the **DBAccess** unit.

Enumerations

Name	Description
TLabelSet	Sets the language of labels in the connect dialog.
TLockMode	Specifies the lock mode.
TRefreshOption	Indicates when the editing record will be refreshed.
TRetryMode	Specifies the application behavior when connection is lost.

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5.10.3.1 TLabelSet Enumeration

Sets the language of labels in the connect dialog.

Unit

[DBAccess](#)

Syntax

```
TLabelSet = (IsCustom, IsEnglish, IsFrench, IsGerman, IsItalian, IsPolish, IsPortuguese, IsRussian, IsSpanish);
```

Values

Value	Meaning
IsCustom	Set the language of labels in the connect dialog manually.
IsEnglish	Set English as the language of labels in the connect dialog.
IsFrench	Set French as the language of labels in the connect dialog.
IsGerman	Set German as the language of labels in the connect dialog.
IsItalian	Set Italian as the language of labels in the connect dialog.
IsPolish	Set Polish as the language of labels in the connect dialog.
IsPortuguese	Set Portuguese as the language of labels in the connect dialog.
IsRussian	Set Russian as the language of labels in the connect dialog.
IsSpanish	Set Spanish as the language of labels in the connect dialog.

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5.10.3.2 TLockMode Enumeration

Specifies the lock mode.

Unit

[DBAccess](#)

Syntax

```
TLockMode = (ImNone, ImPessimistic, ImOptimistic);
```

Values

Value	Meaning
ImNone	No locking occurs. This mode should only be used in single user applications. The default value.
ImOptimistic	Locking occurs when the user posts an edited record, then the lock is released. Locking is done by the RefreshRecord method.
ImPessimistic	Locking occurs when the user starts editing a record. The lock is released after the user has posted or canceled the changes.

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5.10.3.3 TRefreshOption Enumeration

Indicates when the editing record will be refreshed.

Unit

[DBAccess](#)

Syntax

```
TRefreshOption = (roAfterInsert, roAfterUpdate, roBeforeEdit);
```

Values

Value	Meaning
roAfterInsert	Refresh is performed after inserting.
roAfterUpdate	Refresh is performed after updating.
roBeforeEdit	Refresh is performed by Edit method.

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5.10.3.4 TRetryMode Enumeration

Specifies the application behavior when connection is lost.

Unit

[DBAccess](#)

Syntax

```
TRetryMode = (rmRaise, rmReconnect, rmReconnectExecute);
```

Values

Value	Meaning
rmRaise	An exception is raised.
rmReconnect	Reconnect is performed and then exception is raised.
rmReconnectExecute	Reconnect is performed and abortive operation is reexecuted. Exception is not raised.

5.10.4 Variables

Variables in the **DBAccess** unit.

Variables

Name	Description
BaseSQLOldBehavior	After assigning SQL text and modifying it by AddWhere , DeleteWhere , and SetOrderBy , all subsequent changes of the SQL property will not be reflected in the BaseSQL property.
ChangeCursor	When set to True allows data access components to change screen cursor for the execution time.
SQLGeneratorCompatibility	The value of the TCustomDADDataSet.BaseSQL property is used to complete the refresh SQL statement, if the manually assigned TCustomDAUpdateSQL.RefreshSQL property contains only WHERE clause.

5.10.4.1 BaseSQLOldBehavior Variable

After assigning SQL text and modifying it by [AddWhere](#), [DeleteWhere](#), and [SetOrderBy](#), all subsequent changes of the SQL property will not be reflected in the BaseSQL property.

Unit

[DBAccess](#)

Syntax

```
BaseSQLOldBehavior: boolean = False;
```

Remarks

The [BaseSQL](#) property is similar to the SQL property, but it does not store changes made by the [AddWhere](#), [DeleteWhere](#), and [SetOrderBy](#) methods. After assigning SQL text and modifying it by one of these methods, all subsequent changes of the SQL property will not be reflected in the BaseSQL property. This behavior was changed in SDAC 3.55.2.22. To restore old behavior, set the BaseSQLOldBehavior variable to True.

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5.10.4.2 ChangeCursor Variable

When set to True allows data access components to change screen cursor for the execution time.

Unit

[DBAccess](#)

Syntax

```
ChangeCursor: boolean = True;
```

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5.10.4.3 SQLGeneratorCompatibility Variable

The value of the [TCustomDADDataSet.BaseSQL](#) property is used to complete the refresh SQL statement, if the manually assigned [TCustomDAUpdateSQL.RefreshSQL](#) property contains only WHERE clause.

Unit

[DBAccess](#)

Syntax


```
SQLGeneratorCompatibility: boolean = False;
```

Remarks

If the manually assigned [TCustomDAUpdateSQL.RefreshSQL](#) property contains only WHERE clause, SDAC uses the value of the [TCustomDADataSet.BaseSQL](#) property to complete the refresh SQL statement. In this situation all modifications applied to the SELECT query by functions [TCustomDADataSet.AddWhere](#), [TCustomDADataSet.DeleteWhere](#) are not taken into account. This behavior was changed in SDAC 4.00.0.4. To restore the old behavior, set the BaseSQLOldBehavior variable to True.

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5.11 MemData

This unit contains classes for storing data in memory.

Classes

Name	Description
TAttribute	TAttribute is not used in SDAC.
TBlob	Holds large object value for field and parameter dtBlob, dtMemo data types.
TCompressedBlob	Holds large object value for field and parameter dtBlob, dtMemo data types and can compress its data.
TDBObject	A base class for classes that work with user-defined data types that have attributes.
TMemData	Implements in-memory database.
TObjectType	This class is not used.
TSharedObject	A base class that allows to simplify memory management for object referenced by several other objects.

Types

Name	Description
TLocateExOptions	Represents the set of TLocateExOption .
TUpdateRecKinds	Represents the set of TUpdateRecKind.

Enumerations

Name	Description
TCompressBlobMode	Specifies when the values should be compressed and the way they should be stored.
TConnLostCause	Specifies the cause of the connection loss.
TDANumericType	Specifies the format of storing and representing of the NUMERIC (DECIMAL) fields.
TLocateExOption	Allows to set additional search parameters which will be used by the LocateEx method.
TSortType	Specifies a sort type for string fields.
TUpdateRecKind	Indicates records for which the ApplyUpdates method will be performed.

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5.11.1 Classes

Classes in the **MemData** unit.

Classes

Name	Description
------	-------------

TAttribute	TAttribute is not used in SDAC.
TBlob	Holds large object value for field and parameter dtBlob, dtMemo data types.
TCompressedBlob	Holds large object value for field and parameter dtBlob, dtMemo data types and can compress its data.
TDBObject	A base class for classes that work with user-defined data types that have attributes.
TMemData	Implements in-memory database.
TObjectType	This class is not used.
TSharedObject	A base class that allows to simplify memory management for object referenced by several other objects.

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5.11.1.1 TAttribute Class

TAttribute is not used in SDAC.

For a list of all members of this type, see [TAttribute](#) members.

Unit

[MemData](#)

Syntax

```
TAttribute = class(System.TObject);
```

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5.11.1.1.1 Members

[TAttribute](#) class overview.

Properties

Name	Description
AttributeNo	Returns an attribute's ordinal position in object.
DataSize	Returns the size of an attribute value in internal representation.
DataType	Returns the type of data that was assigned to the Attribute.
Length	Returns the length of the string for dtString attribute and precision for dtInteger and dtFloat attribute.
ObjectType	Returns a TObjectType object for an object attribute.
Offset	Returns an offset of the attribute value in internal representation.
Owner	Indicates TObjectType that uses the attribute to represent one of its attributes.
Scale	Returns the scale of dtFloat and dtInteger attributes.
Size	Returns the size of an attribute value in external representation.

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5.11.1.1.2 Properties

Properties of the **TAttribute** class.

For a complete list of the **TAttribute** class members, see the [TAttribute Members](#) topic.

Public

Name	Description
------	-------------

AttributeNo	Returns an attribute's ordinal position in object.
DataSize	Returns the size of an attribute value in internal representation.
DataType	Returns the type of data that was assigned to the Attribute.
Length	Returns the length of the string for dtString attribute and precision for dtInteger and dtFloat attribute.
ObjectType	Returns a TObjectType object for an object attribute.
Offset	Returns an offset of the attribute value in internal representation.
Owner	Indicates TObjectType that uses the attribute to represent one of its attributes.
Scale	Returns the scale of dtFloat and dtInteger attributes.
Size	Returns the size of an attribute value in external representation.

See Also

- [TAttribute Class](#)
- [TAttribute Class Members](#)

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5.11.1.1.2.1 AttributeNo Property

Returns an attribute's ordinal position in object.

Class

[TAttribute](#)

Syntax

```
property AttributeNo: Word;
```

Remarks

Use the AttributeNo property to learn an attribute's ordinal position in object, where 1 is the first field.

See Also

- [TObjectType.Attributes](#)

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5.11.1.1.2.2 DataSize Property

Returns the size of an attribute value in internal representation.

Class

[TAttribute](#)

Syntax

```
property DataSize: Integer;
```

Remarks

Use the DataSize property to learn the size of an attribute value in internal representation.

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5.11.1.1.2.3 DataType Property

Returns the type of data that was assigned to the Attribute.

Class

[TAttribute](#)

Syntax

property DataType: word;

Remarks

Use the DataType property to discover the type of data that was assigned to the Attribute.

Possible values: dtDate, dtFloat, dtInteger, dtString, dtObject.

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5.11.1.1.2.4 Length Property

Returns the length of the string for dtString attribute and precision for dtInteger and dtFloat attribute.

Class

[TAttribute](#)

Syntax

property Length: word;

Remarks

Use the Length property to learn the length of the string for dtString attribute and precision for dtInteger and dtFloat attribute.

See Also

- [Scale](#)

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5.11.1.1.2.5 ObjectType Property

Returns a TObjectType object for an object attribute.

Class

[TAttribute](#)

Syntax

```
property ObjectType: TObjectType;
```

Remarks

Use the ObjectType property to return a TOBJECTType object for an object attribute.

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5.11.1.1.2.6 Offset Property

Returns an offset of the attribute value in internal representation.

Class

[TAttribute](#)

Syntax

```
property Offset: Integer;
```

Remarks

Use the DataSize property to learn an offset of the attribute value in internal representation.

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5.11.1.1.2.7 Owner Property

Indicates TOBJECTType that uses the attribute to represent one of its attributes.

Class

[TAttribute](#)

Syntax

```
property Owner: TObjectType;
```

Remarks

Check the value of the Owner property to determine TOBJECTType that uses the attribute to

represent one of its attributes. Applications should not assign the Owner property directly.

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5.11.1.1.2.8 Scale Property

Returns the scale of dtFloat and dtInteger attributes.

Class

[TAttribute](#)

Syntax

```
property Scale: word;
```

Remarks

Use the Scale property to learn the scale of dtFloat and dtInteger attributes.

See Also

- [Length](#)

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5.11.1.1.2.9 Size Property

Returns the size of an attribute value in external representation.

Class

[TAttribute](#)

Syntax

```
property Size: Integer;
```

Remarks

Read Size to learn the size of an attribute value in external representation.

For example:

dtDate	8 (sizeof(TDateTime))
dtFloat	8 (sizeof(Double))
dtInteger	4 (sizeof(Integer))

See Also

- [DataSize](#)

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5.11.1.2 TBlob Class

Holds large object value for field and parameter dtBlob, dtMemo data types.

For a list of all members of this type, see [TBlob](#) members.

Unit

[MemData](#)

Syntax

```
TBlob = class(TSharedObject);
```

Remarks

Object TBlob holds large object value for the field and parameter dtBlob, dtMemo, dtWideMemo data types.

Inheritance Hierarchy

[TSharedObject](#)

TBlob

See Also

- [TMemDataSet.GetBlob](#)

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5.11.1.2.1 Members

[TBlob](#) class overview.

Properties

Name	Description
AsString	Used to manipulate BLOB value as string.
AsWideString	Used to manipulate BLOB value as Unicode string.
IsUnicode	Gives choice of making TBlob store and process data in Unicode format or not.
RefCount (inherited from TSharedObject)	Used to return the count of reference to a TSharedObject object.
Size	Used to learn the size of the TBlob value in bytes.

Methods

Name	Description
AddRef (inherited from TSharedObject)	Increments the reference count for the number of references dependent on the TSharedObject object.
Assign	Sets BLOB value from another TBlob object.
Clear	Deletes the current value in TBlob object.
LoadFromFile	Loads the contents of a file into a TBlob object.
LoadFromStream	Copies the contents of a stream into the TBlob object.
Read	Acquires a raw sequence of bytes from the data stored in TBlob.
Release (inherited from TSharedObject)	Decrements the reference count.

SaveToFile	Saves the contents of the TBlob object to a file.
SaveToStream	Copies the contents of a TBlob object to a stream.
Truncate	Sets new TBlob size and discards all data over it.
Write	Stores a raw sequence of bytes into a TBlob object.

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5.11.1.2.2 Properties

Properties of the **TBlob** class.

For a complete list of the **TBlob** class members, see the [TBlob Members](#) topic.

Public

Name	Description
AsString	Used to manipulate BLOB value as string.
AsWideString	Used to manipulate BLOB value as Unicode string.
IsUnicode	Gives choice of making TBlob store and process data in Unicode format or not.
RefCount (inherited from TSharedObject)	Used to return the count of reference to a TSharedObject object.
Size	Used to learn the size of the TBlob value in bytes.

See Also

- [TBlob Class](#)
- [TBlob Class Members](#)

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5.11.1.2.2.1 AsString Property

Used to manipulate BLOB value as string.

Class

[TBlob](#)

Syntax

```
property AsString: string;
```

Remarks

Use the AsString property to manipulate BLOB value as string.

See Also

- [Assign](#)
- [AsWideString](#)

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5.11.1.2.2.2 AsWideString Property

Used to manipulate BLOB value as Unicode string.

Class

[TBlob](#)

Syntax

```
property AswideString: string;
```

Remarks

Use the AsWideString property to manipulate BLOB value as Unicode string.

See Also

- [Assign](#)
- [AsString](#)

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5.11.1.2.2.3 IsUnicode Property

Gives choice of making TBlob store and process data in Unicode format or not.

Class

[TBlob](#)

Syntax

```
property IsUnicode: boolean;
```

Remarks

Set IsUnicode to True if you want TBlob to store and process data in Unicode format.

Note: changing this property raises an exception if TBlob is not empty.

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5.11.1.2.2.4 Size Property

Used to learn the size of the TBlob value in bytes.

Class

[TBlob](#)

Syntax

```
property Size: cardinal;
```

Remarks

Use the Size property to find out the size of the TBlob value in bytes.

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5.11.1.2.3 Methods

Methods of the **TBlob** class.

For a complete list of the **TBlob** class members, see the [TBlob Members](#) topic.

Public

Name	Description
AddRef (inherited from TSharedObject)	Increments the reference count for the number of references dependent on the TSharedObject object.
Assign	Sets BLOB value from another TBlob object.
Clear	Deletes the current value in TBlob object.
LoadFromFile	Loads the contents of a file into a TBlob object.
LoadFromStream	Copies the contents of a stream into the TBlob object.
Read	Acquires a raw sequence of bytes from the data stored in TBlob.
Release (inherited from TSharedObject)	Decrements the reference count.
SaveToFile	Saves the contents of the TBlob object to a file.
SaveToStream	Copies the contents of a TBlob object to a stream.
Truncate	Sets new TBlob size and discards all data over it.
Write	Stores a raw sequence of bytes into a TBlob object.

See Also

- [TBlob Class](#)
- [TBlob Class Members](#)

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5.11.1.2.3.1 Assign Method

Sets BLOB value from another TBlob object.

Class

[TBlob](#)

Syntax

```
procedure Assign(Source: TBlob);
```

Parameters

Source

Holds the BLOB from which the value to the current object will be assigned.

Remarks

Call the Assign method to set BLOB value from another TBlob object.

See Also

- [LoadFromStream](#)
- [AsString](#)
- [AsWideString](#)

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5.11.1.2.3.2 Clear Method

Deletes the current value in TBlob object.

Class

[TBlob](#)

Syntax

```
procedure Clear; virtual;
```

Remarks

Call the Clear method to delete the current value in TBlob object.

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5.11.1.2.3.3 LoadFromFile Method

Loads the contents of a file into a TBlob object.

Class

[TBlob](#)

Syntax

```
procedure LoadFromFile(const FileName: string);
```

Parameters

FileName

Holds the name of the file from which the TBlob value is loaded.

Remarks

Call the LoadFromFile method to load the contents of a file into a TBlob object. Specify the name of the file to load into the field as the value of the FileName parameter.

See Also

- [SaveToFile](#)

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5.11.1.2.3.4 LoadFromStream Method

Copies the contents of a stream into the TBlob object.

Class

[TBlob](#)

Syntax

```
procedure LoadFromStream(Stream: TStream); virtual;
```

Parameters

Stream

Holds the specified stream from which the field's value is copied.

Remarks

Call the LoadFromStream method to copy the contents of a stream into the TBlob object. Specify the stream from which the field's value is copied as the value of the Stream parameter.

See Also

- [SaveToStream](#)

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5.11.1.2.3.5 Read Method

Acquires a raw sequence of bytes from the data stored in TBlob.

Class

[TBlob](#)

Syntax

```
function Read(Position: Cardinal; Count: Cardinal; Dest: IntPtr):  
Cardinal; virtual;
```

Parameters

Position

Holds the starting point of the byte sequence.

Count

Holds the size of the sequence in bytes.

Dest

Holds a pointer to the memory area where to store the sequence.

Return Value

Actually read byte count if the sequence crosses object size limit.

Remarks

Call the Read method to acquire a raw sequence of bytes from the data stored in TBlob.

The Position parameter is the starting point of byte sequence which lasts Count number of bytes. The Dest parameter is a pointer to the memory area where to store the sequence.

If the sequence crosses object size limit, function will return actually read byte count.

See Also

- [Write](#)

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5.11.1.2.3.6 SaveToFile Method

Saves the contents of the TBlob object to a file.

Class

[TBlob](#)

Syntax

```
procedure SaveToFile(const FileName: string);
```

Parameters

FileName

Holds a string that contains the name of the file.

Remarks

Call the SaveToFile method to save the contents of the TBlob object to a file. Specify the name of the file as the value of the FileName parameter.

See Also

- [LoadFromFile](#)

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5.11.1.2.3.7 SaveToStream Method

Copies the contents of a TBlob object to a stream.

Class

[TBlob](#)

Syntax

```
procedure SaveToStream(Stream: TStream); virtual;
```

Parameters

Stream

Holds the name of the stream.

Remarks

Call the SaveToStream method to copy the contents of a TBlob object to a stream. Specify the name of the stream to which the field's value is saved as the value of the Stream parameter.

See Also

- [LoadFromStream](#)

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5.11.1.2.3.8 Truncate Method

Sets new TBlob size and discards all data over it.

Class

[TBlob](#)

Syntax

```
procedure Truncate(NewSize: Cardinal); virtual;
```

Parameters

NewSize

Holds the new size of TBlob.

Remarks

Call the Truncate method to set new TBlob size and discard all data over it. If NewSize is greater or equal TBlob.Size, it does nothing.

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5.11.1.2.3.9 Write Method

Stores a raw sequence of bytes into a TBlob object.

Class

[TBlob](#)

Syntax

```
procedure Write(Position: Cardinal; Count: Cardinal; Source:  
IntPtr); virtual;
```

Parameters

Position

Holds the starting point of the byte sequence.

Count

Holds the size of the sequence in bytes.

Source

Holds a pointer to a source memory area.

Remarks

Call the Write method to store a raw sequence of bytes into a TBlob object.

The Position parameter is the starting point of byte sequence which lasts Count number of bytes. The Source parameter is a pointer to a source memory area.

If the value of the Position parameter crosses current size limit of TBlob object, source data will be appended to the object data.

See Also

- [Read](#)

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5.11.1.3 TCompressedBlob Class

Holds large object value for field and parameter dtBlob, dtMemo data types and can compress its data.

For a list of all members of this type, see [TCompressedBlob](#) members.

Unit

[MemData](#)

Syntax

```
TCompressedBlob = class(TBlob);
```

Remarks

TCompressedBlob is a descendant of the TBlob class. It holds large object value for field and parameter dtBlob, dtMemo data types and can compress its data. For more information about using BLOB compression see [TCustomDADataset.Options](#).

Note: Internal compression functions are available in CodeGear Delphi 2007 for Win32, Borland Developer Studio 2006, Borland Delphi 2005, and Borland Delphi 7. To use BLOB compression under Borland Delphi 6 and Borland C++ Builder you should use your own compression functions. To use them set the CompressProc and UncompressProc variables declared in the MemUtils unit.

Example

```
type
  TCompressProc = function(dest: IntPtr; destLen: IntPtr; const source: IntPtr): IntPtr;
  TUncompressProc = function(dest: IntPtr; destLen: IntPtr; source: IntPtr): IntPtr;
var
  CompressProc: TCompressProc;
  UncompressProc: TUncompressProc;
```

Inheritance Hierarchy

[TSharedObject](#)

[TBlob](#)

TCompressedBlob

See Also

- [TBlob](#)
- [TMemDataSet.GetBlob](#)
- [TCustomDADataset.Options](#)

Reserved.

5.11.1.3.1 Members

[TCompressedBlob](#) class overview.

Properties

Name	Description
AsString (inherited from TBlob)	Used to manipulate BLOB value as string.
AsWideString (inherited from TBlob)	Used to manipulate BLOB value as Unicode string.
Compressed	Used to indicate if the Blob is compressed.
CompressedSize	Used to indicate compressed size of the Blob data.
IsUnicode (inherited from TBlob)	Gives choice of making TBlob store and process data in Unicode format or not.
RefCount (inherited from TSharedObject)	Used to return the count of reference to a TSharedObject object.
Size (inherited from TBlob)	Used to learn the size of the TBlob value in bytes.

Methods

Name	Description
AddRef (inherited from TSharedObject)	Increments the reference count for the number of references dependent on the TSharedObject object.
Assign (inherited from TBlob)	Sets BLOB value from another TBlob object.
Clear (inherited from TBlob)	Deletes the current value in TBlob object.
LoadFromFile (inherited from TBlob)	Loads the contents of a file into a TBlob object.
LoadFromStream (inherited from TBlob)	Copies the contents of a stream into the TBlob object.

Read (inherited from TBlob)	Acquires a raw sequence of bytes from the data stored in TBlob.
Release (inherited from TSharedObject)	Decrements the reference count.
SaveToFile (inherited from TBlob)	Saves the contents of the TBlob object to a file.
SaveToStream (inherited from TBlob)	Copies the contents of a TBlob object to a stream.
Truncate (inherited from TBlob)	Sets new TBlob size and discards all data over it.
Write (inherited from TBlob)	Stores a raw sequence of bytes into a TBlob object.

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5.11.1.3.2 Properties

Properties of the **TCompressedBlob** class.

For a complete list of the **TCompressedBlob** class members, see the [TCompressedBlob Members](#) topic.

Public

Name	Description
AsString (inherited from TBlob)	Used to manipulate BLOB value as string.
AsWideString (inherited from TBlob)	Used to manipulate BLOB value as Unicode string.
Compressed	Used to indicate if the Blob is compressed.
CompressedSize	Used to indicate compressed size of the Blob data.
IsUnicode (inherited from TBlob)	Gives choice of making TBlob store and process data in Unicode format or not.
RefCount (inherited from TSharedObject)	Used to return the count of reference to a TSharedObject object.

Size (inherited from TBlob)	Used to learn the size of the TBlob value in bytes.
--	---

See Also

- [TCompressedBlob Class](#)
- [TCompressedBlob Class Members](#)

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5.11.1.3.2.1 Compressed Property

Used to indicate if the Blob is compressed.

Class

[TCompressedBlob](#)

Syntax

```
property Compressed: boolean;
```

Remarks

Indicates whether the Blob is compressed. Set this property to True or False to compress or decompress the Blob.

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5.11.1.3.2.2 CompressedSize Property

Used to indicate compressed size of the Blob data.

Class

[TCompressedBlob](#)

Syntax

```
property CompressedSize: Cardinal;
```

Remarks

Indicates compressed size of the Blob data.

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5.11.1.4 TDBObject Class

A base class for classes that work with user-defined data types that have attributes.

For a list of all members of this type, see [TDBObject](#) members.

Unit

[MemData](#)

Syntax

```
TDBObject = class(TSharedObject);
```

Remarks

TDBObject is a base class for classes that work with user-defined data types that have attributes.

Inheritance Hierarchy

[TSharedObject](#)

TDBObject

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5.11.1.4.1 Members

[TDBObject](#) class overview.

Properties

Name	Description
RefCount (inherited from TSharedObject)	Used to return the count of reference to a

	TSharedObject object.
--	-----------------------

Methods

Name	Description
AddRef (inherited from TSharedObject)	Increments the reference count for the number of references dependent on the TSharedObject object.
Release (inherited from TSharedObject)	Decrements the reference count.

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5.11.1.5 TMemData Class

Implements in-memory database.

For a list of all members of this type, see [TMemData](#) members.

Unit

[MemData](#)

Syntax

```
TMemData = class(TData);
```

Inheritance Hierarchy

TData

TMemData

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5.11.1.5.1 Members

[TMemData](#) class overview.

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5.11.1.6 TObjectType Class

This class is not used.

For a list of all members of this type, see [TObjectType](#) members.

Unit

[MemData](#)

Syntax

```
TObjectType = class(TSharedObject);
```

Inheritance Hierarchy

[TSharedObject](#)

TObjectType

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5.11.1.6.1 Members

[TObjectType](#) class overview.

Properties

Name	Description
AttributeCount	Used to indicate the number of attributes of type.
Attributes	Used to access separate attributes.
DataType	Used to indicate the type of object dtObject, dtArray or dtTable.
RefCount (inherited from TSharedObject)	Used to return the count of reference to a TSharedObject object.
Size	Used to learn the size of an object instance.

Methods

Name	Description
AddRef (inherited from TSharedObject)	Increments the reference count for the number of references dependent on the TSharedObject object.
FindAttribute	Indicates whether a specified Attribute component is referenced in the TAttributes object.
Release (inherited from TSharedObject)	Decrements the reference count.

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5.11.1.6.2 Properties

Properties of the **TObjectType** class.

For a complete list of the **TObjectType** class members, see the [TObjectType Members](#) topic.

Public

Name	Description
AttributeCount	Used to indicate the number of attributes of type.
Attributes	Used to access separate attributes.
DataType	Used to indicate the type of object dtObject, dtArray or dtTable.
RefCount (inherited from TSharedObject)	Used to return the count of reference to a TSharedObject object.
Size	Used to learn the size of an object instance.

See Also

- [TObjectType Class](#)
- [TObjectType Class Members](#)

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5.11.1.6.2.1 AttributeCount Property

Used to indicate the number of attributes of type.

Class

[TObjectType](#)

Syntax

```
property AttributeCount: Integer;
```

Remarks

Use the AttributeCount property to determine the number of attributes of type.

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5.11.1.6.2.2 Attributes Property(Indexer)

Used to access separate attributes.

Class

[TObjectType](#)

Syntax

```
property Attributes[Index: integer]: TAttribute;
```

Parameters

Index

Holds the attribute's ordinal position.

Remarks

Use the Attributes property to access individual attributes. The value of the Index parameter corresponds to the AttributeNo property of TAttribute.

See Also

- [TAttribute](#)
- [FindAttribute](#)

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5.11.1.6.2.3 DataType Property

Used to indicate the type of object dtObject, dtArray or dtTable.

Class

[TObjectType](#)

Syntax

```
property DataType: word;
```

Remarks

Use the DataType property to determine the type of object dtObject, dtArray or dtTable.

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5.11.1.6.2.4 Size Property

Used to learn the size of an object instance.

Class

[TObjectType](#)

Syntax

```
property Size: Integer;
```

Remarks

Use the Size property to find out the size of an object instance. Size is a sum of all attribute sizes.

See Also

- [TAttribute.Size](#)

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5.11.1.6.3 Methods

Methods of the **TObjectType** class.

For a complete list of the **TObjectType** class members, see the [TObjectType Members](#) topic.

Public

Name	Description
AddRef (inherited from TSharedObject)	Increments the reference count for the number of references dependent on the TSharedObject object.
FindAttribute	Indicates whether a specified Attribute component is referenced in the TAttributes object.
Release (inherited from TSharedObject)	Decrements the reference count.

See Also

- [TObjectType Class](#)
- [TObjectType Class Members](#)

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5.11.1.6.3.1 FindAttribute Method

Indicates whether a specified Attribute component is referenced in the TAttributes object.

Class

[TObjectType](#)

Syntax


```
function FindAttribute(const Name: string): TAttribute; virtual;
```

Parameters

Name

Holds the name of the attribute to search for.

Return Value

TAttribute, if an attribute with a matching name was found. Nil Otherwise.

Remarks

Call FindAttribute to determine if a specified Attribute component is referenced in the TAttributes object. Name is the name of the Attribute for which to search. If FindAttribute finds an Attribute with a matching name, it returns the TAttribute. Otherwise it returns nil.

See Also

- [TAttribute](#)
- [Attributes](#)

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5.11.1.7 TSharedObject Class

A base class that allows to simplify memory management for object referenced by several other objects.

For a list of all members of this type, see [TSharedObject](#) members.

Unit

[MemData](#)

Syntax

```
TSharedObject = class(System.TObject);
```

Remarks

TSharedObject allows to simplify memory management for object referenced by several other objects. TSharedObject holds a count of references to itself. When any object (referer object) is going to use TSharedObject, it calls the TSharedObject.AddRef method. Referer

object has to call the `TSharedObject.Release` method after using `TSharedObject`.

See Also

- [TBlob](#)
- [TObjectType](#)

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5.11.1.7.1 Members

[TSharedObject](#) class overview.

Properties

Name	Description
RefCount	Used to return the count of reference to a <code>TSharedObject</code> object.

Methods

Name	Description
AddRef	Increments the reference count for the number of references dependent on the <code>TSharedObject</code> object.
Release	Decrements the reference count.

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5.11.1.7.2 Properties

Properties of the **TSharedObject** class.

For a complete list of the **TSharedObject** class members, see the [TSharedObject Members](#) topic.

Public

Name	Description
RefCount	Used to return the count of reference to a TSharedObject object.

See Also

- [TSharedObject Class](#)
- [TSharedObject Class Members](#)

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5.11.1.7.2.1 RefCount Property

Used to return the count of reference to a TSharedObject object.

Class

[TSharedObject](#)

Syntax

```
property RefCount: Integer;
```

Remarks

Returns the count of reference to a TSharedObject object.

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5.11.1.7.3 Methods

Methods of the **TSharedObject** class.

For a complete list of the **TSharedObject** class members, see the [TSharedObject Members](#) topic.

Public

Name	Description
------	-------------

AddRef	Increments the reference count for the number of references dependent on the TSharedObject object.
Release	Decrements the reference count.

See Also

- [TSharedObject Class](#)
- [TSharedObject Class Members](#)

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5.11.1.7.3.1 AddRef Method

Increments the reference count for the number of references dependent on the TSharedObject object.

Class

[TSharedObject](#)

Syntax

```
procedure AddRef;
```

Remarks

Increments the reference count for the number of references dependent on the TSharedObject object.

See Also

- [Release](#)

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5.11.1.7.3.2 Release Method

Decrements the reference count.

Class

[TSharedObject](#)

Syntax

```
procedure Release;
```

Remarks

Call the Release method to decrement the reference count. When RefCount is 1, TSharedObject is deleted from memory.

See Also

- [AddRef](#)

5.11.2 Types

Types in the **MemData** unit.

Types

Name	Description
TLocateExOptions	Represents the set of TLocateExOption .
TUpdateRecKinds	Represents the set of TUpdateRecKind.

5.11.2.1 TLocateExOptions Set

Represents the set of [TLocateExOption](#).

Unit

[MemData](#)

Syntax

```
TLocateExOptions = set of TLocateExOption;
```

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5.11.2.2 TUpdateRecKinds Set

Represents the set of TUpdateRecKind.

Unit

[MemData](#)

Syntax

```
TUpdateRecKinds = set of TUpdateRecKind;
```

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5.11.3 Enumerations

Enumerations in the **MemData** unit.

Enumerations

Name	Description
TCompressBlobMode	Specifies when the values should be compressed and the way they should be stored.
TConnLostCause	Specifies the cause of the connection loss.
TDANumericType	Specifies the format of storing and representing of the NUMERIC (DECIMAL) fields.
TLocateExOption	Allows to set additional search parameters which will be used by the LocateEx

	method.
TSortType	Specifies a sort type for string fields.
TUpdateRecKind	Indicates records for which the ApplyUpdates method will be performed.

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5.11.3.1 TCompressBlobMode Enumeration

Specifies when the values should be compressed and the way they should be stored.

Unit

[MemData](#)

Syntax

```
TCompressBlobMode = (cbNone, cbClient, cbServer, cbClientServer);
```

Values

Value	Meaning
cbClient	Values are compressed and stored as compressed data at the client side. Before posting data to the server decompression is performed and data at the server side stored in the original form. Allows to reduce used client memory due to increase access time to field values. The time spent on the opening DataSet and executing Post increases.
cbClientServer	Values are compressed and stored in compressed form. Allows to decrease the volume of used memory at client and server sides. Access time to the field values increases as for cbClient. The time spent on opening DataSet and executing Post decreases. Note: On using cbServer or cbClientServer data on the server is stored as compressed. Other applications can add records in uncompressed format but can't read and write already compressed data. If compressed BLOB is partially changed by another application (if signature was not changed), DAC will consider its value as NULL.Blob compression is not applied to Memo fields because of possible cutting.
cbNone	Values not compressed. The default value.
cbServer	Values are compressed before passing to the server and store at

the server in compressed form. Allows to decrease database size on the server. Access time to the field values does not change. The time spent on opening DataSet and executing Post usually decreases.

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5.11.3.2 TConnLostCause Enumeration

Specifies the cause of the connection loss.

Unit

[MemData](#)

Syntax

```
TConnLostCause = (clUnknown, clExecute, clOpen, clRefresh, clApply, clServiceQuery, clTransStart, clConnectionApply, clConnect);
```

Values

Value	Meaning
clApply	Connection loss detected during DataSet.ApplyUpdates (Reconnect/Reexecute possible).
clConnect	Connection loss detected during connection establishing (Reconnect possible).
clConnectionApply	Connection loss detected during Connection.ApplyUpdates (Reconnect/Reexecute possible).
clExecute	Connection loss detected during SQL execution (Reconnect with exception is possible).
clOpen	Connection loss detected during execution of a SELECT statement (Reconnect with exception possible).
clRefresh	Connection loss detected during query opening (Reconnect/Reexecute possible).
clServiceQuery	Connection loss detected during service information request (Reconnect/Reexecute possible).
clTransStart	Connection loss detected during transaction start (Reconnect/Reexecute possible). clTransStart has less priority then clConnectionApply.
clUnknown	The connection loss reason is unknown.

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5.11.3.3 TDANumericType Enumeration

Specifies the format of storing and representing of the NUMERIC (DECIMAL) fields.

Unit

[MemData](#)

Syntax

```
TDANumericType = (ntFloat, ntBCD, ntFmtBCD);
```

Values

Value	Meaning
ntBCD	Data is stored on the client side as currency and represented as TBCDField. This format allows storing data with precision up to 0,0001.
ntFloat	Data stored on the client side is in double format and represented as TFloatField. The default value.
ntFmtBCD	Data is represented as TFMTBCDField. TFMTBCDField gives greater precision and accuracy than TBCDField, but it is slower.

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5.11.3.4 TLocateExOption Enumeration

Allows to set additional search parameters which will be used by the LocateEx method.

Unit

[MemData](#)

Syntax

```
TLocateExOption = (lxCaseInsensitive, lxPartialKey, lxNearest, lxNext, lxUp, lxPartialCompare);
```

Values

Value	Meaning
lxCasInsensitive	Similar to lxCasSensitive. Key fields and key values are matched without regard to the case.
lxCasSensitive	LocateEx moves the cursor to a specific record in a dataset or to the first record in the dataset that is greater than the values specified in the KeyValues parameter. For this option to work correctly dataset should be sorted by the fields the search is performed in. If dataset is not sorted, the function may return a line that is not connected with the search condition.
lxCasNext	LocateEx searches from the current record.
lxCasPartialCompare	Similar to lxCasPartialKey, but the difference is that it can process value entries in any position. For example, 'HAM' would match both 'HAMM', 'HAMMER.', and also 'MR HAMMER'.
lxCasPartialKey	Similar to lxCasPartialKey. Key values can include only a part of the matching key field value. For example, 'HAM' would match both 'HAMM' and 'HAMMER.', but not 'MR HAMMER'.
lxCasUp	LocateEx searches from the current record to the first record.

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5.11.3.5 TSortType Enumeration

Specifies a sort type for string fields.

Unit

[MemData](#)

Syntax

```
TSortType = (stCaseSensitive, stCaseInsensitive, stBinary);
```

Values

Value	Meaning
stBinary	Sorting by character ordinal values (this comparison is also case sensitive).
stCaseInsensitive	Sorting without case sensitivity.
stCaseSensitive	Sorting with case sensitivity.

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5.11.3.6 TUpdateReckind Enumeration

Indicates records for which the ApplyUpdates method will be performed.

Unit

[MemData](#)

Syntax

```
TUpdateReckind = (ukUpdate, ukInsert, ukDelete);
```

Values

Value	Meaning
ukDelete	ApplyUpdates will be performed for deleted records.
ukInsert	ApplyUpdates will be performed for inserted records.
ukUpdate	ApplyUpdates will be performed for updated records.

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5.12 MemDS

This unit contains implementation of the TMemDataSet class.

Classes

Name	Description
TMemDataSet	A base class for working with data and manipulating data in memory.

Variables

Name	Description
DoNotRaiseExcetionOnUaFail	An exception will be raised if the value of the UpdateAction parameter is uaFail.
SendDataSetChangeEventAfterOpen	The DataSetChange event is sent after a dataset gets open. It was necessary to fix

	a problem with disappeared vertical scrollbar in some types of DB-aware grids.
--	--

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5.12.1 Classes

Classes in the **MemDS** unit.

Classes

Name	Description
TMemDataSet	A base class for working with data and manipulating data in memory.

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5.12.1.1 TMemDataSet Class

A base class for working with data and manipulating data in memory.

For a list of all members of this type, see [TMemDataSet](#) members.

Unit

[MemDS](#)

Syntax

```
TMemDataSet = class(TDataSet);
```

Remarks

TMemDataSet derives from the TDataSet database-engine independent set of properties, events, and methods for working with data and introduces additional techniques to store and manipulate data in memory.

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5.12.1.1.1 Members

[TMemDataSet](#) class overview.

Properties

Name	Description
CachedUpdates	Used to enable or disable the use of cached updates for a dataset.
IndexFieldNames	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive	Specifies the upper and lower boundaries for a range.
LocalConstraints	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate	Used to prevent implicit update of rows on database server.
Prepared	Determines whether a query is prepared for execution or not.
Ranged	Indicates whether a range is applied to a dataset.
UpdateRecordTypes	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending	Used to check the status of the cached updates buffer.

Methods

Name	Description
ApplyRange	Applies a range to the dataset.
ApplyUpdates	Overloaded. Writes dataset's pending cached updates to a database.

CancelRange	Removes any ranges currently in effect for a dataset.
CancelUpdates	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates	Clears the cached updates buffer.
DeferredPost	Makes permanent changes to the database server.
EditRangeEnd	Enables changing the ending value for an existing range.
EditRangeStart	Enables changing the starting value for an existing range.
GetBlob	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
Locate	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare	Allocates resources and creates field components for a dataset.
RestoreUpdates	Marks all records in the cache of updates as unapplied.
RevertRecord	Cancels changes made to the current record when cached updates are enabled.
SaveToXML	Overloaded. Saves the current dataset data to a file or a stream in the XML

	format compatible with ADO format.
SetRange	Sets the starting and ending values of a range, and applies it.
SetRangeEnd	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord	Occurs when a single update component can not handle the updates.

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5.12.1.1.2 Properties

Properties of the **TMemDataSet** class.

For a complete list of the **TMemDataSet** class members, see the [TMemDataSet Members](#) topic.

Public

Name	Description
CachedUpdates	Used to enable or disable the use of cached updates for a dataset.
IndexFieldNames	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive	Specifies the upper and lower boundaries for a range.
LocalConstraints	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate	Used to prevent implicit update of rows on database server.
Prepared	Determines whether a query is prepared for execution or not.
Ranged	Indicates whether a range is applied to a dataset.
UpdateRecordTypes	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending	Used to check the status of the cached updates buffer.

See Also

- [TMemDataSet Class](#)
- [TMemDataSet Class Members](#)

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5.12.1.1.2.1 CachedUpdates Property

Used to enable or disable the use of cached updates for a dataset.

Class

[TMemDataSet](#)

Syntax

```
property CachedUpdates: boolean default False;
```

Remarks

Use the CachedUpdates property to enable or disable the use of cached updates for a dataset. Setting CachedUpdates to True enables updates to a dataset (such as posting changes, inserting new records, or deleting records) to be stored in an internal cache on the client side instead of being written directly to the dataset's underlying database tables. When changes are completed, an application writes all cached changes to the database in the context of a single transaction.

Cached updates are especially useful for client applications working with remote database servers. Enabling cached updates brings up the following benefits:

- Fewer transactions and shorter transaction times.
- Minimized network traffic.

The potential drawbacks of enabling cached updates are:

- Other applications can access and change the actual data on the server while users are editing local copies of data, resulting in an update conflict when cached updates are applied to the database.
- Other applications cannot access data changes made by an application until its cached updates are applied to the database.

The default value is False.

Note: When establishing master/detail relationship the CachedUpdates property of detail

dataset works properly only when [TDADatasetOptions.LocalMasterDetail](#) is set to True.

See Also

- [UpdatesPending](#)
- [TMemDataSet.ApplyUpdates](#)
- [RestoreUpdates](#)
- [CommitUpdates](#)
- [CancelUpdates](#)
- [UpdateStatus](#)
- [TCustomDADataset.Options](#)

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5.12.1.1.2.2 IndexFieldNames Property

Used to get or set the list of fields on which the recordset is sorted.

Class

[TMemDataSet](#)

Syntax

```
property IndexFieldNames: string;
```

Remarks

Use the IndexFieldNames property to get or set the list of fields on which the recordset is sorted. Specify the name of each column in IndexFieldNames to use as an index for a table. Column names order is significant. Separate names with semicolons. The specified columns don't need to be indexed. Set IndexFieldNames to an empty string to reset the recordset to the sort order originally used when the recordset's data was first retrieved.

Each field may optionally be followed by the keyword ASC / DESC or CIS / CS / BIN.

Use ASC, DESC keywords to specify a sort order for the field. If one of these keywords is not used, the default sort order for the field is ascending.

Use CIS, CS or BIN keywords to specify the sort type for string fields:

CIS - compare without case sensitivity;

CS - compare with case sensitivity;

BIN - compare by character ordinal values (this comparison is also case sensitive).

If a dataset uses a [TCustomDACConnection](#) component, the default value of the sort type depends on the [TCustomDACConnection.Options](#) option of the connection. If a dataset does not use a connection ([TVirtualTable](#) dataset), the default is CS.

Read `IndexFieldNames` to determine the field or fields on which the recordset is sorted.

Sorting is performed locally.

Note:

You cannot sort by BLOB fields.

`IndexFieldNames` cannot be set to True when [TCustomDADataset.UniDirectional](#)=True.

Example

The following procedure illustrates how to set `IndexFieldNames` in response to a button click:

```
DataSet1.IndexFieldNames := 'LastName ASC CIS; DateDue DESC';
```

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5.12.1.1.2.3 KeyExclusive Property

Specifies the upper and lower boundaries for a range.

Class

[TMemDataSet](#)

Syntax

```
property KeyExclusive: Boolean;
```

Remarks

Use `KeyExclusive` to specify whether a range includes or excludes the records that match its

specified starting and ending values.

By default, KeyExclusive is False, meaning that matching values are included.

To restrict a range to those records that are greater than the specified starting value and less than the specified ending value, set KeyExclusive to True.

See Also

- [SetRange](#)
- [SetRangeEnd](#)
- [SetRangeStart](#)

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5.12.1.1.2.4 LocalConstraints Property

Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.

Class

[TMemDataSet](#)

Syntax

```
property LocalConstraints: boolean default True;
```

Remarks

Use the LocalConstraints property to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet. When LocalConstraints is True, TMemDataSet ignores NOT NULL server constraints. It is useful for tables that have fields updated by triggers.

LocalConstraints is obsolete, and is only included for backward compatibility.

The default value is True.

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5.12.1.1.2.5 LocalUpdate Property

Used to prevent implicit update of rows on database server.

Class

[TMemDataSet](#)

Syntax

```
property LocalUpdate: boolean default False;
```

Remarks

Set the LocalUpdate property to True to prevent implicit update of rows on database server. Data changes are cached locally in client memory.

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5.12.1.1.2.6 Prepared Property

Determines whether a query is prepared for execution or not.

Class

[TMemDataSet](#)

Syntax

```
property Prepared: boolean;
```

Remarks

Check the Prepared property to determine if a query is already prepared for execution. Prepared is True if the query has already been prepared. While queries don't need to be prepared before execution, performance is often boosted if queries are prepared beforehand, particularly if there are parameterized queries that are executed more than once using the same parameter values.

See Also

- [Prepare](#)

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5.12.1.1.2.7 Ranged Property

Indicates whether a range is applied to a dataset.

Class

[TMemDataSet](#)

Syntax

```
property Ranged: Boolean;
```

Remarks

Use the Ranged property to detect whether a range is applied to a dataset.

See Also

- [SetRange](#)
- [SetRangeEnd](#)
- [SetRangeStart](#)

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5.12.1.1.2.8 UpdateRecordTypes Property

Used to indicate the update status for the current record when cached updates are enabled.

Class

[TMemDataSet](#)

Syntax

```
property UpdateRecordTypes: TUpdateRecordTypes default  
[rtModified, rtInserted, rtUnmodified];
```

Remarks

Use the UpdateRecordTypes property to determine the update status for the current record

when cached updates are enabled. Update status can change frequently as records are edited, inserted, or deleted. UpdateRecordTypes offers a convenient method for applications to assess the current status before undertaking or completing operations that depend on the update status of records.

See Also

- [CachedUpdates](#)

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5.12.1.1.2.9 UpdatesPending Property

Used to check the status of the cached updates buffer.

Class

[TMemDataSet](#)

Syntax

```
property UpdatesPending: boolean;
```

Remarks

Use the UpdatesPending property to check the status of the cached updates buffer. If UpdatesPending is True, then there are edited, deleted, or inserted records remaining in local cache and not yet applied to the database. If UpdatesPending is False, there are no such records in the cache.

See Also

- [CachedUpdates](#)

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5.12.1.1.3 Methods

Methods of the **TMemDataSet** class.

For a complete list of the **TMemDataSet** class members, see the [TMemDataSet Members](#)

topic.

Public

Name	Description
ApplyRange	Applies a range to the dataset.
ApplyUpdates	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange	Removes any ranges currently in effect for a dataset.
CancelUpdates	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates	Clears the cached updates buffer.
DeferredPost	Makes permanent changes to the database server.
EditRangeEnd	Enables changing the ending value for an existing range.
EditRangeStart	Enables changing the starting value for an existing range.
GetBlob	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
Locate	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare	Allocates resources and creates field components for a dataset.

RestoreUpdates	Marks all records in the cache of updates as unapplied.
RevertRecord	Cancels changes made to the current record when cached updates are enabled.
SaveToXML	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange	Sets the starting and ending values of a range, and applies it.
SetRangeEnd	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus	Indicates the current update status for the dataset when cached updates are enabled.

See Also

- [TMemDataSet Class](#)
- [TMemDataSet Class Members](#)

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5.12.1.1.3.1 ApplyRange Method

Applies a range to the dataset.

Class

[TMemDataSet](#)

Syntax

```
procedure ApplyRange;
```

Remarks

Call ApplyRange to cause a range established with [SetRangeStart](#) and [SetRangeEnd](#), or [EditRangeStart](#) and [EditRangeEnd](#), to take effect.

When a range is in effect, only those records that fall within the range are available to the application for viewing and editing.

After a call to ApplyRange, the cursor is left on the first record in the range.

See Also

- [CancelRange](#)
- [EditRangeEnd](#)
- [EditRangeStart](#)
- [IndexFieldNames](#)
- [SetRange](#)
- [SetRangeEnd](#)
- [SetRangeStart](#)

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5.12.1.1.3.2 ApplyUpdates Method

Writes dataset's pending cached updates to a database.

Class

[TMemDataSet](#)

Overload List

Name	Description
ApplyUpdates	Writes dataset's pending cached updates to a database.
ApplyUpdates(const UpdateRecKinds: TUpdateRecKinds)	Writes dataset's pending cached updates of specified records to a database.

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Writes dataset's pending cached updates to a database.

Class

[TMemDataSet](#)

Syntax

```
procedure ApplyUpdates; overload; virtual;
```

Remarks

Call the ApplyUpdates method to write a dataset's pending cached updates to a database. This method passes cached data to the database, but the changes are not committed to the database if there is an active transaction. An application must explicitly call the database component's Commit method to commit the changes to the database if the write is successful, or call the database's Rollback method to undo the changes if there is an error.

Following a successful write to the database, and following a successful call to a connection's Commit method, an application should call the CommitUpdates method to clear the cached update buffer.

Note: The preferred method for updating datasets is to call a connection component's

ApplyUpdates method rather than to call each individual dataset's ApplyUpdates method. The connection component's ApplyUpdates method takes care of committing and rolling back transactions and clearing the cache when the operation is successful.

Example

The following procedure illustrates how to apply a dataset's cached updates to a database in response to a button click:

```
procedure ApplyButtonClick(Sender: TObject);
begin
  with MyQuery do
  begin
    Session.StartTransaction;
    try
      ... <Modify data>
      ApplyUpdates; <try to write the updates to the database>
      Session.Commit; <on success, commit the changes>
    except
      RestoreUpdates; <restore update result for applied records>
      Session.Rollback; <on failure, undo the changes>
      raise; <raise the exception to prevent a call to CommitUpdates!>
    end;
    CommitUpdates; <on success, clear the cache>
  end;
end;
```

See Also

- [TMemDataSet.CachedUpdates](#)
- [TMemDataSet.CancelUpdates](#)
- [TMemDataSet.CommitUpdates](#)
- [TMemDataSet.UpdateStatus](#)

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Writes dataset's pending cached updates of specified records to a database.

Class

[TMemDataSet](#)

Syntax

```
procedure ApplyUpdates(const UpdateReckinds: TUpdateReckinds);  
overload; virtual;
```

Parameters

UpdateReckinds

Indicates records for which the ApplyUpdates method will be performed.

Remarks

Call the ApplyUpdates method to write a dataset's pending cached updates of specified records to a database. This method passes cached data to the database, but the changes are not committed to the database if there is an active transaction. An application must explicitly call the database component's Commit method to commit the changes to the database if the write is successful, or call the database's Rollback method to undo the changes if there is an error.

Following a successful write to the database, and following a successful call to a connection's Commit method, an application should call the CommitUpdates method to clear the cached update buffer.

Note: The preferred method for updating datasets is to call a connection component's ApplyUpdates method rather than to call each individual dataset's ApplyUpdates method. The connection component's ApplyUpdates method takes care of committing and rolling back transactions and clearing the cache when the operation is successful.

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5.12.1.1.3.3 CancelRange Method

Removes any ranges currently in effect for a dataset.

Class

[TMemDataSet](#)

Syntax

```
procedure CancelRange;
```

Remarks

Call `CancelRange` to remove a range currently applied to a dataset. Canceling a range reenables access to all records in the dataset.

See Also

- [ApplyRange](#)
- [EditRangeEnd](#)
- [EditRangeStart](#)
- [IndexFieldNames](#)
- [SetRange](#)
- [SetRangeEnd](#)
- [SetRangeStart](#)

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5.12.1.1.3.4 CancelUpdates Method

Clears all pending cached updates from cache and restores dataset in its prior state.

Class

[TMemDataSet](#)

Syntax

```
procedure CancelUpdates;
```

Remarks

Call the `CancelUpdates` method to clear all pending cached updates from cache and restore dataset in its prior state.

It restores the dataset to the state it was in when the table was opened, cached updates were last enabled, or updates were last successfully applied to the database.

When a dataset is closed, or the `CachedUpdates` property is set to `False`, `CancelUpdates` is called automatically.

See Also

- [CachedUpdates](#)
- [TMemDataSet.ApplyUpdates](#)
- [UpdateStatus](#)

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5.12.1.1.3.5 CommitUpdates Method

Clears the cached updates buffer.

Class

[TMemDataSet](#)

Syntax

```
procedure CommitUpdates;
```

Remarks

Call the CommitUpdates method to clear the cached updates buffer after both a successful call to ApplyUpdates and a database component's Commit method. Clearing the cache after applying updates ensures that the cache is empty except for records that could not be processed and were skipped by the OnUpdateRecord or OnUpdateError event handlers. An application can attempt to modify the records still in cache.

CommitUpdates also checks whether there are pending updates in dataset. And if there are, it calls ApplyUpdates.

Record modifications made after a call to CommitUpdates repopulate the cached update buffer and require a subsequent call to ApplyUpdates to move them to the database.

See Also

- [CachedUpdates](#)
- [TMemDataSet.ApplyUpdates](#)
- [UpdateStatus](#)

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5.12.1.1.3.6 DeferredPost Method

Makes permanent changes to the database server.

Class

[TMemDataSet](#)

Syntax

```
procedure DeferredPost;
```

Remarks

Call DeferredPost to make permanent changes to the database server while retaining dataset in its state whether it is dsEdit or dsInsert.

Explicit call to the Cancel method after DeferredPost has been applied does not abandon modifications to a dataset already fixed in database.

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5.12.1.1.3.7 EditRangeEnd Method

Enables changing the ending value for an existing range.

Class

[TMemDataSet](#)

Syntax

```
procedure EditRangeEnd;
```

Remarks

Call EditRangeEnd to change the ending value for an existing range.

To specify an end range value, call FieldByName after calling EditRangeEnd.

After assigning a new ending value, call [ApplyRange](#) to activate the modified range.

See Also

- [ApplyRange](#)
- [CancelRange](#)
- [EditRangeStart](#)
- [IndexFieldNames](#)
- [SetRange](#)
- [SetRangeEnd](#)
- [SetRangeStart](#)

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5.12.1.1.3.8 EditRangeStart Method

Enables changing the starting value for an existing range.

Class

[TMemDataSet](#)

Syntax

```
procedure EditRangeStart;
```

Remarks

Call EditRangeStart to change the starting value for an existing range.

To specify a start range value, call FieldByName after calling EditRangeStart.

After assigning a new ending value, call [ApplyRange](#) to activate the modified range.

See Also

- [ApplyRange](#)
- [CancelRange](#)
- [EditRangeEnd](#)
- [IndexFieldNames](#)
- [SetRange](#)

- [SetRangeEnd](#)
- [SetRangeStart](#)

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5.12.1.1.3.9 GetBlob Method

Retrieves TBlob object for a field or current record when only its name or the field itself is known.

Class

[TMemDataSet](#)

Overload List

Name	Description
GetBlob(Field: TField)	Retrieves TBlob object for a field or current record when the field itself is known.
GetBlob(const FieldName: string)	Retrieves TBlob object for a field or current record when its name is known.

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Retrieves TBlob object for a field or current record when the field itself is known.

Class

[TMemDataSet](#)

Syntax

```
function GetBlob(Field: TField): TBlob; overload;
```

Parameters

Field
Holds an existing TField object.

Return Value

TBlob object that was retrieved.

Remarks

Call the GetBlob method to retrieve TBlob object for a field or current record when only its name or the field itself is known. FieldName is the name of an existing field. The field should have MEMO or BLOB type.

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Retrieves TBlob object for a field or current record when its name is known.

Class

[TMemDataSet](#)

Syntax

```
function GetBlob(const FieldName: string): TBlob; overload;
```

Parameters

FieldName

Holds the name of an existing field.

Return Value

TBlob object that was retrieved.

Example

```
MSQuery1.GetBlob('Comment').SaveToFile('Comment.txt');
```

See Also

- [TBlob](#)

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5.12.1.1.3.10 Locate Method

Searches a dataset for a specific record and positions the cursor on it.

Class

[TMemDataSet](#)

Overload List

Name	Description
Locate(const KeyFields: array of TField; const KeyValues: variant; Options: TLocateOptions)	Searches a dataset by the specified fields for a specific record and positions cursor on it.
Locate(const KeyFields: string; const KeyValues: variant; Options: TLocateOptions)	Searches a dataset by the fields specified by name for a specific record and positions the cursor on it.

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Searches a dataset by the specified fields for a specific record and positions cursor on it.

Class

[TMemDataSet](#)

Syntax

```
function Locate(const KeyFields: array of TField; const KeyValues: variant; Options: TLocateOptions): boolean;  
reintroduce; overload;
```

Parameters

KeyFields

Holds TField objects in which to search.

KeyValues

Holds the variant that specifies the values to match in the key fields.

Options

Holds additional search latitude when searching in string fields.

Return Value

True if it finds a matching record, and makes this record the current one. Otherwise it returns False.

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Searches a dataset by the fields specified by name for a specific record and positions the cursor on it.

Class

[TMemDataSet](#)

Syntax

```
function Locate(const KeyFields: string; const KeyValues:  
variant; Options: TLocateOptions): boolean; overload; override;
```

Parameters

KeyFields

Holds a semicolon-delimited list of field names in which to search.

KeyValues

Holds the variant that specifies the values to match in the key fields.

Options

Holds additional search latitude when searching in string fields.

Return Value

True if it finds a matching record, and makes this record the current one. Otherwise it returns False.

Remarks

Call the Locate method to search a dataset for a specific record and position cursor on it.

KeyFields is a string containing a semicolon-delimited list of field names on which to search.

KeyValues is a variant that specifies the values to match in the key fields. If KeyFields lists a single field, KeyValues specifies the value for that field on the desired record. To specify multiple search values, pass a variant array as KeyValues, or construct a variant array on the fly using the VarArrayOf routine. An example is provided below.

Options is a set that optionally specifies additional search latitude when searching in string fields. If Options contains the loCaseInsensitive setting, then Locate ignores case when matching fields. If Options contains the loPartialKey setting, then Locate allows partial-string matching on strings in KeyValues. If Options is an empty set, or if KeyFields does not include any string fields, Options is ignored.

Locate returns True if it finds a matching record, and makes this record the current one. Otherwise it returns False.

The Locate function works faster when dataset is locally sorted on the KeyFields fields. Local dataset sorting can be set with the [TMemDataSet.IndexFieldNames](#) property.

Example

An example of specifying multiple search values:

```
with CustTable do
    Locate('Company;Contact;Phone', VarArrayOf(['Sight Diver', 'P',
        '408-431-1000']), [loPartialKey]);
```

See Also

- [TMemDataSet.IndexFieldNames](#)
- [TMemDataSet.LocateEx](#)

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5.12.1.1.3.11 LocateEx Method

Excludes features that don't need to be included to the [TMemDataSet.Locate](#) method of TDataSet.

Class

[TMemDataSet](#)

Overload List

Name	Description
LocateEx(const KeyFields: array of TField; const KeyValues: variant; Options: TLocateExOptions)	Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet by the specified fields.
LocateEx(const KeyFields: string; const KeyValues: variant; Options: TLocateExOptions)	Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet by the specified field names.

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Excludes features that don't need to be included to the [TMemDataSet.Locate](#) method of TDataSet by the specified fields.

Class

[TMemDataSet](#)

Syntax

```
function LocateEx(const KeyFields: array of TField; const KeyValues: variant; Options: TLocateExOptions): boolean; overload;
```

Parameters

KeyFields

Holds TField objects to search in.

KeyValues

Holds the values of the fields to search for.

Options

Holds additional search parameters which will be used by the LocateEx method.

Return Value

True, if a matching record was found. Otherwise returns False.

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Excludes features that don't need to be included to the [TMemDataSet.Locate](#) method of TDataSet by the specified field names.

Class

[TMemDataSet](#)

Syntax

```
function LocateEx(const KeyFields: string; const KeyValues: variant; Options: TLocateExOptions): boolean; overload;
```

Parameters

KeyFields

Holds the fields to search in.

KeyValues

Holds the values of the fields to search for.

Options

Holds additional search parameters which will be used by the LocateEx method.

Return Value

True, if a matching record was found. Otherwise returns False.

Remarks

Call the `LocateEx` method when you need some features not to be included to the [TMemDataSet.Locate](#) method of `TDataSet`.

`LocateEx` returns `True` if it finds a matching record, and makes that record the current one. Otherwise `LocateEx` returns `False`.

The `LocateEx` function works faster when dataset is locally sorted on the `KeyFields` fields. Local dataset sorting can be set with the [TMemDataSet.IndexFieldNames](#) property.

Note: Please add the `MemData` unit to the "uses" list to use the `TLocalExOption` enumeration.

See Also

- [TMemDataSet.IndexFieldNames](#)
- [TMemDataSet.Locate](#)

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5.12.1.1.3.12 Prepare Method

Allocates resources and creates field components for a dataset.

Class

[TMemDataSet](#)

Syntax

```
procedure Prepare; virtual;
```

Remarks

Call the `Prepare` method to allocate resources and create field components for a dataset. To learn whether dataset is prepared or not use the `Prepared` property.

The `UnPrepare` method unprepares a query.

Note: When you change the text of a query at runtime, the query is automatically closed and unprepared.

See Also

- [Prepared](#)
- [UnPrepare](#)

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5.12.1.1.3.13 RestoreUpdates Method

Marks all records in the cache of updates as unapplied.

Class

[TMemDataSet](#)

Syntax

```
procedure RestoreUpdates;
```

Remarks

Call the RestoreUpdates method to return the cache of updates to its state before calling ApplyUpdates. RestoreUpdates marks all records in the cache of updates as unapplied. It is useful when ApplyUpdates fails.

See Also

- [CachedUpdates](#)
- [TMemDataSet.ApplyUpdates](#)
- [CancelUpdates](#)
- [UpdateStatus](#)

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5.12.1.1.3.14 RevertRecord Method

Cancels changes made to the current record when cached updates are enabled.

Class

[TMemDataSet](#)

Syntax

```
procedure RevertRecord;
```

Remarks

Call the RevertRecord method to undo changes made to the current record when cached updates are enabled.

See Also

- [CachedUpdates](#)
- [CancelUpdates](#)

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5.12.1.1.3.15 SaveToXML Method

Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.

Class

[TMemDataSet](#)

Overload List

Name	Description
SaveToXML(Destination: TStream)	Saves the current dataset data to a stream in the XML format compatible with ADO format.
SaveToXML(const FileName: string)	Saves the current dataset data to a file in the XML format compatible with ADO format.

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Saves the current dataset data to a stream in the XML format compatible with ADO format.

Class

[TMemDataSet](#)

Syntax

```
procedure SaveToXML(Destination: TStream); overload;
```

Parameters

Destination

Holds a TStream object.

Remarks

Call the SaveToXML method to save the current dataset data to a file or a stream in the XML format compatible with ADO format.

If the destination file already exists, it is overwritten. It remains open from the first call to SaveToXML until the dataset is closed. This file can be read by other applications while it is opened, but they cannot write to the file.

When saving data to a stream, a TStream object must be created and its position must be set in a preferable value.

See Also

- [TVirtualTable.LoadFromFile](#)
- [TVirtualTable.LoadFromStream](#)

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Saves the current dataset data to a file in the XML format compatible with ADO format.

Class

[TMemDataSet](#)

Syntax

```
procedure SaveToXML(const FileName: string); overload;
```

Parameters

FileName

Holds the name of a destination file.

See Also

- [TVirtualTable.LoadFromFile](#)
- [TVirtualTable.LoadFromStream](#)

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5.12.1.1.3.16 SetRange Method

Sets the starting and ending values of a range, and applies it.

Class

[TMemDataSet](#)

Syntax

```
procedure SetRange(const StartValues: array of System.TVarRec;  
const EndValues: array of System.TVarRec; StartExclusive: Boolean  
= False; EndExclusive: Boolean = False);
```

Parameters

StartValues

Indicates the field values that designate the first record in the range. In C++,
StartValues_Size is the index of the last value in the StartValues array.

EndValues

Indicates the field values that designate the last record in the range. In C++,
EndValues_Size is the index of the last value in the EndValues array.

StartExclusive

Indicates the upper and lower boundaries of the start range.

EndExclusive

Indicates the upper and lower boundaries of the end range.

Remarks

Call SetRange to specify a range and apply it to the dataset. The new range replaces the currently specified range, if any.

SetRange combines the functionality of [SetRangeStart](#), [SetRangeEnd](#), and [ApplyRange](#) in a single procedure call. SetRange performs the following functions:

- 1. Puts the dataset into dsSetKey state.
- 2. Erases any previously specified starting range values and ending range values.
- 3. Sets the start and end range values.
- 4. Applies the range to the dataset.

After a call to SetRange, the cursor is left on the first record in the range.

If either StartValues or EndValues has fewer elements than the number of fields in the current index, then the remaining entries are ignored when performing a search.

See Also

- [ApplyRange](#)
- [CancelRange](#)
- [EditRangeEnd](#)
- [EditRangeStart](#)
- [IndexFieldNames](#)
- [KeyExclusive](#)
- [SetRangeEnd](#)
- [SetRangeStart](#)

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5.12.1.1.3.17 SetRangeEnd Method

Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.

Class

[TMemDataSet](#)

Syntax

```
procedure SetRangeEnd;
```

Remarks

Call SetRangeEnd to put the dataset into dsSetKey state, erase any previous end range values, and set them to NULL.

Subsequent field assignments made with FieldByName specify the actual set of ending values for a range.

After assigning end-range values, call [ApplyRange](#) to activate the modified range.

See Also

- [ApplyRange](#)
- [CancelRange](#)
- [EditRangeStart](#)
- [IndexFieldNames](#)
- [SetRange](#)
- [SetRangeStart](#)

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5.12.1.1.3.18 SetRangeStart Method

Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.

Class

[TMemDataSet](#)

Syntax

```
procedure SetRangeStart;
```

Remarks

Call SetRangeStart to put the dataset into dsSetKey state, erase any previous start range values, and set them to NULL.

Subsequent field assignments to `FieldByName` specify the actual set of starting values for a range.

After assigning start-range values, call [ApplyRange](#) to activate the modified range.

See Also

- [ApplyRange](#)
- [CancelRange](#)
- [EditRangeStart](#)
- [IndexFieldNames](#)
- [SetRange](#)
- [SetRangeEnd](#)

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5.12.1.1.3.19 UnPrepare Method

Frees the resources allocated for a previously prepared query on the server and client sides.

Class

[TMemDataSet](#)

Syntax

```
procedure UnPrepare; virtual;
```

Remarks

Call the `UnPrepare` method to free the resources allocated for a previously prepared query on the server and client sides.

Note: When you change the text of a query at runtime, the query is automatically closed and unprepared.

See Also

- [Prepare](#)

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5.12.1.1.3.20 UpdateResult Method

Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.

Class

[TMemDataSet](#)

Syntax

```
function UpdateResult: TUpdateAction;
```

Return Value

a value of the TUpdateAction enumeration.

Remarks

Call the UpdateResult method to read the status of the latest call to the ApplyUpdates method while cached updates are enabled. UpdateResult reflects updates made on the records that have been edited, inserted, or deleted.

UpdateResult works on the record by record basis and is applicable to the current record only.

See Also

- [CachedUpdates](#)

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5.12.1.1.3.21 UpdateStatus Method

Indicates the current update status for the dataset when cached updates are enabled.

Class

[TMemDataSet](#)

Syntax


```
function UpdateStatus: TUpdateStatus; override;
```

Return Value
a value of the TUpdateStatus enumeration.

Remarks
Call the UpdateStatus method to determine the current update status for the dataset when cached updates are enabled. Update status can change frequently as records are edited, inserted, or deleted. UpdateStatus offers a convenient method for applications to assess the current status before undertaking or completing operations that depend on the update status of the dataset.

See Also
• [CachedUpdates](#)

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5.12.1.1.4 Events

Events of the **TMemDataSet** class.

For a complete list of the **TMemDataSet** class members, see the [TMemDataSet Members](#) topic.

Public

Name	Description
OnUpdateError	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord	Occurs when a single update component can not handle the updates.

See Also
• [TMemDataSet Class](#)
• [TMemDataSet Class Members](#)

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5.12.1.1.4.1 OnUpdateError Event

Occurs when an exception is generated while cached updates are applied to a database.

Class

[TMemDataSet](#)

Syntax

```
property OnUpdateError: TUpdateErrorEvent;
```

Remarks

Write the OnUpdateError event handler to respond to exceptions generated when cached updates are applied to a database.

E is a pointer to an EDatabaseError object from which application can extract an error message and the actual cause of the error condition. The OnUpdateError handler can use this information to determine how to respond to the error condition.

UpdateKind describes the type of update that generated the error.

UpdateAction indicates the action to take when the OnUpdateError handler exits. On entry into the handler, UpdateAction is always set to uaFail. If OnUpdateError can handle or correct the error, set UpdateAction to uaRetry before exiting the error handler.

The error handler can use the TField.OldValue and TField.NewValue properties to evaluate error conditions and set TField.NewValue to a new value to reapply. In this case, set UpdateAction to uaRetry before exiting.

Note: If a call to ApplyUpdates raises an exception and ApplyUpdates is not called within the context of a try...except block, an error message is displayed. If the OnUpdateError handler cannot correct the error condition and leaves UpdateAction set to uaFail, the error message is displayed twice. To prevent redisplay, set UpdateAction to uaAbort in the error handler.

See Also

- [CachedUpdates](#)

5.12.1.1.4.2 OnUpdateRecord Event

Occurs when a single update component can not handle the updates.

Class

[TMemDataSet](#)

Syntax

```
property OnUpdateRecord: TUpdateRecordEvent;
```

Remarks

Write the OnUpdateRecord event handler to process updates that cannot be handled by a single update component, such as implementation of cascading updates, insertions, or deletions. This handler is also useful for applications that require additional control over parameter substitution in update components.

UpdateKind describes the type of update to perform.

UpdateAction indicates the action taken by the OnUpdateRecord handler before it exits. On entry into the handler, UpdateAction is always set to uaFail. If OnUpdateRecord is successful, it should set UpdateAction to uaApplied before exiting.

See Also

- [CachedUpdates](#)

5.12.2 Variables

Variables in the **MemDS** unit.

Variables

Name	Description
------	-------------

DoNotRaiseExcetionOnUaFail	An exception will be raised if the value of the UpdateAction parameter is uaFail.
SendDataSetChangeEventAfterOpen	The DataSetChange event is sent after a dataset gets open. It was necessary to fix a problem with disappeared vertical scrollbar in some types of DB-aware grids.

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5.12.2.1 DoNotRaiseExcetionOnUaFail Variable

An exception will be raised if the value of the UpdateAction parameter is uaFail.

Unit

[MemDS](#)

Syntax

```
DoNotRaiseExcetionOnUaFail: boolean = False;
```

Remarks

Starting with SDAC 4.20.0.13, if the [OnUpdateRecord](#) event handler sets the UpdateAction parameter to uaFail, an exception is raised. The default value of UpdateAction is uaFail. So, the exception will be raised when the value of this parameter is left unchanged.

To restore the old behaviour, set DoNotRaiseExcetionOnUaFail to True.

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5.12.2.2 SendDataSetChangeEventAfterOpen Variable

The DataSetChange event is sent after a dataset gets open. It was necessary to fix a problem with disappeared vertical scrollbar in some types of DB-aware grids.

Unit

[MemDS](#)

Syntax

```
SendDataSetChangeEventAfterOpen: boolean = True;
```

Remarks

Starting with SDAC 4.20.0.12, the DataSetChange event is sent after a dataset gets open. It was necessary to fix a problem with disappeared vertical scrollbar in some types of DB-aware grids. This problem appears only under Windows XP when visual styles are enabled.

To disable sending this event, change the value of this variable to False.

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5.13 MSAccess

This unit contains implementation of most public classes of SDAC.

Classes

Name	Description
TCustomMSConnection	A base class defining functionality for classes derived from it, and introducing OLE DB specific properties.
TCustomMSConnectionOptions	This class allows setting up the behaviour of the TCustomMSConnection class.
TCustomMSDataSet	A component for defining the functionality for the classes derived from it.
TCustomMSStoredProc	A component used to access stored procedures on a database server.
TCustomMSTable	A base class that defines functionality for descendant classes which access data in a single table without

	writing SQL statements.
TMSChangeNotification	A component for keeping information in local dataset up-to-date through receiving notifications.
TMSConnection	A component for establishing connection to the database server, providing customized login support and performing transaction control.
TMSConnectionOptions	This class allows setting up the behaviour of the TMSConnection class.
TMSDataSetOptions	This class allows setting up the behaviour of the TMSDataSet class.
TMSDataSource	TMSDataSource provides an interface between a SDAC dataset components and data-aware controls on a form.
TMSEncryptor	The class that performs encrypting and decrypting of data.
TMSFileStream	A class for managing FILESTREAM data using Win32 API.
TMSMetadata	A component for obtaining metainformation about database objects from the server.
TMSParam	A class that is used to set the values of individual parameters passed with queries or stored procedures.
TMSParams	Used to control TMSParam objects.
TMSQuery	A component for executing queries and operating record sets. It also provides flexible way to update data.
TMSSQL	A component for executing

	SQL statements and calling stored procedures on the database server.
TMSStoredProc	A component for accessing and executing stored procedures and functions.
TMSTable	A component for retrieving and updating data in a single table without writing SQL statements.
TMSTableData	A component for working with user-defined table types in SQL Server 2008.
TMSUDTField	A field class providing native access to the CLR User-defined Types (UDT) fields of SQL Server.
TMSUpdateSQL	A component for tuning update operations for the DataSet component.
TMSXMLField	A class providing access to the SQL Server xml data type.

Types

Name	Description
TMSChangeNotificationEvent	This type is used for the TMSChangeNotification.OnChange event.
TMSUpdateExecuteEvent	This type is used for the TCustomMSDataSet.AfterUpdateExecute and TCustomMSDataSet.BeforeUpdateExecute events.

Enumerations

Name	Description
TIsolationLevel	Specifies the extent to which all outside transactions interfere with the subsequent transactions of the current

	connection.
TMSLockType	Specifies the parameters for locking the current record.
TMSNotificationInfo	Indicates the reason of the notification.
TMSNotificationSource	Indicates the source of notification.
TMSNotificationType	Indicates if this notification is generated because of change or by subscription.
TMSObjectType	Enumerates the object types supported by TMSMetadata.

Variables

Name	Description
_UseUpdateOptimization	In SDAC 4.00.0.4 update statements execution was optimized. This optimization changed the behaviour of affected rows count retrieval for the tables with triggers.

Constants

Name	Description
SDACVersion	Read this constant to get the current version number for SDAC.

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5.13.1 Classes

Classes in the **MSAccess** unit.

Classes

Name	Description
TCustomMSConnection	A base class defining functionality for classes

	derived from it, and introducing OLE DB specific properties.
TCustomMSConnectionOptions	This class allows setting up the behaviour of the TCustomMSConnection class.
TCustomMSDataSet	A component for defining the functionality for the classes derived from it.
TCustomMSStoredProc	A component used to access stored procedures on a database server.
TCustomMSTable	A base class that defines functionality for descendant classes which access data in a single table without writing SQL statements.
TMSChangeNotification	A component for keeping information in local dataset up-to-date through receiving notifications.
TMSConnection	A component for establishing connection to the database server, providing customized login support and performing transaction control.
TMSConnectionOptions	This class allows setting up the behaviour of the TMSConnection class.
TMSDataSetOptions	This class allows setting up the behaviour of the TMSDataSet class.
TMSDataSource	TMSDataSource provides an interface between a SDAC dataset components and data-aware controls on a form.
TMSEncryptor	The class that performs encrypting and decrypting of data.
TMSFileStream	A class for managing FILESTREAM data using Win32 API.

TMSMetadata	A component for obtaining metainformation about database objects from the server.
TMSPParam	A class that is used to set the values of individual parameters passed with queries or stored procedures.
TMSPParams	Used to control TMSPParam objects.
TMSQuery	A component for executing queries and operating record sets. It also provides flexible way to update data.
TMSSQL	A component for executing SQL statements and calling stored procedures on the database server.
TMSStoredProc	A component for accessing and executing stored procedures and functions.
TMSTable	A component for retrieving and updating data in a single table without writing SQL statements.
TMSTableData	A component for working with user-defined table types in SQL Server 2008.
TMSUDTField	A field class providing native access to the CLR User-defined Types (UDT) fields of SQL Server.
TMSUpdateSQL	A component for tuning update operations for the DataSet component.
TMSXMLField	A class providing access to the SQL Server xml data type.

5.13.1.1 TCustomMSConnection Class

A base class defining functionality for classes derived from it, and introducing OLE DB specific properties.

For a list of all members of this type, see [TCustomMSConnection](#) members.

Unit

[MSAccess](#)

Syntax

```
TCustomMSConnection = class(TCustomDAConnection);
```

Remarks

TCustomMSConnection is a base connection class that defines functionality for classes derived from it, and introduces OLE DB specific properties. Applications should never use TCustomMSConnection objects directly. Descendants of TCustomMSConnection, such as [TMSConnection](#), [TMSCompactConnection](#) should be used instead.

Inheritance Hierarchy

[TCustomDAConnection](#)
 TCustomMSConnection

See Also

- [TMSConnection](#)
- [TMSCompactConnection](#)

5.13.1.1.1 Members

[TCustomMSConnection](#) class overview.

Properties

Name	Description
------	-------------

ClientVersion	Contains the version of Microsoft OLE DB Provider for SQL Server.
ConnectDialog (inherited from TCustomDAConnection)	Allows to link a TCustomConnectDialog component.
ConnectionString (inherited from TCustomDAConnection)	Used to specify the connection information, such as: UserName, Password, Server, etc.
ConvertEOL (inherited from TCustomDAConnection)	Allows customizing line breaks in string fields and parameters.
Database	Used to specify the database name that is a default source of data for SQL queries once a connection is established.
InTransaction (inherited from TCustomDAConnection)	Indicates whether the transaction is active.
IsolationLevel	Used to specify the extent to which all outside transactions interfere with subsequent transactions of the current connection.
LoginPrompt (inherited from TCustomDAConnection)	Specifies whether a login dialog appears immediately before opening a new connection.
Options	Used to specify the behaviour of a TCustomMSConnection object.
Password (inherited from TCustomDAConnection)	Serves to supply a password for login.
Pooling (inherited from TCustomDAConnection)	Enables or disables using connection pool.
PoolingOptions (inherited from TCustomDAConnection)	Specifies the behaviour of connection pool.
Server (inherited from TCustomDAConnection)	Serves to supply the server name for login.
ServerVersion	Contains the exact number of the SQL Server version.

Username (inherited from TCustomDAConnection)	Used to supply a user name for login.
--	---------------------------------------

Methods

Name	Description
ApplyUpdates (inherited from TCustomDAConnection)	Overloaded. Applies changes in datasets.
AssignConnect	Shares database connection between the TCustomMSConnection components.
Commit (inherited from TCustomDAConnection)	Commits current transaction.
Connect (inherited from TCustomDAConnection)	Establishes a connection to the server.
CreateDataSet	Returns a new object of the TCustomMSDataset class and associates it with this connection object.
CreateSQL	Returns a new instance of the TMSSQL class and associates it with this connection object.
Disconnect (inherited from TCustomDAConnection)	Performs disconnect.
ExecProc (inherited from TCustomDAConnection)	Allows to execute stored procedure or function providing its name and parameters.
ExecProcEx (inherited from TCustomDAConnection)	Allows to execute a stored procedure or function.
ExecSQL (inherited from TCustomDAConnection)	Executes a SQL statement with parameters.
ExecSQLEx (inherited from TCustomDAConnection)	Executes any SQL statement outside the TQuery or TSQL components.
GetDatabaseNames (inherited from TCustomDAConnection)	Returns a database list from the server.
GetKeyFieldNames (inherited from TCustomDAConnection)	Provides a list of available key field names.

GetStoredProcNames (inherited from TCustomDACConnection)	Returns a list of stored procedures from the server.
GetTableNames (inherited from TCustomDACConnection)	Provides a list of available tables names.
MonitorMessage (inherited from TCustomDACConnection)	Sends a specified message through the TCustomDASQLMonitor component.
OpenDatasets	Opens several datasets as one batch.
Ping (inherited from TCustomDACConnection)	Used to check state of connection to the server.
RemoveFromPool (inherited from TCustomDACConnection)	Marks the connection that should not be returned to the pool after disconnect.
Rollback (inherited from TCustomDACConnection)	Discards all current data changes and ends transaction.
StartTransaction (inherited from TCustomDACConnection)	Begins a new user transaction.

Events

Name	Description
OnConnectionLost (inherited from TCustomDACConnection)	This event occurs when connection was lost.
OnError (inherited from TCustomDACConnection)	This event occurs when an error has arisen in the connection.

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5.13.1.1.2 Properties

Properties of the **TCustomMSConnection** class.

For a complete list of the **TCustomMSConnection** class members, see the

[TCustomMSConnection Members](#) topic.

Public

Name	Description
ClientVersion	Contains the version of Microsoft OLE DB Provider for SQL Server.
ConnectDialog (inherited from TCustomDAConnection)	Allows to link a TCustomConnectDialog component.
ConnectionString (inherited from TCustomDAConnection)	Used to specify the connection information, such as: UserName, Password, Server, etc.
ConvertEOL (inherited from TCustomDAConnection)	Allows customizing line breaks in string fields and parameters.
Database	Used to specify the database name that is a default source of data for SQL queries once a connection is established.
InTransaction (inherited from TCustomDAConnection)	Indicates whether the transaction is active.
IsolationLevel	Used to specify the extent to which all outside transactions interfere with subsequent transactions of the current connection.
LoginPrompt (inherited from TCustomDAConnection)	Specifies whether a login dialog appears immediately before opening a new connection.
Options	Used to specify the behaviour of a TCustomMSConnection object.
Password (inherited from TCustomDAConnection)	Serves to supply a password for login.
Pooling (inherited from TCustomDAConnection)	Enables or disables using connection pool.
PoolingOptions (inherited from	Specifies the behaviour of connection pool.

TCustomDAConnection)	
Server (inherited from TCustomDAConnection)	Serves to supply the server name for login.
ServerVersion	Contains the exact number of the SQL Server version.
Username (inherited from TCustomDAConnection)	Used to supply a user name for login.

See Also

- [TCustomMSConnection Class](#)
- [TCustomMSConnection Class Members](#)

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5.13.1.1.2.1 ClientVersion Property

Contains the version of Microsoft OLE DB Provider for SQL Server.

Class

[TCustomMSConnection](#)

Syntax

```
property ClientVersion: string;
```

Remarks

The version of Microsoft OLE DB Provider for SQL Server (sqloledb.dll).

To get the value of this property, connection to the server must be established.

See Also

- [TCustomDAConnection.Connect](#)
- [ServerVersion](#)

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5.13.1.1.2.2 Database Property

Used to specify the database name that is a default source of data for SQL queries once a connection is established.

Class

[TCustomMSConnection](#)

Syntax

```
property Database: string;
```

Remarks

Use the Database property to specify the database name that is a default source of data for SQL queries once a connection is established.

Altering the Database property makes new database name take effect immediately.

When Database is not assigned, SDAC 4.20 and higher will use the default database for the current SQL Server login specified in the [TCustomDACConnection.Username](#) property.

Preceding SDAC versions use the 'master' database by default.

Setting Database='Northwind' allows you to omit database specifier in the SELECT statements. That is, instead of

```
SELECT * FROM Northwind..Products;
```

you may just write

```
SELECT * FROM Products
```

See Also

- [TCustomDACConnection.Server](#)
- [TCustomDACConnection.Username](#)
- [TCustomDACConnection.Password](#)

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5.13.1.1.2.3 IsolationLevel Property

Used to specify the extent to which all outside transactions interfere with subsequent transactions of the current connection.

Class

[TCustomMSConnection](#)

Syntax

```
property IsolationLevel: TIsolationLevel default ilReadCommitted;
```

Remarks

Use the IsolationLevel property to specify the extent to which all outside transactions interfere with subsequent transactions of the current connection.

Changes to IsolationLevel take effect at a time of starting new transaction or opening new connection.

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5.13.1.1.2.4 Options Property

Used to specify the behaviour of a TCustomMSConnection object.

Class

[TCustomMSConnection](#)

Syntax

```
property Options: TCustomMSConnectionOptions;
```

Remarks

Set the properties of Options to specify the behaviour of a TCustomMSConnection object.

Descriptions of all options are in the table below.

Option Name	Description
Encrypt	Specifies if data should be encrypted

	before sending it over the network.
NumericType	Specifies the format of storing and representing the NUMERIC (DECIMAL) fields for all TCustomMSDataSets associated with the given connection.
Provider	Used to specify a provider from the list of supported providers.
QuotedIdentifier	Causes Microsoft SQL Server to follow the SQL-92 rules regarding quotation mark delimiting identifiers and literal strings.
UseWideMemos	Used to manage field type creation for the NTEXT data type.

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5.13.1.1.2.5 ServerVersion Property

Contains the exact number of the SQL Server version.

Class

[TCustomMSConnection](#)

Syntax

```
property ServerVersion: string;
```

Remarks

The version of SQL Server.

To get the value of this property, connection to the server must be established.

See Also

- [TCustomDAConnection.Connect](#)
- [ClientVersion](#)

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5.13.1.1.3 Methods

Methods of the **TCustomMSConnection** class.

For a complete list of the **TCustomMSConnection** class members, see the [TCustomMSConnection Members](#) topic.

Public

Name	Description
ApplyUpdates (inherited from TCustomDAConnection)	Overloaded. Applies changes in datasets.
AssignConnect	Shares database connection between the TCustomMSConnection components.
Commit (inherited from TCustomDAConnection)	Commits current transaction.
Connect (inherited from TCustomDAConnection)	Establishes a connection to the server.
CreateDataSet	Returns a new object of the TCustomMSDataset class and associates it with this connection object.
CreateSQL	Returns a new instance of the TMSSQL class and associates it with this connection object.
Disconnect (inherited from TCustomDAConnection)	Performs disconnect.
ExecProc (inherited from TCustomDAConnection)	Allows to execute stored procedure or function providing its name and parameters.
ExecProcEx (inherited from TCustomDAConnection)	Allows to execute a stored procedure or function.
ExecSQL (inherited from TCustomDAConnection)	Executes a SQL statement with parameters.
ExecSQLEx (inherited from TCustomDAConnection)	Executes any SQL statement outside the TQuery or TSQL components.
GetDatabaseNames (inherited from TCustomDAConnection)	Returns a database list from the server.

GetKeyFieldNames (inherited from TCustomDACConnection)	Provides a list of available key field names.
GetStoredProcNames (inherited from TCustomDACConnection)	Returns a list of stored procedures from the server.
GetTableNames (inherited from TCustomDACConnection)	Provides a list of available tables names.
MonitorMessage (inherited from TCustomDACConnection)	Sends a specified message through the TCustomDASQLMonitor component.
OpenDatasets	Opens several datasets as one batch.
Ping (inherited from TCustomDACConnection)	Used to check state of connection to the server.
RemoveFromPool (inherited from TCustomDACConnection)	Marks the connection that should not be returned to the pool after disconnect.
Rollback (inherited from TCustomDACConnection)	Discards all current data changes and ends transaction.
StartTransaction (inherited from TCustomDACConnection)	Begins a new user transaction.

See Also

- [TCustomMSConnection Class](#)
- [TCustomMSConnection Class Members](#)

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5.13.1.1.3.1 AssignConnect Method

Shares database connection between the TCustomMSConnection components.

Class

[TCustomMSConnection](#)

Syntax

```
procedure AssignConnect(Source: TCustomMSConnection);
```

Parameters

Source

Preconnected TCustomMSConnection component which connection is to be shared with the current TCustomMSConnection component.

Remarks

Use the AssignConnect method to share database connection between the TCustomMSConnection components.

AssignConnect assumes that the Source parameter points to a preconnected TCustomMSConnection component which connection is to be shared with the current TCustomMSConnection component. Note that AssignConnect doesn't make any references to the Source TCustomMSConnection component. So before disconnecting parent TCustomMSConnection component call AssignConnect(nil) or the Disconnect method for all assigned connections.

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5.13.1.1.3.2 CreateDataSet Method

Returns a new object of the TCustomMSDataset class and associates it with this connection object.

Class

[TCustomMSConnection](#)

Syntax

```
function CreateDataSet(AOwner: TComponent = nil):  
TCustomDADataset; override;
```

Parameters

AOwner

Holds the owner of the component.

Remarks

CreateSQL returns a new object of the TCustomMSDataset class and associates it with this connection object.

See Also

- [CreateSQL](#)

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5.13.1.1.3.3 CreateSQL Method

Returns a new instance of the TMSSQL class and associates it with this connection object.

Class

[TCustomMSConnection](#)

Syntax

```
function CreateSQL: TCustomDASQL; override;
```

Return Value

a new instance of the TMSSQL class.

Remarks

CreateSQL returns a new instance of the TMSSQL class and associates it with this connection object.

See Also

- [CreateDataSet](#)

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5.13.1.1.3.4 OpenDatasets Method

Opens several datasets as one batch.

Class

[TCustomMSConnection](#)

Syntax

```
procedure OpenDatasets(const ds: array of TCustomMSDataSet);
```

Parameters

ds

an array of datasets that will be opened.

Remarks

Call the OpenDatasets method to open several datasets as one batch. This method can significantly increase performance when opening queries through remote connection (e. g. Internet).

When you execute a query through remote connection, a delay occurs. If you open more than one query, the time of the delay increases proportionally to the number of opened queries. The OpenDatasets method puts all SQL queries from the received datasets together and executes them as one package. The received results are redistributed to the original dataset.

Note, that when this operation is performed, each one of the opened datasets should return only one resultset.

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5.13.1.2 TCustomMSConnectionOptions Class

This class allows setting up the behaviour of the TCustomMSConnection class.

For a list of all members of this type, see [TCustomMSConnectionOptions](#) members.

Unit

[MSAccess](#)

Syntax

```
TCustomMSConnectionOptions = class(TDACConnectionOptions);
```

Inheritance Hierarchy

[TDACConnectionOptions](#)

TCustomMSConnectionOptions

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5.13.1.2.1 Members

[TCustomMSConnectionOptions](#) class overview.

Properties

Name	Description
AllowImplicitConnect (inherited from TDACConnectionOptions)	Specifies whether to allow or not implicit connection opening.
DefaultSortType (inherited from TDACConnectionOptions)	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
DisconnectedMode (inherited from TDACConnectionOptions)	Used to open a connection only when needed for performing a server call and closes after performing the operation.
Encrypt	Specifies if data should be encrypted before sending it over the network.
KeepDesignConnected (inherited from TDACConnectionOptions)	Used to prevent an application from establishing a connection at the time of startup.
LocalFailover (inherited from TDACConnectionOptions)	If True, the TCustomDACConnection.OnConnectionLost event occurs and a failover operation can be performed after connection breaks.
NumericType	Specifies the format of storing and representing the NUMERIC (DECIMAL) fields for all TCustomMSDataSets associated with the given

	connection.
Provider	Used to specify a provider from the list of supported providers.
QuotedIdentifier	Causes Microsoft SQL Server to follow the SQL-92 rules regarding quotation mark delimiting identifiers and literal strings.
UseWideMemos	Used to manage field type creation for the NTEXT data type.

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5.13.1.2.2 Properties

Properties of the **TCustomMSConnectionOptions** class.

For a complete list of the **TCustomMSConnectionOptions** class members, see the [TCustomMSConnectionOptions Members](#) topic.

Public

Name	Description
DefaultSortType (inherited from TDACConnectionOptions)	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
DisconnectedMode (inherited from TDACConnectionOptions)	Used to open a connection only when needed for performing a server call and closes after performing the operation.
Encrypt	Specifies if data should be encrypted before sending it over the network.
KeepDesignConnected (inherited from TDACConnectionOptions)	Used to prevent an application from establishing

TDAConnectionOptions)	a connection at the time of startup.
LocalFailover (inherited from TDAConnectionOptions)	If True, the TCustomDAConnection.OnConnectionLost event occurs and a failover operation can be performed after connection breaks.
NumericType	Specifies the format of storing and representing the NUMERIC (DECIMAL) fields for all TCustomMSDataSets associated with the given connection.
Provider	Used to specify a provider from the list of supported providers.
QuotedIdentifier	Causes Microsoft SQL Server to follow the SQL-92 rules regarding quotation mark delimiting identifiers and literal strings.
UseWideMemos	Used to manage field type creation for the NTEXT data type.

Published

Name	Description
AllowImplicitConnect (inherited from TDAConnectionOptions)	Specifies whether to allow or not implicit connection opening.

See Also

- [TCustomMSConnectionOptions Class](#)
- [TCustomMSConnectionOptions Class Members](#)

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5.13.1.2.2.1 Encrypt Property

Specifies if data should be encrypted before sending it over the network.

Class

[TCustomMSConnectionOptions](#)

Syntax

```
property Encrypt: boolean default DefValEncrypt;
```

Remarks

Use the Encrypt property to specify if data should be encrypted before sending it over the network. The default value is False.

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5.13.1.2.2.2 NumericType Property

Specifies the format of storing and representing the NUMERIC (DECIMAL) fields for all [TCustomMSDataSets](#) associated with the given connection.

Class

[TCustomMSConnectionOptions](#)

Syntax

```
property NumericType: TDANumericType default ntFloat;
```

Remarks

Use the NumericType property to specify the format of storing and representing the NUMERIC (DECIMAL) fields for all [TCustomMSDataSets](#) associated with the given connection.

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5.13.1.2.2.3 Provider Property

Used to specify a provider from the list of supported providers.

Class

[TCustomMSConnectionOptions](#)

Syntax

```
property Provider: TMSPProvider default DefValProvider;
```

Remarks

Use the Provider property to specify a provider from the list of supported providers.

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5.13.1.2.2.4 QuotedIdentifier Property

Causes Microsoft SQL Server to follow the SQL-92 rules regarding quotation mark delimiting identifiers and literal strings.

Class

[TCustomMSConnectionOptions](#)

Syntax

```
property QuotedIdentifier: boolean default True;
```

Remarks

Causes Microsoft SQL Server to follow the SQL-92 rules regarding quotation mark delimiting identifiers and literal strings. Identifiers delimited by double quotation marks can be either Transact-SQL reserved keywords or can contain characters not usually allowed by the Transact-SQL syntax rules for identifiers.

True (the default value):

Identifiers can be delimited by double quotation marks, and literals must be delimited by single quotation marks.

All strings delimited by double quotation marks are interpreted as object identifiers. Therefore, quoted identifiers do not have to follow the Transact-SQL rules for identifiers. They can be reserved keywords and can include characters not always allowed in the Transact-SQL identifiers. Double quotation marks cannot be used to delimit literal string expressions; single quotation marks must be used to enclose literal strings. If a single quotation mark (') is a part of the literal string, it can be represented by two single quotation marks ("). QuotedIdentifier must be True when reserved keywords are used for object names in the database.

False (BDE compatibility):

Identifiers cannot be quoted and must follow all Transact-SQL rules for identifiers. Literals can be delimited by either single or double quotation marks. If a literal string is delimited by double quotation marks, the string can contain embedded single quotation marks such as apostrophes.

QuotedIdentifier must be True when creating or manipulating indexes on computed columns or indexed views. If QuotedIdentifier is False, CREATE, UPDATE, INSERT, and DELETE statements on tables with indexes on computed columns or indexed views will fail.

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5.13.1.2.2.5 UseWideMemos Property

Used to manage field type creation for the NTEXT data type.

Class

[TCustomMSConnectionOptions](#)

Syntax

```
property UseWideMemos: boolean default True;
```

Remarks

If True (the default value), then TWideMemo fields are created for the NTEXT data type. If False, TMemo fields are created. This option is available for Delphi 2006 and higher.

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5.13.1.3 TCustomMSDataSet Class

A component for defining the functionality for the classes derived from it.

For a list of all members of this type, see [TCustomMSDataSet](#) members.

Unit

[MSAccess](#)

Syntax

```
TCustomMSDataSet = class(TCustomDADataset);
```

Remarks

TCustomMSDataSet is a base dataset component that defines the functionality for the classes derived from it. Applications never use TCustomMSDataSet objects directly. Instead they use descendants of TCustomMSDataSet, such as TMSQuery, TMSTable and TMSStoredProc, that inherit its dataset-related properties and methods.

Inheritance Hierarchy

[TMemDataSet](#)

[TCustomDADataset](#)

TCustomMSDataSet

See Also

- [TMSQuery](#)
- [TCustomMSTable](#)
- [TCustomMSStoredProc](#)
- [Performance of Obtaining Data](#)
- [Master/Detail Relationships](#)

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5.13.1.3.1 Members

[TCustomMSDataSet](#) class overview.

Properties

Name	Description
BaseSQL (inherited from TCustomDADataset)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
ChangeNotification	Points to a TMSChangeNotification component.
CommandTimeout	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Conditions (inherited from TCustomDADataset)	Used to add WHERE conditions to a query
Connection	Used to specify a connection object that will be used to connect to a data store.
CursorType	Cursor types supported by SQL Server.
DataTypeMap (inherited from TCustomDADataset)	Used to set data type mapping rules
Debug (inherited from TCustomDADataset)	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields (inherited from TCustomDADataset)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from TCustomDADataset)	Used to keep dataset opened after connection is closed.
Encryption	Used to specify encryption options in a dataset.
FetchAll	Used to decrease the time of retrieving additional

	records to the client side when calling TMemDataSet.Locate and TMemDataSet.LocateEx for the first time.
FetchRows (inherited from TCustomDADataset)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from TCustomDADataset)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from TCustomDADataset)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from TCustomDADataset)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from TCustomDADataset)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from TCustomDADataset)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDADataset)	Makes it possible to change SQL queries easily.

MasterFields (inherited from TCustomDADataset)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from TCustomDADataset)	Used to specify the data source component which binds current dataset to the master one.
Options	Used to specify the behaviour of a TCustomMSDataSet object.
ParamCheck (inherited from TCustomDADataset)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from TCustomDADataset)	Used to indicate how many parameters are there in the Params property.
Params	Contains parameters for a query's SQL statement.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from TCustomDADataset)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from TCustomDADataset)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from TCustomDADataset)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from TCustomDADataset)	Used to provide a SQL

	statement that a query component executes when its Open method is called.
SQLDelete (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from TCustomDADataset)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from TCustomDADataset)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional (inherited from TCustomDADataset)	Used if an application does not need bidirectional access to records in the result set.
UpdateObject	Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Methods

Name	Description
AddWhere (inherited from TCustomDADataset)	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from TCustomDADataset)	Breaks execution of the SQL statement on the server.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
CreateBlobStream (inherited from TCustomDADataset)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
CreateProcCall	Serves for the creating of a stored procedures call.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
DeleteWhere (inherited from TCustomDADataset)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
Execute (inherited from TCustomDADataset)	Overloaded. Executes a SQL statement on the

	server.
Executing (inherited from TCustomDADataset)	Indicates whether SQL statement is still being executed.
Fetched (inherited from TCustomDADataset)	Used to find out whether TCustomDADataset has fetched all rows.
Fetching (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is still fetching rows.
FetchingAll (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is fetching all rows to the end.
FindKey (inherited from TCustomDADataset)	Searches for a record which contains specified field values.
FindMacro (inherited from TCustomDADataset)	Finds a macro with the specified name.
FindNearest (inherited from TCustomDADataset)	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam	Indicates whether a parameter with the specified name exists in a dataset.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from TCustomDADataset)	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject (inherited from TCustomDADataset)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from TCustomDADataset)	Retrieves the precision of a number field.
GetFieldScale (inherited from TCustomDADataset)	Retrieves the scale of a number field.
GetFileStreamForField	Used to create the TMSFileStream object for working with FILESTREAM

	data.
GetKeyFieldNames (inherited from TCustomDADataset)	Provides a list of available key field names.
GetOrderBy (inherited from TCustomDADataset)	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent (inherited from TCustomDADataset)	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock	Overloaded. Locks the current records to prevent multiple users' access to it.
LockTable	Locks a table to prevent multiple access to it.
MacroByName (inherited from TCustomDADataset)	Finds a macro with the specified name.
OpenNext	Opens next rowset in the statement.
ParamByName	Provides access to a parameter by its name.
Prepare (inherited from TCustomDADataset)	Allocates, opens, and parses cursor for a query.
RefreshQuick	An optimized procedure to retrieve the changes applied to the server by other clients to the particular client side.
RefreshRecord (inherited from TCustomDADataset)	Actualizes field values for the current record.
RestoreSQL (inherited from TCustomDADataset)	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as

	unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL (inherited from TCustomDADataset)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy (inherited from TCustomDADataset)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved (inherited from TCustomDADataset)	Determines if the SQL property value was saved to the BaseSQL property.
UnLock (inherited from TCustomDADataset)	Releases a record lock.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
AfterExecute (inherited from TCustomDADataset)	Occurs after a component has executed a query to database.
AfterFetch (inherited from TCustomDADataset)	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute	Occurs after executing insert, delete, update, lock and refresh operation.
BeforeFetch (inherited from TCustomDADataset)	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute	Occurs before executing insert, delete, update, lock and refresh operation.
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

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5.13.1.3.2 Properties

Properties of the **TCustomMSDataSet** class.

For a complete list of the **TCustomMSDataSet** class members, see the [TCustomMSDataSet Members](#) topic.

Public

Name	Description
BaseSQL (inherited from TCustomDADataset)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.

CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
ChangeNotification	Points to a TMSChangeNotification component.
CommandTimeout	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Conditions (inherited from TCustomDADataset)	Used to add WHERE conditions to a query
Connection	Used to specify a connection object that will be used to connect to a data store.
CursorType	Cursor types supported by SQL Server.
DataTypeMap (inherited from TCustomDADataset)	Used to set data type mapping rules
Debug (inherited from TCustomDADataset)	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields (inherited from TCustomDADataset)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from TCustomDADataset)	Used to keep dataset opened after connection is closed.
Encryption	Used to specify encryption options in a dataset.
FetchAll	Used to decrease the time of retrieving additional records to the client side when calling TMemDataSet.Locate and TMemDataSet.LocateEx for the first time.
FetchRows (inherited from TCustomDADataset)	Used to define the number of rows to be transferred

	across the network at the same time.
FilterSQL (inherited from TCustomDADataset)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from TCustomDADataset)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from TCustomDADataset)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from TCustomDADataset)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from TCustomDADataset)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDADataset)	Makes it possible to change SQL queries easily.
MasterFields (inherited from TCustomDADataset)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.

MasterSource (inherited from TCustomDADataset)	Used to specify the data source component which binds current dataset to the master one.
Options	Used to specify the behaviour of a TCustomMSDataSet object.
ParamCheck (inherited from TCustomDADataset)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from TCustomDADataset)	Used to indicate how many parameters are there in the Params property.
Params	Contains parameters for a query's SQL statement.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from TCustomDADataset)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from TCustomDADataset)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from TCustomDADataset)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from TCustomDADataset)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying a deletion to a record.

SQLInsert (inherited from TCustomDADataset)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from TCustomDADataset)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional (inherited from TCustomDADataset)	Used if an application does not need bidirectional access to records in the result set.
UpdateObject	Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

See Also

- [TCustomMSDataSet Class](#)
- [TCustomMSDataSet Class Members](#)

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5.13.1.3.2.1 ChangeNotification Property

Points to a [TMSChangeNotification](#) component.

Class

[TCustomMSDataSet](#)

Syntax

```
property ChangeNotification: TMSChangeNotification;
```

Remarks

Points to a [TMSChangeNotification](#) component used to handle events related to the server side changes.

Note: This property is not available of users of SDAC Standard Edition.

See Also

- [TMSChangeNotification](#)
- [Options](#)
- [Options](#)

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5.13.1.3.2.2 CommandTimeout Property

Used to specify the wait time before terminating the attempt to execute a command and generating an error.

Class

[TCustomMSDataSet](#)

Syntax

```
property CommandTimeout: integer default 0;
```

Remarks

The time in seconds to wait for the command to execute.

The default value is 0. The 0 value indicates no limit (an attempt to execute a command will wait indefinitely).

If a command is successfully executed prior to the expiration of the seconds specified, CommandTimeout has no effect. Otherwise, the 'Query timeout expired' error is generated by SQL Server. This error has the DB_E_ABORTLIMITREACHED OLEDB error code.

For more information about OLEDB Errors, refer to <http://technet.microsoft.com/en-us/library/ms171852.aspx>

Samples

Delphi

```
MSQuery.CommandTimeout := 5; // wait 5 seconds for the command to execute
MSQuery.SQL.Text := 'long-lasting query';
try
  MSQuery.Execute;
except
  on E: EOleDbError do begin
    if E.ErrorCode = DB_E_ABORTLIMITREACHED then // the 'Query timeout expired'
      ShowMessage(E.Message);
    raise;
  end;
end;
```

C++Builder

```
MSQuery->CommandTimeout = 5; // wait 5 seconds for the command to execute
MSQuery->SQL->Text = "long-lasting query";
try
{
  MSQuery->Execute();
}
catch (EOleDbError &E)
{
  if (E.ErrorCode == DB_E_ABORTLIMITREACHED) // the 'Query timeout expired'
    ShowMessage(E.Message);
  throw;
}
```

See Also

- [TMSConnection.ConnectionTimeout](#)

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5.13.1.3.2.3 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

[TCustomMSDataSet](#)

Syntax

```
property Connection: TCustomMSConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store.

Set at design-time by selecting from the list of provided TCustomMSConnection or its descendant class objects.

At runtime, set the Connection property to reference an existing TCustomMSConnection object.

See Also

- [TCustomMSConnection](#)

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5.13.1.3.2.4 CursorType Property

Cursor types supported by SQL Server.

Class

[TCustomMSDataSet](#)

Syntax

```
property CursorType: TMSCursorType default ctDefaultResultSet;
```

Remarks

Depending on the text of the SQL statement cursor type and the value of the

[TCustomDADataset.ReadOnly](#) property when [Options](#) is True, cursor type can be modified while opening a dataset. To learn more about implicit conversion of cursors, refer to [MSDN](#) .

ctStatic, ctKeyset and ctDynamic cursors are server cursors. So the

[TCustomDADataset.FetchRows](#), [FetchAll](#), [TMemDataSet.CachedUpdates](#) properties don't have any influence on such cursors and only the Options.CursorUpdate option does.

To learn how to choose cursor type, refer to [MSDN](#) .

The default value is ctDefaultResultSet.

See Also

- [Performance of Obtaining Data](#)
- [Options](#)

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5.13.1.3.2.5 Encryption Property

Used to specify encryption options in a dataset.

Class

[TCustomMSDataSet](#)

Syntax

```
property Encryption: TMSEncryption;
```

Remarks

Set the Encryption options for using encryption in a dataset.

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5.13.1.3.2.6 FetchAll Property

Used to decrease the time of retrieving additional records to the client side when calling [TMemDataSet.Locate](#) and [TMemDataSet.LocateEx](#) for the first time.

Class

[TCustomMSDataSet](#)

Syntax

```
property FetchAll: boolean default True;
```

Remarks

When the FetchAll property is False, the first call to the [TMemDataSet.Locate](#) and [TMemDataSet.LocateEx](#) methods may take a lot of time to retrieve additional records to the client side. The default value is True.

Since SDAC 4.20, changing the value of the FetchAll option to True for a dataset open in the FetchAll=False mode will not lead to closing this dataset. This fill forces all records to be fetched to the client.

Note: When setting [TCustomMSDataSet](#).FetchAll = False you should keep in mind that execution of such queries blocks the current session. In order to avoid blocking OLE DB creates additional session that causes the following problems:

- Each additional session runs outside the transaction context thus the [TCustomDAConnection.Commit](#) and [TCustomDAConnection.Rollback](#) operations in the main session won't apply changes made in additional sessions. This also concerns changes made by TDataSet.Post.
- No transactions can be started if there are underfetched datasets within the connection.
- Temporary tables created in one session are not accessible from other sessions therefore simultaneous using of FetchAll = False and temporary tables is impossible.
- When editing compound queries with ORDER BY clause setting FetchAll = False may lead to deadlock during TDataSet.Post.

Important: If there is more than one dataset attached to TMSConnection, setting FetchAll = False even in one of them may lead to the problems described above.

To prevent the TMSConnection object from creating additional connections for datasets that work in the FetchAll=False mode, you should enable the [TMSConnectionOptions.MultipleActiveResultSets](#) option. This option is supported since SQL

Server 2005 with using SQL Native Client as OLE DB provider.

See Also

- [Performance of Obtaining Data](#)
- [TMSConnectionOptions.MultipleActiveResultSets](#)
- [TMSConnectionOptions.Provider](#)

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5.13.1.3.2.7 Options Property

Used to specify the behaviour of a TCustomMSDataSet object.

Class

[TCustomMSDataSet](#)

Syntax

```
property Options: TMSDataSetOptions;
```

Remarks

Set the properties of Options to specify the behaviour of a TMSDataSet object.

Descriptions of all options are in the table below.

Option Name	Description
AllFieldsEditable	Not supported.
AutoPrepare	Used to execute automatic TCustomDADataset.Prepare on a query execution.
AutoRefresh	Used to enable automatic refresh of a dataset every AutoRefreshInterval seconds.
AutoRefreshInterval	Used to define in what time interval in seconds the Refresh or RefreshQuick method of DataSet is called.
CheckRowVersion	Used to determine whether dataset checks for rows modifications made by another user on automatic generation of SQL statement for update or delete data.

CursorUpdate	Used to specify the way data updates reflect on database when modifying dataset by using server cursors <code>ctKeySet</code> and <code>ctDynamic</code> .
DefaultValues	Used to enable <code>TCustomMSDataSet</code> to fill the <code>DefaultExpression</code> property of <code>TField</code> objects by an appropriate value.
DescribeParams	Used to specify whether to query TMSPParam properties from the server when executing the TCustomDADataset.Prepare method.
DisableMultipleResults	Used to forbid multiple results usage by a command.
DMLRefresh	Used to refresh a record when insertion or update is performed.
EnableBCD	Used to specify whether to treat numeric fields as floating-point or BCD.
FullRefresh	Used to specify the fields to include in the automatically generated SQL statement when calling the TCustomDADataset.RefreshRecord method.
HideSystemUniqueFields	Used to hide system fields for the <code>prSQL</code> , <code>prNativeClient</code> and <code>prMSOLEDB</code> providers. The default value is <code>True</code> .
LastIdentityValueFunction	Determines which system function to use to obtain an identifier when adding a record. The default value is <code>vfScopeIdentity</code> .
LongStrings	Represents string fields with the length that is greater than 255 as <code>TStringField</code> .
NonBlocking	Used to fetch rows in a separate thread.
NumberRange	Used to set the <code>MaxValue</code> and <code>MinValue</code> properties of <code>TIntegerField</code> and <code>TFloatField</code> to appropriate values.
PrepareUpdateSQL	Used to automatically prepare update queries before execution.
QueryIdentity	Used to specify whether to request the Identity field value on execution of the <code>Insert</code> or <code>Append</code> method.
QueryRecCount	Used to perform additional query to get record count for this <code>SELECT</code> , so the <code>RecordCount</code> property reflects the actual number of records.
QuoteNames	Used for <code>TCustomMSDataSet</code> to quote all

	field names in autogenerated SQL statements.
ReflectChangeNotify	Indicates whether DataSet will be automatically refreshed when the underlying data on the server is changed.
RemoveOnRefresh	Used for dataset to locally remove record on refresh if it does not match filter condition (WHERE clause for refresh SQL) anymore.
RequiredFields	Used for TCustomMSDataSet to set the Required property of TField objects for the NOT NULL fields.
ReturnParams	Used to return the new values of fields to dataset after insert or update.
SetEmptyStrToNull	Force replace of empty strings with NULL values in data. Default value is False.
StrictUpdate	Used for TCustomDADataset to raise an exception when the number of updated or deleted records is not equal 1.
TrimFixedChar	Used to specify whether to discard all trailing spaces in the fixed-length string fields of a dataset.
TrimVarChar	Used to specify whether to discard all trailing spaces in the variable-length string fields of a dataset.
UniqueRecords	Used to specify whether to query additional keyfields from the server.

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5.13.1.3.2.8 Params Property

Contains parameters for a query's SQL statement.

Class

[TCustomMSDataSet](#)

Syntax

property Params: [TMSPParams](#) **stored** False;

Remarks

Access Params at runtime to view and set parameter names, values, and data types dynamically (at design-time use the Parameters editor to set the parameter information). Params is a zero-based array of parameter records. Index specifies the array element to access.

An easier way to set and retrieve parameter values, when the name of each parameter is known, is to call ParamByName.

See Also

- [TMSPParam](#)
- [ParamByName](#)

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5.13.1.3.2.9 SmartFetch Property

The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.

Class

[TCustomMSDataSet](#)

Syntax

```
property SmartFetch: TSmartFetchOptions;
```

See Also

- [TSmartFetchOptions](#)

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5.13.1.3.2.10 UpdateObject Property

Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.

Class

[TCustomMSDataSet](#)

Syntax

property UpdateObject: [TMSUpdatesQL](#);

Remarks

The UpdateObject property points to an update object component which provides SQL statements that perform updates of read-only datasets when cached updates are enabled.

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5.13.1.3.3 Methods

Methods of the **TCustomMSDataSet** class.

For a complete list of the **TCustomMSDataSet** class members, see the

[TCustomMSDataSet Members](#) topic.

Public

Name	Description
AddWhere (inherited from TCustomDADataset)	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from TCustomDADataset)	Breaks execution of the SQL statement on the server.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates

	buffer.
CreateBlobStream (inherited from TCustomDADataset)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
CreateProcCall	Serves for the creating of a stored procedures call.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
DeleteWhere (inherited from TCustomDADataset)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
Execute (inherited from TCustomDADataset)	Overloaded. Executes a SQL statement on the server.
Executing (inherited from TCustomDADataset)	Indicates whether SQL statement is still being executed.
Fetched (inherited from TCustomDADataset)	Used to find out whether TCustomDADataset has fetched all rows.
Fetching (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is still fetching rows.
FetchingAll (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is fetching all rows to the end.
FindKey (inherited from TCustomDADataset)	Searches for a record which contains specified field values.
FindMacro (inherited from TCustomDADataset)	Finds a macro with the specified name.
FindNearest (inherited from TCustomDADataset)	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than

	the values specified in the KeyValues parameter.
FindParam	Indicates whether a parameter with the specified name exists in a dataset.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from TCustomDADataset)	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject (inherited from TCustomDADataset)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from TCustomDADataset)	Retrieves the precision of a number field.
GetFieldScale (inherited from TCustomDADataset)	Retrieves the scale of a number field.
GetFileStreamForField	Used to create the TMSFileStream object for working with FILESTREAM data.
GetKeyFieldNames (inherited from TCustomDADataset)	Provides a list of available key field names.
GetOrderBy (inherited from TCustomDADataset)	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent (inherited from TCustomDADataset)	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock	Overloaded. Locks the current records to prevent

	multiple users' access to it.
LockTable	Locks a table to prevent multiple access to it.
MacroByName (inherited from TCustomDADataset)	Finds a macro with the specified name.
OpenNext	Opens next rowset in the statement.
ParamByName	Provides access to a parameter by its name.
Prepare (inherited from TCustomDADataset)	Allocates, opens, and parses cursor for a query.
RefreshQuick	An optimized procedure to retrieve the changes applied to the server by other clients to the particular client side.
RefreshRecord (inherited from TCustomDADataset)	Actualizes field values for the current record.
RestoreSQL (inherited from TCustomDADataset)	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL (inherited from TCustomDADataset)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy (inherited from TCustomDADataset)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.

SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved (inherited from TCustomDADataset)	Determines if the SQL property value was saved to the BaseSQL property.
UnLock (inherited from TCustomDADataset)	Releases a record lock.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

See Also

- [TCustomMSDataSet Class](#)
- [TCustomMSDataSet Class Members](#)

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5.13.1.3.3.1 CreateProcCall Method

Serves for the creating of a stored procedures call.

Class

[TCustomMSDataSet](#)

Syntax

```
procedure CreateProcCall(const Name: string);
```

Parameters

Name

Holds the name of a stored routine.

Remarks

Using the name of a stored procedure, a command for the call is generated and parameters are created. After a call to CreateProcCall the values of the parameters should be defined and the procedure should be executed.

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5.13.1.3.3.2 FindParam Method

Indicates whether a parameter with the specified name exists in a dataset.

Class

[TCustomMSDataSet](#)

Syntax

```
function FindParam(const value: string): TMSParam;
```

Parameters

Value

Holds the name of the parameter to search for.

Return Value

A TMSParam object, if a param with the matching name was found.

Remarks

Call the FindParam method to determine if parameter with the specified name exists in a dataset. Name is the name of the param for which to search. If FindParam finds a param with the matching name, it returns a TMSParam object for the specified Name. Otherwise it returns nil.

See Also

- [Params](#)
- [ParamByName](#)

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5.13.1.3.3.3 GetFileStreamForField Method

Used to create the TMSFileStream object for working with FILESTREAM data.

Class

[TCustomMSDataSet](#)

Syntax

```
function GetFileStreamForField(const FieldName: string; const  
DesiredAccess: TMSsqlFilestreamDesiredAccess = daReadWrite; const  
OpenOptions: TMSsqlFilestreamOpenOptions = []; const  
AllocationSize: Int64 = 0): TMSFileStream;
```

Parameters

FieldName

Contains the existing field name of a VARBINARY(MAX) column.

DesiredAccess

Determines the mode that is used to access FILESTREAM data.

The following values can be used:

- *daRead* - data can be read from the file.
- *daWrite* - data can be written to the file.
- *daReadWrite* - data can be read and written from the file.

OpenOptions

Determines file attributes and flags. By default, the file is being opened or created with no special options. The following values can be used:

- *ooAsync* - The file is being opened or created for asynchronous I/O.
- *ooNoBuffering* - The system opens the file without system caching.
- *ooNoWriteThrough* - The system does not write through an intermediate cache. Writes go directly to disk.
- *ooSequentialScan* - The file is being accessed sequentially from beginning to end. The

system can use this as a hint to optimize file caching. If an application moves the file pointer for random access, optimal caching may not occur.

- *ooRandomAccess* - The file is being accessed randomly. The system can use this as a hint to optimize file caching.

AllocationSize

Determines the initial allocation size of the data file in bytes. It is ignored in read mode. If this parameter is 0, the default file system behavior is used.

Return Value

The TMSFileStream object for working with FILESTREAM data.

Remarks

Creates the TMSFileStream object for working with FILESTREAM data of specified column. Transaction must be started before calling this method.

Note that this method requests server to obtain the Win32 compatible file handle for a FILESTREAM data.

To obtain the file handle, the following steps are performed:

1. getting the current transaction context of a session by calling the GET_FILESTREAM_TRANSACTION_CONTEXT Transact-SQL function. (<http://msdn.microsoft.com/en-us/library/bb934014.aspx>)
2. obtaining the Win32 file handle by executing the OpenSqlFilestream API. (<http://msdn.microsoft.com/en-us/library/bb933972.aspx>)

Note: You can find more information about working with FILESTREAM data in MSDN at [http://msdn.microsoft.com/en-us/library/cc949109\(v=sql.100\).aspx](http://msdn.microsoft.com/en-us/library/cc949109(v=sql.100).aspx)

See Also

- [TMSFileStream](#)

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5.13.1.3.3.4 Lock Method

Locks the current records to prevent multiple users' access to it.

Class

[TCustomMSDataSet](#)

Overload List

Name	Description
Lock	Locks the current records to prevent multiple users' access to it.
Lock(LockType: TMSLockType)	Locks the current records to prevent multiple users' access to it.

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Locks the current records to prevent multiple users' access to it.

Class

[TCustomMSDataSet](#)

Syntax

```
procedure Lock; override;
```

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Locks the current records to prevent multiple users' access to it.

Class

[TCustomMSDataSet](#)

Syntax

```
procedure Lock(LockType: TMSLockType); reintroduce;
```

Parameters

LockType

Holds the lock type.

Remarks

This method locks the current record in dataset to prevent multiple users' access to it.

Record lock can be performed only within a transaction. If an application cannot update/lock a record because it has already been locked, it will wait until the lock is released. When the [server lock timeout](#) has expired, but lock is not acquired, an exception will be raised. Lock is released when the transaction is committed/rolled back.

You should also be aware of the [Lock Escalation](#) mechanism of SQL Server using locking in SDAC. Locking multiple records in the same table may lead to the locking of a whole table. This will avoid the server's resources overrun.

Note There is an optimization for exclusive locks - SQL Server checks whether data has been changed since the transaction was started. If not, then a lock request is ignored. For more information see [this](#) topic of MSDN.

Example

To avoid this issue, you can [refresh](#) only locked record:

```
if not MSQuery.Connection.InTransaction then // check whether the transaction is running
    MSQuery.Connection.StartTransaction; // run the transaction
    // setup how much time to wait before raising an exception
    // if the record is already locked by someone else
    MSQuery.Connection.ExecSQL('SET LOCK_TIMEOUT ' + IntToStr(StrToInt(edLockTimeout)));
    MSQuery.Lock(ltExclusive); // perform exclusive lock
    MSQuery.RefreshRecord; // make sure that the record is locked
```

See Also

- [TCustomMSDataSet.LockTable](#)
- [TCustomDACConnection.StartTransaction](#)
- [TCustomDACConnection.Commit](#)
- [TCustomDACConnection.Rollback](#)

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5.13.1.3.3.5 LockTable Method

Locks a table to prevent multiple access to it.

Class

[TCustomMSDataSet](#)

Syntax

```
procedure LockTable(LockType: TMSLockType);
```

Parameters

LockType

Holds the lock type.

Remarks

This method locks the underlying dataset's table to prevent multiple users' access to it.

Table lock can be performed only within a transaction. If an application cannot update/lock a table because it has already been locked, it will wait until the lock is released. When the [server lock timeout](#) has expired, but lock is not acquired, an exception will be raised. Lock is released when the transaction is committed/rolled back.

See Also

- [TCustomMSDataSet.Lock](#)
- [TCustomDACConnection.StartTransaction](#)
- [TCustomDACConnection.Commit](#)
- [TCustomDACConnection.Rollback](#)

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5.13.1.3.3.6 OpenNext Method

Opens next rowset in the statement.

Class

[TCustomMSDataSet](#)

Syntax

```
function OpenNext: boolean;
```

Return Value

True, if DataSet opens.

Remarks

Call the OpenNext method to get the second and other ResultSets while executing a multiresult query. If DataSet opens, it returns True. If there are no record sets to be represented, it will return False, and the current record set will be closed. Has effect only for the ctDefaultResultSet cursor. The OpenNext method isn't compatible with

[TCustomDADDataSet.Prepare](#).

Example

Here is a small piece of code that demonstrates the approach of working with multiple datasets returned by a multi-statement query:

```
MSQuery.SQL.Clear;  
MSQuery.SQL.Add('SELECT * FROM Table1;');  
MSQuery.SQL.Add('SELECT * FROM Table2;');  
MSQuery.SQL.Add('SELECT * FROM Table3;');  
MSQuery.SQL.Add('SELECT * FROM Table4;');  
MSQuery.SQL.Add('SELECT * FROM Table5;');  
MSQuery.FetchAll := False;  
MSQuery.Open;  
repeat  
    // < do something >  
until not MSQuery.OpenNext;
```

See Also

- [TCustomDADDataSet.Execute](#)

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5.13.1.3.3.7 ParamByName Method

Provides access to a parameter by its name.

Class

[TCustomMSDataSet](#)

Syntax

```
function ParamByName(const Value: string): TMSPParam;
```

Parameters

Value

Holds the name of the parameter to retrieve information for.

Return Value

a TMSPParam object.

Remarks

Call the ParamByName method to set or use parameter information for a specific parameter based on its name. Name is the name of the parameter for which to retrieve information.

ParamByName is used to set a parameter's value at runtime and returns a [TMSPParam](#) object.

Example

The following statement retrieves the current value of a parameter called "Contact" into an edit box:

```
Edit1.Text := Query1.ParamsByName('Contact').AsString;
```

See Also

- [TMSPParam](#)
- [Params](#)
- [FindParam](#)

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5.13.1.3.3.8 RefreshQuick Method

An optimized procedure to retrieve the changes applied to the server by other clients to the particular client side.

Class

[TCustomMSDataSet](#)

Syntax

```
procedure RefreshQuick(const CheckDeleted: boolean);
```

Parameters

CheckDeleted

if True, records deleted by other clients will be checked additionally. If False, remote records are not checked.

Remarks

Call the RefreshQuick method to quickly retrieve to the client side changes applied to the server by other clients. The main difference between the RefreshQuick and Refresh methods is that RefreshQuick does not transfer to the client all data like the Refresh method does. The only rows that were added or modified from the moment of the last refresh are returned to a client. The necessity of data inquiry for each row is defined by the TIMESTAMP field. So the RefreshQuick method requires query to include a unique key fields and a TIMESTAMP field. If the CheckDeleted parameter value is True, records deleted by other clients will be checked additionally.

This method is especially effective for queries with huge data level in the single row.

This feature does not work with [SQL Server Compact Edition](#).

Note: If RefreshQuick is called for a dataset which is ordered on the server (query includes the ORDER BY clause), dataset records ordering can be violated because not all records will be retrieved by this method. You can use local ordering to solve this problem. For more information about local ordering, see the [TMemDataSet.IndexFieldNames](#) property description.

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5.13.1.3.4 Events

Events of the **TCustomMSDataSet** class.

For a complete list of the **TCustomMSDataSet** class members, see the [TCustomMSDataSet Members](#) topic.

Public

Name	Description
AfterExecute (inherited from TCustomDADataset)	Occurs after a component has executed a query to database.
AfterFetch (inherited from TCustomDADataset)	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute	Occurs after executing insert, delete, update, lock and refresh operation.
BeforeFetch (inherited from TCustomDADataset)	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute	Occurs before executing insert, delete, update, lock and refresh operation.
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

See Also

- [TCustomMSDataSet Class](#)
- [TCustomMSDataSet Class Members](#)

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5.13.1.3.4.1 AfterUpdateExecute Event

Occurs after executing insert, delete, update, lock and refresh operation.

Class

[TCustomMSDataSet](#)

Syntax

```
property AfterUpdateExecute: TMSUpdateExecuteEvent;
```

Remarks

The AfterUpdateExecute event occurs after executing insert, delete, update, lock and refresh operation. You can use AfterUpdateExecute to read parameters of corresponding statements.

See Also

- [BeforeUpdateExecute](#)

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5.13.1.3.4.2 BeforeUpdateExecute Event

Occurs before executing insert, delete, update, lock and refresh operation.

Class

[TCustomMSDataSet](#)

Syntax

```
property BeforeUpdateExecute: TMSUpdateExecuteEvent;
```

Remarks

The BeforeUpdateExecute event occurs before executing insert, delete, update, lock and refresh operation. You can use BeforeUpdateExecute to set parameters of corresponding statements.

See Also

- [AfterUpdateExecute](#)

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5.13.1.4 TCustomMSStoredProc Class

A component used to access stored procedures on a database server.

For a list of all members of this type, see [TCustomMSStoredProc](#) members.

Unit

[MSAccess](#)

Syntax

```
TCustomMSStoredProc = class(TCustomMSDataSet);
```

Remarks

TCustomMSStoredProc implements functionality to access stored procedures on a database server.

You need only to define the StoredProcName property, while not bothering about writing SQL statement by hand.

Use the Execute method at runtime to generate a request that instructs server to execute procedure and return parameters in the Params property.

Inheritance Hierarchy

[TMemDataSet](#)

[TCustomDADataset](#)

[TCustomMSDataSet](#)

TCustomMSStoredProc

See Also

- [TCustomMSDataSet](#)
- [TMSStoredProc](#)
- [Performance of Obtaining Data](#)
- [Master/Detail Relationships](#)

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5.13.1.4.1 Members

[TCustomMSStoredProc](#) class overview.

Properties

Name	Description
------	-------------

BaseSQL (inherited from TCustomDADataset)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
ChangeNotification (inherited from TCustomMSDataSet)	Points to a TMSChangeNotification component.
CommandTimeout (inherited from TCustomMSDataSet)	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Conditions (inherited from TCustomDADataset)	Used to add WHERE conditions to a query
Connection (inherited from TCustomMSDataSet)	Used to specify a connection object that will be used to connect to a data store.
CursorType (inherited from TCustomMSDataSet)	Cursor types supported by SQL Server.
DataTypeMap (inherited from TCustomDADataset)	Used to set data type mapping rules
Debug (inherited from TCustomDADataset)	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields (inherited from TCustomDADataset)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from TCustomDADataset)	Used to keep dataset opened after connection is closed.
Encryption (inherited from TCustomMSDataSet)	Used to specify encryption options in a dataset.
FetchAll (inherited from TCustomMSDataSet)	Used to decrease the time of retrieving additional records to the client side when calling TMemDataSet.Locate and

	TMemDataSet.LocateEx for the first time.
FetchRows (inherited from TCustomDADataset)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from TCustomDADataset)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from TCustomDADataset)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from TCustomDADataset)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from TCustomDADataset)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from TCustomDADataset)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDADataset)	Makes it possible to change SQL queries easily.
MasterFields (inherited from TCustomDADataset)	Used to specify the names of one or more fields that are

	used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from TCustomDADataset)	Used to specify the data source component which binds current dataset to the master one.
Options (inherited from TCustomMSDataSet)	Used to specify the behaviour of a TCustomMSDataSet object.
ParamCheck (inherited from TCustomDADataset)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from TCustomDADataset)	Used to indicate how many parameters are there in the Params property.
Params (inherited from TCustomMSDataSet)	Contains parameters for a query's SQL statement.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from TCustomDADataset)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from TCustomDADataset)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from TCustomDADataset)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from TCustomMSDataSet)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from TCustomDADataset)	Used to provide a SQL statement that a query component executes when

	its Open method is called.
SQLDelete (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from TCustomDADataset)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from TCustomDADataset)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying an update to a dataset.
StoredProcName	Used to specify the stored procedure name that is to be called on the server.
UniDirectional (inherited from TCustomDADataset)	Used if an application does not need bidirectional access to records in the result set.
UpdateObject (inherited from TCustomMSDataSet)	Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

UpdatingTable	Specifies which table in a query is assumed to be the target for subsequent data-modification queries as a result of user incentive to insert, update or delete records.
-------------------------------	--

Methods

Name	Description
AddWhere (inherited from TCustomDADataset)	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from TCustomDADataset)	Breaks execution of the SQL statement on the server.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
CreateBlobStream (inherited from TCustomDADataset)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
CreateProcCall (inherited from TCustomMSDataSet)	Serves for the creating of a stored procedures call.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
DeleteWhere (inherited from TCustomDADataset)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.

EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
ExecProc	Executes SQL statements on the server.
Execute (inherited from TCustomDADataset)	Overloaded. Executes a SQL statement on the server.
Executing (inherited from TCustomDADataset)	Indicates whether SQL statement is still being executed.
Fetched (inherited from TCustomDADataset)	Used to find out whether TCustomDADataset has fetched all rows.
Fetching (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is still fetching rows.
FetchingAll (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is fetching all rows to the end.
FindKey (inherited from TCustomDADataset)	Searches for a record which contains specified field values.
FindMacro (inherited from TCustomDADataset)	Finds a macro with the specified name.
FindNearest (inherited from TCustomDADataset)	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam (inherited from TCustomMSDataSet)	Indicates whether a parameter with the specified name exists in a dataset.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from TCustomDADataset)	Returns internal field types defined in the MemData and

	accompanying modules.
GetFieldObject (inherited from TCustomDADataset)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from TCustomDADataset)	Retrieves the precision of a number field.
GetFieldScale (inherited from TCustomDADataset)	Retrieves the scale of a number field.
GetFileStreamForField (inherited from TCustomMSDataset)	Used to create the TMSFileStream object for working with FILESTREAM data.
GetKeyFieldNames (inherited from TCustomDADataset)	Provides a list of available key field names.
GetOrderBy (inherited from TCustomDADataset)	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent (inherited from TCustomDADataset)	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from TMemDataset)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataset)	Overloaded. Excludes features that don't need to be included to the TMemDataset.Locate method of TDataSet.
Lock (inherited from TCustomMSDataset)	Overloaded. Locks the current records to prevent multiple users' access to it.
LockTable (inherited from TCustomMSDataset)	Locks a table to prevent multiple access to it.
MacroByName (inherited from TCustomDADataset)	Finds a macro with the specified name.
OpenNext (inherited from TCustomMSDataset)	Opens next rowset in the statement.
ParamByName (inherited from TCustomMSDataset)	Provides access to a parameter by its name.
Prepare (inherited from TCustomDADataset)	Allocates, opens, and parses cursor for a query.

PrepareSQL	Builds a query for TCustomMSStoredProc based on the Params and StoredProcName properties, and assign it to the SQL property.
RefreshQuick (inherited from TCustomMSDataSet)	An optimized procedure to retrieve the changes applied to the server by other clients to the particular client side.
RefreshRecord (inherited from TCustomDADataset)	Actualizes field values for the current record.
RestoreSQL (inherited from TCustomDADataset)	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL (inherited from TCustomDADataset)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy (inherited from TCustomDADataset)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.

SQLSaved (inherited from TCustomDADataset)	Determines if the SQL property value was saved to the BaseSQL property.
UnLock (inherited from TCustomDADataset)	Releases a record lock.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
AfterExecute (inherited from TCustomDADataset)	Occurs after a component has executed a query to database.
AfterFetch (inherited from TCustomDADataset)	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute (inherited from TCustomMSDataSet)	Occurs after executing insert, delete, update, lock and refresh operation.
BeforeFetch (inherited from TCustomDADataset)	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute (inherited from TCustomMSDataSet)	Occurs before executing insert, delete, update, lock and refresh operation.
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

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5.13.1.4.2 Properties

Properties of the **TCustomMSStoredProc** class.

For a complete list of the **TCustomMSStoredProc** class members, see the [TCustomMSStoredProc Members](#) topic.

Public

Name	Description
BaseSQL (inherited from TCustomDADataset)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
ChangeNotification (inherited from TCustomMSDataSet)	Points to a TMSChangeNotification component.
CommandTimeout (inherited from TCustomMSDataSet)	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Conditions (inherited from TCustomDADataset)	Used to add WHERE conditions to a query
Connection (inherited from TCustomMSDataSet)	Used to specify a connection object that will be used to connect to a data store.
CursorType (inherited from TCustomMSDataSet)	Cursor types supported by SQL Server.
DataTypeMap (inherited from TCustomDADataset)	Used to set data type mapping rules
Debug (inherited from TCustomDADataset)	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields (inherited from TCustomDADataset)	Used to specify the fields that correspond to the

	foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from TCustomDADataset)	Used to keep dataset opened after connection is closed.
Encryption (inherited from TCustomMSDataSet)	Used to specify encryption options in a dataset.
FetchAll (inherited from TCustomMSDataSet)	Used to decrease the time of retrieving additional records to the client side when calling TMemDataSet.Locate and TMemDataSet.LocateEx for the first time.
FetchRows (inherited from TCustomDADataset)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from TCustomDADataset)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from TCustomDADataset)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from TCustomDADataset)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from TCustomDADataset)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT

	NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from TCustomDADataset)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDADataset)	Makes it possible to change SQL queries easily.
MasterFields (inherited from TCustomDADataset)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from TCustomDADataset)	Used to specify the data source component which binds current dataset to the master one.
Options (inherited from TCustomMSDataSet)	Used to specify the behaviour of a TCustomMSDataSet object.
ParamCheck (inherited from TCustomDADataset)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from TCustomDADataset)	Used to indicate how many parameters are there in the Params property.
Params (inherited from TCustomMSDataSet)	Contains parameters for a query's SQL statement.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from TCustomDADataset)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from TCustomDADataset)	Used to indicate when the editing record is refreshed.

RowsAffected (inherited from TCustomDADataset)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from TCustomMSDataset)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from TCustomDADataset)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from TCustomDADataset)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from TCustomDADataset)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying an update to a dataset.
StoredProcName	Used to specify the stored procedure name that is to be called on the server.
UniDirectional (inherited from TCustomDADataset)	Used if an application does not need bidirectional access to records in the result set.

UpdateObject (inherited from TCustomMSDataSet)	Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.
UpdatingTable	Specifies which table in a query is assumed to be the target for subsequent data-modification queries as a result of user incentive to insert, update or delete records.

See Also

- [TCustomMSStoredProc Class](#)
- [TCustomMSStoredProc Class Members](#)

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5.13.1.4.2.1 StoredProcName Property

Used to specify the stored procedure name that is to be called on the server.

Class

[TCustomMSStoredProc](#)

Syntax

```
property StoredProcName: string;
```

Remarks

Use the StoredProcName property to specify the name of the stored procedure to call on the server. If StoredProcName does not match the name of the existing stored procedure on the

server, then when an application attempts to prepare the procedure prior to execution, an exception is raised.

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5.13.1.4.2.2 UpdatingTable Property

Specifies which table in a query is assumed to be the target for subsequent data-modification queries as a result of user incentive to insert, update or delete records.

Class

[TCustomMSStoredProc](#)

Syntax

```
property UpdatingTable: string;
```

Remarks

Use the UpdatingTable property on Insert, Update, Delete, or RefreshRecord (see also [TCustomMSDataSet.Options](#)) if appropriate SQL (SQLInsert, SQLUpdate or SQLDelete) is not provided.

If UpdatingTable is not set then the first table used in query is assumed to be the target.

If a query is addressed to the View then entire View is taken as a target for subsequent modifications.

All fields from other than target table have their ReadOnly properties set to True (if [TCustomMSDataSet.Options](#) is True).

With [TCustomMSDataSet.CursorType](#) UpdatingTable can be used only if [TCustomMSDataSet.Options](#) = False.

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5.13.1.4.3 Methods

Methods of the **TCustomMSStoredProc** class.

For a complete list of the **TCustomMSStoredProc** class members, see the [TCustomMSStoredProc Members](#) topic.

Public

Name	Description
AddWhere (inherited from TCustomDADataset)	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from TCustomDADataset)	Breaks execution of the SQL statement on the server.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
CreateBlobStream (inherited from TCustomDADataset)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
CreateProcCall (inherited from TCustomMSDataSet)	Serves for the creating of a stored procedures call.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
DeleteWhere (inherited from TCustomDADataset)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing

	range.
ExecProc	Executes SQL statements on the server.
Execute (inherited from TCustomDADataset)	Overloaded. Executes a SQL statement on the server.
Executing (inherited from TCustomDADataset)	Indicates whether SQL statement is still being executed.
Fetched (inherited from TCustomDADataset)	Used to find out whether TCustomDADataset has fetched all rows.
Fetching (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is still fetching rows.
FetchingAll (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is fetching all rows to the end.
FindKey (inherited from TCustomDADataset)	Searches for a record which contains specified field values.
FindMacro (inherited from TCustomDADataset)	Finds a macro with the specified name.
FindNearest (inherited from TCustomDADataset)	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam (inherited from TCustomMSDataset)	Indicates whether a parameter with the specified name exists in a dataset.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from TCustomDADataset)	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject (inherited from TCustomDADataset)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from TCustomDADataset)	Retrieves the precision of a number field.

GetFieldScale (inherited from TCustomDADataset)	Retrieves the scale of a number field.
GetFileStreamForField (inherited from TCustomMSDataSet)	Used to create the TMSFileStream object for working with FILESTREAM data.
GetKeyFieldNames (inherited from TCustomDADataset)	Provides a list of available key field names.
GetOrderBy (inherited from TCustomDADataset)	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent (inherited from TCustomDADataset)	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock (inherited from TCustomMSDataSet)	Overloaded. Locks the current records to prevent multiple users' access to it.
LockTable (inherited from TCustomMSDataSet)	Locks a table to prevent multiple access to it.
MacroByName (inherited from TCustomDADataset)	Finds a macro with the specified name.
OpenNext (inherited from TCustomMSDataSet)	Opens next rowset in the statement.
ParamByName (inherited from TCustomMSDataSet)	Provides access to a parameter by its name.
Prepare (inherited from TCustomDADataset)	Allocates, opens, and parses cursor for a query.
PrepareSQL	Builds a query for TCustomMSStoredProc based on the Params and StoredProcName properties, and assign it to the SQL property.

RefreshQuick (inherited from TCustomMSDataSet)	An optimized procedure to retrieve the changes applied to the server by other clients to the particular client side.
RefreshRecord (inherited from TCustomDADataset)	Actualizes field values for the current record.
RestoreSQL (inherited from TCustomDADataset)	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL (inherited from TCustomDADataset)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy (inherited from TCustomDADataset)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved (inherited from TCustomDADataset)	Determines if the SQL property value was saved to the BaseSQL property.
UnLock (inherited from TCustomDADataset)	Releases a record lock.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously

	prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

See Also

- [TCustomMSStoredProc Class](#)
- [TCustomMSStoredProc Class Members](#)

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5.13.1.4.3.1 ExecProc Method

Executes SQL statements on the server.

Class

[TCustomMSStoredProc](#)

Syntax

```
procedure ExecProc;
```

Remarks

Call the ExecProc method to execute a SQL statement on the server. If SQL statement is a query, ExecProc calls the Open method.

Internally ExecProc calls inherited [TCustomDADataset.Execute](#) method and is only included for compatibility with BDE.

See Also

- [TCustomDADataset.Execute](#)

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5.13.1.4.3.2 PrepareSQL Method

Builds a query for TCustomMSStoredProc based on the Params and StoredProcName properties, and assign it to the SQL property.

Class

[TCustomMSStoredProc](#)

Syntax

```
procedure PrepareSQL;
```

Remarks

Call the PrepareSQL method to build a query for TCustomMSStoredProc based on the Params and StoredProcName properties, and assign it to the SQL property. Generated query is then verified to be valid and, if necessary, the list of parameters is modified.

PrepareSQL is called implicitly when TCustomMSStoredProc is executed.

See Also

- [TCustomDADataset.Params](#)
- [StoredProcName](#)
- [ExecProc](#)

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5.13.1.5 TCustomMSTable Class

A base class that defines functionality for descendant classes which access data in a single table without writing SQL statements.

For a list of all members of this type, see [TCustomMSTable](#) members.

Unit

[MSAccess](#)

Syntax

```
TCustomMSTable = class(TCustomMSDataSet);
```

Remarks

TCustomMSTable implements functionality to access data in a table. Use TCustomMSTable properties and methods to gain direct access to records and fields in an underlying server database without writing SQL statements.

Inheritance Hierarchy

[TMemDataSet](#)

[TCustomDADataset](#)

[TCustomMSDataSet](#)

TCustomMSTable

See Also

- [TMSTable](#)
- [TMSStoredProc](#)
- [Performance of Obtaining Data](#)

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5.13.1.5.1 Members

[TCustomMSTable](#) class overview.

Properties

Name	Description
BaseSQL (inherited from TCustomDADataset)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates

	for a dataset.
ChangeNotification (inherited from TCustomMSDataSet)	Points to a TMSChangeNotification component.
CommandTimeout (inherited from TCustomMSDataSet)	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Conditions (inherited from TCustomDADataset)	Used to add WHERE conditions to a query
Connection (inherited from TCustomMSDataSet)	Used to specify a connection object that will be used to connect to a data store.
CursorType (inherited from TCustomMSDataSet)	Cursor types supported by SQL Server.
DataTypeMap (inherited from TCustomDADataset)	Used to set data type mapping rules
Debug (inherited from TCustomDADataset)	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields (inherited from TCustomDADataset)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from TCustomDADataset)	Used to keep dataset opened after connection is closed.
Encryption (inherited from TCustomMSDataSet)	Used to specify encryption options in a dataset.
FetchAll (inherited from TCustomMSDataSet)	Used to decrease the time of retrieving additional records to the client side when calling TMemDataSet.Locate and TMemDataSet.LocateEx for the first time.
FetchRows (inherited from TCustomDADataset)	Used to define the number of rows to be transferred across the network at the same time.

FilterSQL (inherited from TCustomDADataset)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from TCustomDADataset)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from TCustomDADataset)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from TCustomDADataset)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from TCustomDADataset)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDADataset)	Makes it possible to change SQL queries easily.
MasterFields (inherited from TCustomDADataset)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from TCustomDADataset)	Used to specify the data source component which

	binds current dataset to the master one.
Options (inherited from TCustomMSDataSet)	Used to specify the behaviour of a TCustomMSDataSet object.
OrderFields	Used to build ORDER BY clause of SQL statements.
ParamCheck (inherited from TCustomDADataset)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from TCustomDADataset)	Used to indicate how many parameters are there in the Params property.
Params (inherited from TCustomMSDataSet)	Contains parameters for a query's SQL statement.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from TCustomDADataset)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from TCustomDADataset)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from TCustomDADataset)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from TCustomMSDataSet)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from TCustomDADataset)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying a deletion to a record.

SQLInsert (inherited from TCustomDADataset)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from TCustomDADataset)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying an update to a dataset.
TableName	Used to specify the name of the database table that this component encapsulates.
UniDirectional (inherited from TCustomDADataset)	Used if an application does not need bidirectional access to records in the result set.
UpdateObject (inherited from TCustomMSDataSet)	Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Methods

Name	Description
------	-------------

AddWhere (inherited from TCustomDADataset)	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from TCustomDADataset)	Breaks execution of the SQL statement on the server.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
CreateBlobStream (inherited from TCustomDADataset)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
CreateProcCall (inherited from TCustomMSDataSet)	Serves for the creating of a stored procedures call.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
DeleteWhere (inherited from TCustomDADataset)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
Execute (inherited from TCustomDADataset)	Overloaded. Executes a SQL statement on the server.
Executing (inherited from TCustomDADataset)	Indicates whether SQL statement is still being

	executed.
Fetched (inherited from TCustomDADataset)	Used to find out whether TCustomDADataset has fetched all rows.
Fetching (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is still fetching rows.
FetchingAll (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is fetching all rows to the end.
FindKey (inherited from TCustomDADataset)	Searches for a record which contains specified field values.
FindMacro (inherited from TCustomDADataset)	Finds a macro with the specified name.
FindNearest (inherited from TCustomDADataset)	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam (inherited from TCustomMSDataSet)	Indicates whether a parameter with the specified name exists in a dataset.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from TCustomDADataset)	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject (inherited from TCustomDADataset)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from TCustomDADataset)	Retrieves the precision of a number field.
GetFieldScale (inherited from TCustomDADataset)	Retrieves the scale of a number field.
GetFileStreamForField (inherited from TCustomMSDataSet)	Used to create the TMSFileStream object for working with FILESTREAM data.
GetKeyFieldNames (inherited from	Provides a list of available key field names.

<u>TCustomDADataset</u>)	
<u>GetOrderBy</u> (inherited from <u>TCustomDADataset</u>)	Retrieves an ORDER BY clause from a SQL statement.
<u>GotoCurrent</u> (inherited from <u>TCustomDADataset</u>)	Sets the current record in this dataset similar to the current record in another dataset.
<u>Locate</u> (inherited from <u>TMemDataSet</u>)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
<u>LocateEx</u> (inherited from <u>TMemDataSet</u>)	Overloaded. Excludes features that don't need to be included to the <u>TMemDataSet.Locate</u> method of TDataSet.
<u>Lock</u> (inherited from <u>TCustomMSDataSet</u>)	Overloaded. Locks the current records to prevent multiple users' access to it.
<u>LockTable</u> (inherited from <u>TCustomMSDataSet</u>)	Locks a table to prevent multiple access to it.
<u>MacroByName</u> (inherited from <u>TCustomDADataset</u>)	Finds a macro with the specified name.
<u>OpenNext</u> (inherited from <u>TCustomMSDataSet</u>)	Opens next rowset in the statement.
<u>ParamByName</u> (inherited from <u>TCustomMSDataSet</u>)	Provides access to a parameter by its name.
<u>Prepare</u> (inherited from <u>TCustomDADataset</u>)	Allocates, opens, and parses cursor for a query.
<u>PrepareSQL</u>	Determines KeyFields and build query of TCustomMSTable.
<u>RefreshQuick</u> (inherited from <u>TCustomMSDataSet</u>)	An optimized procedure to retrieve the changes applied to the server by other clients to the particular client side.
<u>RefreshRecord</u> (inherited from <u>TCustomDADataset</u>)	Actualizes field values for the current record.
<u>RestoreSQL</u> (inherited from <u>TCustomDADataset</u>)	Restores the SQL property modified by AddWhere and SetOrderBy.
<u>RestoreUpdates</u> (inherited from <u>TMemDataSet</u>)	Marks all records in the

	cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL (inherited from TCustomDADataset)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy (inherited from TCustomDADataset)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved (inherited from TCustomDADataset)	Determines if the SQL property value was saved to the BaseSQL property.
UnLock (inherited from TCustomDADataset)	Releases a record lock.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are

	enabled.
--	----------

Events

Name	Description
AfterExecute (inherited from TCustomDADataset)	Occurs after a component has executed a query to database.
AfterFetch (inherited from TCustomDADataset)	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute (inherited from TCustomMSDataSet)	Occurs after executing insert, delete, update, lock and refresh operation.
BeforeFetch (inherited from TCustomDADataset)	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute (inherited from TCustomMSDataSet)	Occurs before executing insert, delete, update, lock and refresh operation.
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

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5.13.1.5.2 Properties

Properties of the **TCustomMSTable** class.

For a complete list of the **TCustomMSTable** class members, see the [TCustomMSTable Members](#) topic.

Public

Name	Description
BaseSQL (inherited from TCustomDADataset)	Used to return SQL text without any changes

	performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
ChangeNotification (inherited from TCustomMSDataSet)	Points to a TMSChangeNotification component.
CommandTimeout (inherited from TCustomMSDataSet)	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Conditions (inherited from TCustomDADataset)	Used to add WHERE conditions to a query
Connection (inherited from TCustomMSDataSet)	Used to specify a connection object that will be used to connect to a data store.
CursorType (inherited from TCustomMSDataSet)	Cursor types supported by SQL Server.
DataTypeMap (inherited from TCustomDADataset)	Used to set data type mapping rules
Debug (inherited from TCustomDADataset)	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields (inherited from TCustomDADataset)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from TCustomDADataset)	Used to keep dataset opened after connection is closed.
Encryption (inherited from TCustomMSDataSet)	Used to specify encryption options in a dataset.
FetchAll (inherited from TCustomMSDataSet)	Used to decrease the time of retrieving additional records to the client side when calling TMemDataSet.Locate and TMemDataSet.LocateEx for the first time.

FetchRows (inherited from TCustomDADataset)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from TCustomDADataset)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from TCustomDADataset)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from TCustomDADataset)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from TCustomDADataset)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from TCustomDADataset)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDADataset)	Makes it possible to change SQL queries easily.
MasterFields (inherited from TCustomDADataset)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship

	between it and the dataset specified in MasterSource.
MasterSource (inherited from TCustomDADataset)	Used to specify the data source component which binds current dataset to the master one.
Options (inherited from TCustomMSDataSet)	Used to specify the behaviour of a TCustomMSDataSet object.
OrderFields	Used to build ORDER BY clause of SQL statements.
ParamCheck (inherited from TCustomDADataset)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from TCustomDADataset)	Used to indicate how many parameters are there in the Params property.
Params (inherited from TCustomMSDataSet)	Contains parameters for a query's SQL statement.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from TCustomDADataset)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from TCustomDADataset)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from TCustomDADataset)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from TCustomMSDataSet)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from TCustomDADataset)	Used to provide a SQL statement that a query component executes when its Open method is called.

SQLDelete (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from TCustomDADataset)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from TCustomDADataset)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying an update to a dataset.
TableName	Used to specify the name of the database table that this component encapsulates.
UniDirectional (inherited from TCustomDADataset)	Used if an application does not need bidirectional access to records in the result set.
UpdateObject (inherited from TCustomMSDataSet)	Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

See Also

- [TCustomMSTable Class](#)
- [TCustomMSTable Class Members](#)

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5.13.1.5.2.1 OrderFields Property

Used to build ORDER BY clause of SQL statements.

Class

[TCustomMSTable](#)

Syntax

```
property OrderFields: string;
```

Remarks

TCustomMSTable uses the OrderFields property to build ORDER BY clause of SQL statements.

Place commas to separate fields in a single string.

TCustomMSTable is reopened when the OrderFields property is being changed.

See Also

- [TCustomMSTable](#)

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5.13.1.5.2.2 TableName Property

Used to specify the name of the database table that this component encapsulates.

Class

[TCustomMSTable](#)

Syntax

```
property TableName: string;
```

Remarks

Use the TableName property to specify the name of the database table that this component encapsulates. At design-time select a valid table name from the TableName drop-down list in the Object Inspector.

Note: To work with temporary tables you must set [TCustomMSDataSet.FetchAll](#) to True (for details see the FetchAll description).

See Also

- [TCustomMSTable](#)
- [TCustomDACConnection.GetTableNames](#)

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5.13.1.5.3 Methods

Methods of the **TCustomMSTable** class.

For a complete list of the **TCustomMSTable** class members, see the [TCustomMSTable Members](#) topic.

Public

Name	Description
AddWhere (inherited from TCustomDADataset)	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from TCustomDADataset)	Breaks execution of the SQL statement on the server.

CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
CreateBlobStream (inherited from TCustomDADataset)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
CreateProcCall (inherited from TCustomMSDataSet)	Serves for the creating of a stored procedures call.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
DeleteWhere (inherited from TCustomDADataset)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
Execute (inherited from TCustomDADataset)	Overloaded. Executes a SQL statement on the server.
Executing (inherited from TCustomDADataset)	Indicates whether SQL statement is still being executed.
Fetched (inherited from TCustomDADataset)	Used to find out whether TCustomDADataset has fetched all rows.
Fetching (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is still fetching rows.
FetchingAll (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is fetching all rows to the end.

FindKey (inherited from TCustomDADataset)	Searches for a record which contains specified field values.
FindMacro (inherited from TCustomDADataset)	Finds a macro with the specified name.
FindNearest (inherited from TCustomDADataset)	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam (inherited from TCustomMSDataset)	Indicates whether a parameter with the specified name exists in a dataset.
GetBlob (inherited from TMemDataset)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from TCustomDADataset)	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject (inherited from TCustomDADataset)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from TCustomDADataset)	Retrieves the precision of a number field.
GetFieldScale (inherited from TCustomDADataset)	Retrieves the scale of a number field.
GetFileStreamForField (inherited from TCustomMSDataset)	Used to create the TMSFileStream object for working with FILESTREAM data.
GetKeyFieldNames (inherited from TCustomDADataset)	Provides a list of available key field names.
GetOrderBy (inherited from TCustomDADataset)	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent (inherited from TCustomDADataset)	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from TMemDataset)	Overloaded. Searches a dataset for a specific record

	and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock (inherited from TCustomMSDataSet)	Overloaded. Locks the current records to prevent multiple users' access to it.
LockTable (inherited from TCustomMSDataSet)	Locks a table to prevent multiple access to it.
MacroByName (inherited from TCustomDADataset)	Finds a macro with the specified name.
OpenNext (inherited from TCustomMSDataSet)	Opens next rowset in the statement.
ParamByName (inherited from TCustomMSDataSet)	Provides access to a parameter by its name.
Prepare (inherited from TCustomDADataset)	Allocates, opens, and parses cursor for a query.
PrepareSQL	Determines KeyFields and build query of TCustomMSTable.
RefreshQuick (inherited from TCustomMSDataSet)	An optimized procedure to retrieve the changes applied to the server by other clients to the particular client side.
RefreshRecord (inherited from TCustomDADataset)	Actualizes field values for the current record.
RestoreSQL (inherited from TCustomDADataset)	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL (inherited from TCustomDADataset)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML

	format compatible with ADO format.
SetOrderBy (inherited from TCustomDADataset)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved (inherited from TCustomDADataset)	Determines if the SQL property value was saved to the BaseSQL property.
UnLock (inherited from TCustomDADataset)	Releases a record lock.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

See Also

- [TCustomMSTable Class](#)
- [TCustomMSTable Class Members](#)

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5.13.1.5.3.1 PrepareSQL Method

Determines KeyFields and build query of TCustomMSTable.

Class

[TCustomMSTable](#)

Syntax

```
procedure PrepareSQL;
```

Remarks

Call the PrepareSQL method to determine KeyFields and build query of TCustomMSTable. PrepareSQL is called implicitly when TCustomMSTable is being opened.

See Also

- [OrderFields](#)
- [TableName](#)
- [TCustomDADataset.FilterSQL](#)

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5.13.1.6 TMSChangeNotification Class

A component for keeping information in local dataset up-to-date through receiving notifications.

For a list of all members of this type, see [TMSChangeNotification](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSChangeNotification = class(TComponent);
```

Remarks

The TMSChangeNotification component is used to register queries with the database and

receive notifications in response to DML or DDL changes on the objects associated with queries. The notifications are published by database when the DML or DDL transaction commits.

You should assign a `TMSChangeNotification` object to the [TCustomMSDataSet.ChangeNotification](#) property of the dataset you want to be notified about changes. One `TMSChangeNotification` object can be associated with multiple datasets.

Client is notified only about changes made in the actually selected data. For example, if you select records that match a condition from a table, notification about the changes in records that do not match provided condition will not be received.

A notification subscription is removed after the notification event occurs. You can reopen/refresh your dataset to get the newest data and renew the notification subscription.

The Query Notification does not support the `DBPROP_UNIQUEROWS` option that is required for editable datasets. Therefore `TMSChangeNotification` executes an additional query immediately after the main query has been executed, and before records have been fetched. As the main connection is busy, OLE DB creates an additional connection to the server to execute this query. This can slow down your application. Setting the [TMSConnectionOptions.MultipleActiveResultSets](#) option of [TMSConnection](#) to `True` helps to prevent creating additional connections to server.

Requirements:

1. The Query Notifications mechanism was implemented in SQL Server 2005, therefore this component can be used starting with SQL Server 2005 and SQL Native Client.
2. Provided statement should meet restrictions described in [MSDN](#).

See Also

- [TCustomMSDataSet.ChangeNotification](#)
- [TCustomMSDataSet.Options](#)
- [MSDN: Creating a Query for Notification](#)
- [MSDN: Working with Query Notifications](#)
- [MSDN: Using Query Notifications](#)

Reserved.

5.13.1.6.1 Members

[TMSChangeNotification](#) class overview.

Properties

Name	Description
Enabled	Used to enable or disable using change notification.
Service	Used to assign a service manually.
TimeOut	Indicates the interval for a notification to remain active.

Events

Name	Description
OnChange	Occurs when data in one of the associated datasets was changed on the server.

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5.13.1.6.2 Properties

Properties of the **TMSChangeNotification** class.

For a complete list of the **TMSChangeNotification** class members, see the

[TMSChangeNotification Members](#) topic.

Published

Name	Description
Enabled	Used to enable or disable using change notification.
Service	Used to assign a service manually.
TimeOut	Indicates the interval for a notification to remain active.

See Also

- [TMSChangeNotification Class](#)
- [TMSChangeNotification Class Members](#)

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5.13.1.6.2.1 Enabled Property

Used to enable or disable using change notification.

Class

[TMSChangeNotification](#)

Syntax

```
property Enabled: boolean default True;
```

Remarks

Set the Enabled property to False to disable change notification for all datasets connected to the TMSChangeNotification component. Setting this property to True allows datasets, connected to the TMSChangeNotification component, to use change notification.

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5.13.1.6.2.2 Service Property

Used to assign a service manually.

Class

[TMSChangeNotification](#)

Syntax

```
property Service: string;
```

Remarks

If this property is not assigned, TMSChangeNotification automatically creates a service and associates it with a queue in order to receive change notifications from this queue. The name of the automatically created service consists of the 'SDAC_NS_' prefix and the current session identifier (SPID). The queue name consists of the service name and the '_QUEUE' postfix. Such service and queue are created for each connection.

If several DataSet components work through the same connection associated with the TMSChangeNotification component, only one service and one queue will be used. After all DataSets of a connection are closed, and notifications are not necessary, the service and the queue are dropped. Also if there are invalid services and queues at the server, they will be dropped. A server or a queue is considered invalid if there is no connection with the corresponding SPID. This should be done in order to prevent clogging the server with unused services and queues, and to remove all unused notifications.

If a service name is assigned via this property, it is necessary for you to create the service manually. The service should be created according to the rules of such object creation for Query Notification. Manually assigned service will not be deleted by SDAC after all datasets using it are closed. It means that the notification subscription will stay active, and when the query is opened next time, it will be able to receive notifications.

You should remember that several applications, or several instances of the same application using the same service name, may work incorrectly, as they will obtain notifications from the same queue. To avoid possible problems, it is necessary to use a separate service for each connection (if Service is not assigned, this is done automatically).

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5.13.1.6.2.3 TimeOut Property

Indicates the interval for a notification to remain active.

Class

[TMSChangeNotification](#)

Syntax

```
property TimeOut: integer default 432000;
```

Remarks

Set the Timeout property to determine time interval in seconds, after which the notification registration will expire.

The default value is 432000, which equals to 5 days. The minimum value is 1 second, maximum is $2^{31}-1$ seconds.

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5.13.1.6.3 Events

Events of the **TMSChangeNotification** class.

For a complete list of the **TMSChangeNotification** class members, see the [TMSChangeNotification Members](#) topic.

Published

Name	Description
OnChange	Occurs when data in one of the associated datasets was changed on the server.

See Also

- [TMSChangeNotification Class](#)
- [TMSChangeNotification Class Members](#)

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5.13.1.6.3.1 OnChange Event

Occurs when data in one of the associated datasets was changed on the server.

Class

[TMSChangeNotification](#)

Syntax

```
property OnChange: TMSChangeNotificationEvent;
```

Remarks

The OnChange event occurs when data in one of the associated datasets has been changed on the server. To receive change notifications the [Enabled](#) property must be set to True. The DataSet parameter points to the dataset affected by this change. Other parameters provide detailed information about the change.

See Also

- [Enabled](#)

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5.13.1.7 TMSConnection Class

A component for establishing connection to the database server, providing customized login support and performing transaction control.

For a list of all members of this type, see [TMSConnection](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSConnection = class(TCustomMSConnection);
```

Remarks

TMSConnection publishes connection-related properties derived from its ancestor class TCustomDAConnection and introduces OLE DB specific properties, which give more control over transactions.

Note: if you would like to use SDAC in a service, console or just in a separate thread, you need to call Colnitalize for each thread. Also call CoUnlitalize when the thread is finished.

Inheritance Hierarchy

[TCustomDAConnection](#)

[TCustomMSConnection](#)**TMSConnection**

See Also

- [TCustomMSDataSet.Connection](#)
- [TMSSQL.Connection](#)

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5.13.1.7.1 Members

[TMSConnection](#) class overview.

Properties

Name	Description
Authentication	Used to specify the authentication service used by the database server to identify a user.
ClientVersion (inherited from TCustomMSConnection)	Contains the version of Microsoft OLE DB Provider for SQL Server.
ConnectDialog (inherited from TCustomDAConnection)	Allows to link a TCustomConnectDialog component.
ConnectionTimeout	Used to specify the amount of time before an attempt to make a connection is considered unsuccessful.
ConnectionString (inherited from TCustomDAConnection)	Used to specify the connection information, such as: UserName, Password, Server, etc.
ConvertEOL (inherited from TCustomDAConnection)	Allows customizing line breaks in string fields and parameters.
Database (inherited from TCustomMSConnection)	Used to specify the database name that is a default source of data for SQL queries once a connection is established.

InTransaction (inherited from TCustomDACConnection)	Indicates whether the transaction is active.
IsolationLevel (inherited from TCustomMSConnection)	Used to specify the extent to which all outside transactions interfere with subsequent transactions of the current connection.
LoginPrompt (inherited from TCustomDACConnection)	Specifies whether a login dialog appears immediately before opening a new connection.
Options	Used to specify the behaviour of a TMSConnection object.
Password (inherited from TCustomDACConnection)	Serves to supply a password for login.
Pooling (inherited from TCustomDACConnection)	Enables or disables using connection pool.
PoolingOptions (inherited from TCustomDACConnection)	Specifies the behaviour of connection pool.
Port	Used to specify the port number for the connection.
Server (inherited from TCustomDACConnection)	Serves to supply the server name for login.
ServerVersion (inherited from TCustomMSConnection)	Contains the exact number of the SQL Server version.
Username (inherited from TCustomDACConnection)	Used to supply a user name for login.

Methods

Name	Description
ApplyUpdates (inherited from TCustomDACConnection)	Overloaded. Applies changes in datasets.
AssignConnect (inherited from TCustomMSConnection)	Shares database connection between the TCustomMSConnection components.
ChangePassword	Assigns a new password instead of an expired one..
Commit (inherited from TCustomDACConnection)	Commits current transaction.

Connect (inherited from TCustomDAConnection)	Establishes a connection to the server.
CreateDataSet (inherited from TCustomMSConnection)	Returns a new object of the TCustomMSDataset class and associates it with this connection object.
CreateSQL (inherited from TCustomMSConnection)	Returns a new instance of the TMSSQL class and associates it with this connection object.
Disconnect (inherited from TCustomDAConnection)	Performs disconnect.
ExecProc (inherited from TCustomDAConnection)	Allows to execute stored procedure or function providing its name and parameters.
ExecProcEx (inherited from TCustomDAConnection)	Allows to execute a stored procedure or function.
ExecSQL (inherited from TCustomDAConnection)	Executes a SQL statement with parameters.
ExecSQLEx (inherited from TCustomDAConnection)	Executes any SQL statement outside the TQuery or TSQL components.
GetDatabaseNames (inherited from TCustomDAConnection)	Returns a database list from the server.
GetKeyFieldNames (inherited from TCustomDAConnection)	Provides a list of available key field names.
GetStoredProcNames (inherited from TCustomDAConnection)	Returns a list of stored procedures from the server.
GetTableNames (inherited from TCustomDAConnection)	Provides a list of available tables names.
MonitorMessage (inherited from TCustomDAConnection)	Sends a specified message through the TCustomDASQLMonitor component.
OpenDatasets (inherited from TCustomMSConnection)	Opens several datasets as one batch.
Ping (inherited from TCustomDAConnection)	Used to check state of connection to the server.

RemoveFromPool (inherited from TCustomDACConnection)	Marks the connection that should not be returned to the pool after disconnect.
Rollback (inherited from TCustomDACConnection)	Discards all current data changes and ends transaction.
StartTransaction (inherited from TCustomDACConnection)	Begins a new user transaction.

Events

Name	Description
OnConnectionLost (inherited from TCustomDACConnection)	This event occurs when connection was lost.
OnError (inherited from TCustomDACConnection)	This event occurs when an error has arisen in the connection.
OnInfoMessage	Occurs if a SQL Server info message was generated.

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5.13.1.7.2 Properties

Properties of the **TMSConnection** class.

For a complete list of the **TMSConnection** class members, see the [TMSConnection Members](#) topic.

Public

Name	Description
ClientVersion (inherited from TCustomMSConnection)	Contains the version of Microsoft OLE DB Provider for SQL Server.
ConnectDialog (inherited from TCustomDACConnection)	Allows to link a TCustomConnectDialog component.

ConnectionString (inherited from TCustomDACConnection)	Used to specify the connection information, such as: UserName, Password, Server, etc.
ConvertEOL (inherited from TCustomDACConnection)	Allows customizing line breaks in string fields and parameters.
Database (inherited from TCustomMSConnection)	Used to specify the database name that is a default source of data for SQL queries once a connection is established.
InTransaction (inherited from TCustomDACConnection)	Indicates whether the transaction is active.
IsolationLevel (inherited from TCustomMSConnection)	Used to specify the extent to which all outside transactions interfere with subsequent transactions of the current connection.
LoginPrompt (inherited from TCustomDACConnection)	Specifies whether a login dialog appears immediately before opening a new connection.
Password (inherited from TCustomDACConnection)	Serves to supply a password for login.
Pooling (inherited from TCustomDACConnection)	Enables or disables using connection pool.
PoolingOptions (inherited from TCustomDACConnection)	Specifies the behaviour of connection pool.
Server (inherited from TCustomDACConnection)	Serves to supply the server name for login.
ServerVersion (inherited from TCustomMSConnection)	Contains the exact number of the SQL Server version.
Username (inherited from TCustomDACConnection)	Used to supply a user name for login.

Published

Name	Description
Authentication	Used to specify the authentication service used by the database server to identify a user.

ConnectionTimeout	Used to specify the amount of time before an attempt to make a connection is considered unsuccessful.
Options	Used to specify the behaviour of a TMSConnection object.
Port	Used to specify the port number for the connection.

See Also

- [TMSConnection Class](#)
- [TMSConnection Class Members](#)

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5.13.1.7.2.1 Authentication Property

Used to specify the authentication service used by the database server to identify a user.

Class

[TMSConnection](#)

Syntax

property Authentication: [TMSAuthentication](#) **default**
defValAuthentication;

Remarks

Use the Authentication property to specify the authentication service used by the database server to identify a user.

If you need to use this property at run-time, you must use the OLEDBAccess unit.

See Also

- [TCustomDACConnection.Username](#)
- [TCustomDACConnection.Password](#)

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5.13.1.7.2.2 ConnectionTimeout Property

Used to specify the amount of time before an attempt to make a connection is considered unsuccessful.

Class

[TMSConnection](#)

Syntax

```
property ConnectionTimeout: integer default  
DefValConnectionTimeout;
```

Remarks

Use the ConnectionTimeout property to specify the amount of time in seconds before an attempt to make a connection is considered unsuccessful.

The default value is 15 seconds.

See Also

- [TCustomMSDataSet.CommandTimeout](#)
- [TMSSQL.CommandTimeout](#)

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5.13.1.7.2.3 Options Property

Used to specify the behaviour of a TMSConnection object.

Class

[TMSConnection](#)

Syntax

```
property Options: TMSConnectionOptions;
```

Remarks

Set the properties of Options to specify the behaviour of a TMSConnection object.

Descriptions of all options are in the table below.

Option Name	Description
ApplicationIntent	Used to specify the application workload type when connecting to a server.
ApplicationName	The name of a client application. The default value is the name of the executable file of your application.
AutoTranslate	Used to translate character strings sent between the client and server by converting through Unicode.
DefaultLockTimeout	Specifies how much time in milliseconds a transaction will wait for a lock.
Encrypt	Specifies if data should be encrypted before sending it over the network.
FailoverPartner	Specifies the SQL Server name to which SQL Native Client will reconnect when a failover of the principal SQL Server occurs.
ForceCreateDatabase	Used to force TMSConnection to create a new database before opening a connection, if the database is not exists.
InitialFileName	Specifies the name of the main database file.
IPVersion	Use the IPVersion property to specify Internet Protocol Version. The default value is ivIPv4.
Language	Specifies the SQL Server language name.
MultipleActiveResultSets	Enables support for the Multiple Active Result Sets (MARS) technology.
MultipleConnections	Enables and disables to create additional connections to support concurrent sessions, commands and rowset objects.
NativeClientVersion	Specifies which version of SQL Native Client will be used.
NetworkLibrary	Specifies the name of the Net-Library (DLL) used to communicate with an instance of SQL Server.
PacketSize	Network packet size in bytes.
PersistSecurityInfo	Used to allow the data source object to persist sensitive authentication information

	such as a password along with other authentication information.
Provider	Used to specify a provider from the list of supported providers.
TrustServerCertificate	Used to enable traffic encryption without validation.
WorkstationID	A string identifying the workstation.

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5.13.1.7.2.4 Port Property

Used to specify the port number for the connection.

Class

[TMSConnection](#)

Syntax

```
property Port: integer default DefaultSDACPort;
```

Remarks

Use the Port property to specify the port number for the connection. The default value is 1433.

Note 1: If the [Server](#) property contains a port (for example, Server=localhost,1434), the Port property is ignored.

Note 2: If the Port property is set to the default value 1433, and the Server property does not contain a port or is blank, the Port property is ignored. In this case, the used provider (OLEDB or SQL Native Client) performs searching on the specified server for the correct port that is listened by SQL Server and uses it to connect to the server.

See Also

- [TCustomDAConnection.Server](#)

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5.13.1.7.3 Methods

Methods of the **TMSConnection** class.

For a complete list of the **TMSConnection** class members, see the [TMSConnection Members](#) topic.

Public

Name	Description
ApplyUpdates (inherited from TCustomDAConnection)	Overloaded. Applies changes in datasets.
AssignConnect (inherited from TCustomMSConnection)	Shares database connection between the TCustomMSConnection components.
ChangePassword	Assigns a new password instead of an expired one..
Commit (inherited from TCustomDAConnection)	Commits current transaction.
Connect (inherited from TCustomDAConnection)	Establishes a connection to the server.
CreateDataSet (inherited from TCustomMSConnection)	Returns a new object of the TCustomMSDataset class and associates it with this connection object.
CreateSQL (inherited from TCustomMSConnection)	Returns a new instance of the TMSSQL class and associates it with this connection object.
Disconnect (inherited from TCustomDAConnection)	Performs disconnect.
ExecProc (inherited from TCustomDAConnection)	Allows to execute stored procedure or function providing its name and parameters.
ExecProcEx (inherited from TCustomDAConnection)	Allows to execute a stored procedure or function.
ExecSQL (inherited from TCustomDAConnection)	Executes a SQL statement with parameters.
ExecSQLEx (inherited from TCustomDAConnection)	Executes any SQL statement outside the TQuery or TSQL components.

GetDatabaseNames (inherited from TCustomDACConnection)	Returns a database list from the server.
GetKeyFieldNames (inherited from TCustomDACConnection)	Provides a list of available key field names.
GetStoredProcNames (inherited from TCustomDACConnection)	Returns a list of stored procedures from the server.
GetTableNames (inherited from TCustomDACConnection)	Provides a list of available tables names.
MonitorMessage (inherited from TCustomDACConnection)	Sends a specified message through the TCustomDASQLMonitor component.
OpenDatasets (inherited from TCustomMSConnection)	Opens several datasets as one batch.
Ping (inherited from TCustomDACConnection)	Used to check state of connection to the server.
RemoveFromPool (inherited from TCustomDACConnection)	Marks the connection that should not be returned to the pool after disconnect.
Rollback (inherited from TCustomDACConnection)	Discards all current data changes and ends transaction.
StartTransaction (inherited from TCustomDACConnection)	Begins a new user transaction.

See Also

- [TMSConnection Class](#)
- [TMSConnection Class Members](#)

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5.13.1.7.3.1 ChangePassword Method

Assigns a new password instead of an expired one..

Class

[TMSConnection](#)

Syntax

```
procedure ChangePassword(const NewPassword: string);
```

Parameters

NewPassword

Holds the new password assigned.

Remarks

Use the ChangePassword method to change an expired user's password. In SQL Server versions prior to SQL Server 2005 only a database administrator has permissions to change an expired user's password. Starting from SQL Server 2005 you can change it using the ChangePassword method and SQL Native Client.

Note: Only an expired user's password can be changed using this method.

See Also

- [MSDN: Changing Passwords Programmatically](#)

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5.13.1.7.4 Events

Events of the **TMSConnection** class.

For a complete list of the **TMSConnection** class members, see the [TMSConnection Members](#) topic.

Public

Name	Description
OnConnectionLost (inherited from	This event occurs when connection was lost.

TCustomDACConnection)	
OnError (inherited from TCustomDACConnection)	This event occurs when an error has arisen in the connection.

Published

Name	Description
OnInfoMessage	Occurs if a SQL Server info message was generated.

See Also

- [TMSConnection Class](#)
- [TMSConnection Class Members](#)

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5.13.1.7.4.1 OnInfoMessage Event

Occurs if a SQL Server info message was generated.

Class

[TMSConnection](#)

Syntax

```
property OnInfoMessage: TMSConnectionInfoMessageEvent;
```

Remarks

The OnInfoMessage event occurs in case of generation of a SQL Server info message. The event occurs only if the command is executed through a dataset descendant (TMSQuery, TMSStoredProc). To make this event occur for TMSScript, TMSScript.DataSet should be set. It does not work for TMSSQL. The following is the list of Transact-SQL commands that generate info messages:

PRINT

RAISERROR with a severity of 10 or lower

DBCC

SET SHOWPLAN

SET STATISTICS.

See Also

- [EMSError](#)

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5.13.1.8 TMSConnectionOptions Class

This class allows setting up the behaviour of the TMSConnection class.

For a list of all members of this type, see [TMSConnectionOptions](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSConnectionOptions = class(TCustomMSConnectionOptions);
```

Inheritance Hierarchy

[TDACConnectionOptions](#)

[TCustomMSConnectionOptions](#)

TMSConnectionOptions

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5.13.1.8.1 Members

[TMSConnectionOptions](#) class overview.

Properties

Name	Description
AllowImplicitConnect (inherited from TDAConnectionOptions)	Specifies whether to allow or not implicit connection opening.
ApplicationIntent	Used to specify the application workload type when connecting to a server.
ApplicationName	The name of a client application. The default value is the name of the executable file of your application.
AutoTranslate	Used to translate character strings sent between the client and server by converting through Unicode.
DefaultLockTimeout	Specifies how much time in milliseconds a transaction will wait for a lock.
DefaultSortType (inherited from TDAConnectionOptions)	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
DisconnectedMode (inherited from TDAConnectionOptions)	Used to open a connection only when needed for performing a server call and closes after performing the operation.
Encrypt	Specifies if data should be encrypted before sending it over the network.
FailoverPartner	Specifies the SQL Server name to which SQL Native Client will reconnect when a failover of the principal SQL Server occurs.
ForceCreateDatabase	Used to force TMSConnection to create a new database before opening a connection, if the

	database is not exists.
InitialFileName	Specifies the name of the main database file.
IPVersion	Use the IPVersion property to specify Internet Protocol Version. The default value is ivIPv4.
KeepDesignConnected (inherited from TDACConnectionOptions)	Used to prevent an application from establishing a connection at the time of startup.
Language	Specifies the SQL Server language name.
LocalFailover (inherited from TDACConnectionOptions)	If True, the TCustomDAConnection.OnConnectionLost event occurs and a failover operation can be performed after connection breaks.
MultipleActiveResultSets	Enables support for the Multiple Active Result Sets (MARS) technology.
MultipleConnections	Enables and disables to create additional connections to support concurrent sessions, commands and rowset objects.
NativeClientVersion	Specifies which version of SQL Native Client will be used.
NetworkLibrary	Specifies the name of the Net-Library (DLL) used to communicate with an instance of SQL Server.
NumericType (inherited from TCustomMSConnectionOptions)	Specifies the format of storing and representing the NUMERIC (DECIMAL) fields for all TCustomMSDataSets associated with the given connection.
PacketSize	Network packet size in bytes.
PersistSecurityInfo	Used to allow the data

	source object to persist sensitive authentication information such as a password along with other authentication information.
Provider	Used to specify a provider from the list of supported providers.
QuotedIdentifier (inherited from TCustomMSConnectionOptions)	Causes Microsoft SQL Server to follow the SQL-92 rules regarding quotation mark delimiting identifiers and literal strings.
TrustServerCertificate	Used to enable traffic encryption without validation.
UseWideMemos (inherited from TCustomMSConnectionOptions)	Used to manage field type creation for the NTEXT data type.
WorkstationID	A string identifying the workstation.

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5.13.1.8.2 Properties

Properties of the **TMSConnectionOptions** class.

For a complete list of the **TMSConnectionOptions** class members, see the

[TMSConnectionOptions Members](#) topic.

Public

Name	Description
DefaultSortType (inherited from TDACConnectionOptions)	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
DisconnectedMode (inherited from	Used to open a connection

<u>TDACConnectionOptions</u>)	only when needed for performing a server call and closes after performing the operation.
<u>KeepDesignConnected</u> (inherited from <u>TDACConnectionOptions</u>)	Used to prevent an application from establishing a connection at the time of startup.
<u>LocalFailover</u> (inherited from <u>TDACConnectionOptions</u>)	If True, the <u>TCustomDAConnection.OnConnectionLost</u> event occurs and a failover operation can be performed after connection breaks.
<u>NumericType</u> (inherited from <u>TCustomMSConnectionOptions</u>)	Specifies the format of storing and representing the NUMERIC (DECIMAL) fields for all <u>TCustomMSDataSets</u> associated with the given connection.
<u>QuotedIdentifier</u> (inherited from <u>TCustomMSConnectionOptions</u>)	Causes Microsoft SQL Server to follow the SQL-92 rules regarding quotation mark delimiting identifiers and literal strings.
<u>UseWideMemos</u> (inherited from <u>TCustomMSConnectionOptions</u>)	Used to manage field type creation for the NTEXT data type.

Published

Name	Description
<u>AllowImplicitConnect</u> (inherited from <u>TDACConnectionOptions</u>)	Specifies whether to allow or not implicit connection opening.
<u>ApplicationIntent</u>	Used to specify the application workload type when connecting to a server.
<u>ApplicationName</u>	The name of a client application. The default value is the name of the executable file of your application.

AutoTranslate	Used to translate character strings sent between the client and server by converting through Unicode.
DefaultLockTimeout	Specifies how much time in milliseconds a transaction will wait for a lock.
Encrypt	Specifies if data should be encrypted before sending it over the network.
FailoverPartner	Specifies the SQL Server name to which SQL Native Client will reconnect when a failover of the principal SQL Server occurs.
ForceCreateDatabase	Used to force TMSConnection to create a new database before opening a connection, if the database is not exists.
InitialFileName	Specifies the name of the main database file.
IPVersion	Use the IPVersion property to specify Internet Protocol Version. The default value is ivIPv4.
Language	Specifies the SQL Server language name.
MultipleActiveResultSets	Enables support for the Multiple Active Result Sets (MARS) technology.
MultipleConnections	Enables and disables to create additional connections to support concurrent sessions, commands and rowset objects.
NativeClientVersion	Specifies which version of SQL Native Client will be used.
NetworkLibrary	Specifies the name of the Net-Library (DLL) used to communicate with an instance of SQL Server.

PacketSize	Network packet size in bytes.
PersistSecurityInfo	Used to allow the data source object to persist sensitive authentication information such as a password along with other authentication information.
Provider	Used to specify a provider from the list of supported providers.
TrustServerCertificate	Used to enable traffic encryption without validation.
WorkstationID	A string identifying the workstation.

See Also

- [TMSConnectionOptions Class](#)
- [TMSConnectionOptions Class Members](#)

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5.13.1.8.2.1 ApplicationIntent Property

Used to specify the application workload type when connecting to a server.

Class

[TMSConnectionOptions](#)

Syntax

```
property ApplicationIntent: TApplicationIntent default t  
DefValApplicationIntent;
```

Remarks

Use the ApplicationIntent property to specify the application workload type. The default value is [aiReadWrite](#).

See Also

- [SQL Server Native Client Support for High Availability, Disaster Recovery](#)
- [Using Connection String Keywords with SQL Server Native Client](#)

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5.13.1.8.2.2 ApplicationName Property

The name of a client application. The default value is the name of the executable file of your application.

Class

[TMSConnectionOptions](#)

Syntax

```
property ApplicationName: string;
```

Remarks

Use the ApplicationName property to specify the name of a client application. The default value is the name of the executable file of your application.

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5.13.1.8.2.3 AutoTranslate Property

Used to translate character strings sent between the client and server by converting through Unicode.

Class

[TMSConnectionOptions](#)

Syntax

```
property AutoTranslate: boolean default DefValAutoTranslate;
```

Remarks

When set to True, character strings sent between the client and server are translated by

converting through Unicode to minimize problems in matching extended characters between the code pages on the client and server.

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5.13.1.8.2.4 DefaultLockTimeout Property

Specifies how much time in milliseconds a transaction will wait for a lock.

Class

[TMSConnectionOptions](#)

Syntax

```
property DefaultLockTimeout: integer;
```

Remarks

Use the DefaultLockTimeout property to specify how much time in milliseconds a transaction will wait for a lock. The default value is 2000 ms.

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5.13.1.8.2.5 Encrypt Property

Specifies if data should be encrypted before sending it over the network.

Class

[TMSConnectionOptions](#)

Syntax

```
property Encrypt: boolean;
```

Remarks

Use the Encrypt property to specify if data should be encrypted before sending it over the network. The default value is False.

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5.13.1.8.2.6 FailoverPartner Property

Specifies the SQL Server name to which SQL Native Client will reconnect when a failover of the principal SQL Server occurs.

Class

[TMSCConnectionOptions](#)

Syntax

```
property FailoverPartner: string;
```

Remarks

Use the FailoverPartner property to specify the SQL Server name to which SQL Native Client will reconnect when a failover of the principal SQL Server occurs. This option is supported since SQL Server 2005 using SQL Native Client as OLE DB provider.

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5.13.1.8.2.7 ForceCreateDatabase Property

Used to force TMSConnection to create a new database before opening a connection, if the database is not exists.

Class

[TMSCConnectionOptions](#)

Syntax

```
property ForceCreateDatabase: boolean;
```

Remarks

By default, when connecting to a database, SQL Server does not check whether there exists the specified file. If the [TCustomMSConnection.Database](#) property points to a non-existent database in correct system path, a new empty database will be created and opened, and no warning message will be displayed. In the case if an incorrect database name was entered by

mistake, this behavior can lead to misunderstandings and errors in the operation of the software.

If the `TMSConnectionOptions.ForceDatabaseCreate` property is set to `False`, before establishing a connection to the database, `P:Devart.Sdac.TCustomMSConnection` will check whether the specified file exists. If the file does not exist, an appropriate exception will be raised.

If the `TMSConnectionOptions.ForceDatabaseCreate` property is set to `True`, no checking will be performed and a new database will be created.

The default value of the `TMSConnectionOptions.ForceDatabaseCreate` property is `False`.

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5.13.1.8.2.8 InitialFileName Property

Specifies the name of the main database file.

Class

[TMSConnectionOptions](#)

Syntax

```
property InitialFileName: string;
```

Remarks

Use the `InitialFileName` property to specify the name of the main database file. This database will be the default database for the connection. SQL Server attaches the database to the server if it has not been attached to the server yet. So, this property can be used to connect to the database that has not been attached to the server yet.

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5.13.1.8.2.9 IPVersion Property

Use the `IPVersion` property to specify Internet Protocol Version. The default value is `IPv4`.

Class

[TMSConnectionOptions](#)

Syntax

```
property IPVersion: TIPVersion;
```

Remarks

Use the IPVersion property to specify Internet Protocol Version.

Supported values:

- ivIPBoth - specifies that either Internet Protocol Version 6 (IPv6) or Version 4 (IPv4) will be used;
- ivIPv4 (default) - specifies that Internet Protocol Version 4 (IPv4) will be used;
- ivIPv6 - specifies that Internet Protocol Version 6 (IPv6) will be used.

Note : When the TIPVersion property is set to ivIPBoth, a connection attempt will be made via IPv6 if it is enabled on the operating system. If the connection attempt fails, a new connection attempt will be made via IPv4.

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5.13.1.8.2.10 Language Property

Specifies the SQL Server language name.

Class

[TMSConnectionOptions](#)

Syntax

```
property Language: string;
```

Remarks

Use the Language property to specify the SQL Server language name. Identifies the language used for system message selection and formatting. The language must be installed on the computer running an instance of SQL Server otherwise the connection will fail.

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5.13.1.8.2.11 MultipleActiveResultSets Property

Enables support for the Multiple Active Result Sets (MARS) technology.

Class

[TMSConnectionOptions](#)

Syntax

```
property MultipleActiveResultSets: boolean default  
DefValMultipleActiveResultSets;
```

Remarks

Use the MultipleActiveResultSets property to enable support for the Multiple Active Result Sets (MARS) technology. It allows applications to have more than one pending request per connection, and, in particular, to have more than one active default result set per connection. Current session is not blocked when using FetchAll = False, and it is not necessary for OLE DB to create additional sessions for any query executing. MARS was supported in SQL Server versions since SQL Server 2005 with using SQL Native Client as OLE DB provider.

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5.13.1.8.2.12 MultipleConnections Property

Enables and disables to create additional connections to support concurrent sessions, commands and rowset objects.

Class

[TMSConnectionOptions](#)

Syntax

```
property MultipleConnections: boolean default  
DefValMultipleConnections;
```

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5.13.1.8.2.13 NativeClientVersion Property

Specifies which version of SQL Native Client will be used.

Class

[TMSConnectionOptions](#)

Syntax

```
property NativeClientVersion: TNativeClientVersion;
```

Remarks

Use the NativeClientVersion property to specify which version of SQL Native Client will be used. The default value is [ncAuto](#). NativeClientVersion is applied when the [Provider](#) property is set to prNativeClient or prAuto.

See Also

- [Provider](#)

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5.13.1.8.2.14 NetworkLibrary Property

Specifies the name of the Net-Library (DLL) used to communicate with an instance of SQL Server.

Class

[TMSConnectionOptions](#)

Syntax

```
property NetworkLibrary: string;
```

Remarks

The name of the Net-Library (DLL) used to communicate with an instance of SQL Server. The name should not include the path or the .dll file name extension. The default name is

provided by SQL Server Client Network Utility.

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5.13.1.8.2.15 PacketSize Property

Network packet size in bytes.

Class

[TMSConnectionOptions](#)

Syntax

```
property PacketSize: integer default DefaultPacketSize;
```

Remarks

Use the PacketSize property to specify the network packet size in bytes. The packet size property value must be between 512 and 32,767. The default network packet size is 4,096.

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5.13.1.8.2.16 PersistSecurityInfo Property

Used to allow the data source object to persist sensitive authentication information such as a password along with other authentication information.

Class

[TMSConnectionOptions](#)

Syntax

```
property PersistSecurityInfo: boolean default  
DefValPersistSecurityInfo;
```

Remarks

If True, the data source object is allowed to persist sensitive authentication information such as a password along with other authentication information.

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5.13.1.8.2.17 Provider Property

Used to specify a provider from the list of supported providers.

Class

[TMSConnectionOptions](#)

Syntax

```
property Provider: TMSProvider;
```

Remarks

Use the Provider property to specify a provider from the list of supported providers. The default value of this property is prAuto. In this case a provider of the most recent version is used. Some features in SQL Server require the SQL Native Client (prNativeClient) provider to be used. If chosen provider is not installed, an exception is raised. The prCompact value should be set for working with [SQL Server Compact Edition](#).

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5.13.1.8.2.18 TrustServerCertificate Property

Used to enable traffic encryption without validation.

Class

[TMSConnectionOptions](#)

Syntax

```
property TrustServerCertificate: boolean default  
defvalTrustServerCertificate;
```

Remarks

Use the TrustServerCertificate property to enable traffic encryption without validation. The default value is False. This option is supported since SQL Server 2005 with using SQL Native

Client as OLE DB provider.

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5.13.1.8.2.19 WorkstationID Property

A string identifying the workstation.

Class

[TMSConnectionOptions](#)

Syntax

```
property workstationID: string;
```

Remarks

A string identifying the workstation. The default value is the name of your machine.

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5.13.1.9 TMSDataSetOptions Class

This class allows setting up the behaviour of the TMSDataSet class.

For a list of all members of this type, see [TMSDataSetOptions](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSDataSetOptions = class(TDADatasetOptions);
```

Inheritance Hierarchy

[TDADatasetOptions](#)

TMSDataSetOptions

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5.13.1.9.1 Members

[TMSDataSetOptions](#) class overview.

Properties

Name	Description
AllFieldsEditable	Not supported.
AutoPrepare	Used to execute automatic TCustomDADataset.Prepare on a query execution.
AutoRefresh	Used to enable automatic refresh of a dataset every AutoRefreshInterval seconds.
AutoRefreshInterval	Used to define in what time interval in seconds the Refresh or TCustomMSDataSet.RefreshQuick method of DataSet is called.
CacheCalcFields (inherited from TDADatasetOptions)	Used to enable caching of the TField.Calculated and TField.Lookup fields.
CheckRowVersion	Used to determine whether dataset checks for rows modifications made by another user on automatic generation of SQL statement for update or delete data.
CompressBlobMode (inherited from TDADatasetOptions)	Used to store values of the BLOB fields in compressed form.
CursorUpdate	Used to specify the way data updates reflect on database when modifying dataset by using server cursors ctKeySet and ctDynamic .
DefaultValues	Used to enable TCustomMSDataSet to fill the DefaultExpression

	property of TField objects by an appropriate value.
DescribeParams	Used to specify whether to query TMSPParam properties from the server when executing the TCustomDADataset.Prepare method.
DetailDelay (inherited from TDADatasetOptions)	Used to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset.
DisableMultipleResults	Used to forbid multiple results usage by a command.
DMLRefresh	Used to refresh a record when insertion or update is performed.
EnableBCD	Used to specify whether to treat numeric fields as floating-point or BCD.
FieldsOrigin (inherited from TDADatasetOptions)	Used for TCustomDADataset to fill the Origin property of the TField objects by appropriate value when opening a dataset.
FlatBuffers (inherited from TDADatasetOptions)	Used to control how a dataset treats data of the ftString and ftVarBytes fields.
FullRefresh	Used to specify the fields to include in the automatically generated SQL statement when calling the TCustomDADataset.RefreshRecord method.
HideSystemUniqueFields	Used to hide system fields for the prSQL, prNativeClient and prMSOLEDB providers. The default value is True.
InsertAllSetFields (inherited from TDADatasetOptions)	Used to include all set dataset fields in the

	generated INSERT statement
LastIdentityValueFunction	Determines which system function to use to obtain an identifier when adding a record. The default value is <code>vfScopelIdentity</code> .
LocalMasterDetail (inherited from TDADatasetOptions)	Used for <code>TCustomDADataset</code> to use local filtering to establish master/detail relationship for detail dataset and does not refer to the server.
LongStrings	Represents string fields with the length that is greater than 255 as <code>TStringField</code> .
MasterFieldsNullable (inherited from TDADatasetOptions)	Allows to use NULL values in the fields by which the relation is built, when generating the query for the Detail tables (when this option is enabled, the performance can get worse).
NonBlocking	Used to fetch rows in a separate thread.
NumberRange	Used to set the <code>MaxValue</code> and <code>MinValue</code> properties of <code>TIntegerField</code> and <code>TFloatField</code> to appropriate values.
PrepareUpdateSQL	Used to automatically prepare update queries before execution.
QueryIdentity	Used to specify whether to request the Identity field value on execution of the Insert or Append method.
QueryRecCount	Used to perform additional query to get record count for this SELECT, so the <code>RecordCount</code> property reflects the actual number of records.
QuoteNames	Used for <code>TCustomMSDataSet</code> to

	quote all field names in autogenerated SQL statements.
ReflectChangeNotify	Indicates whether DataSet will be automatically refreshed when the underlying data on the server is changed.
RemoveOnRefresh	Used for dataset to locally remove record on refresh if it does not match filter condition (WHERE clause for refresh SQL) anymore.
RequiredFields	Used for TCustomMSDataSet to set the Required property of TField objects for the NOT NULL fields.
ReturnParams	Used to return the new values of fields to dataset after insert or update.
SetEmptyStrToNull	Force replace of empty strings with NULL values in data. Default value is False.
SetFieldsReadOnly (inherited from TDADatasetOptions)	Used for a dataset to set the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated.
StrictUpdate	Used for TCustomDADataset to raise an exception when the number of updated or deleted records is not equal 1.
TrimFixedChar	Used to specify whether to discard all trailing spaces in the fixed-length string fields of a dataset.
TrimVarChar	Used to specify whether to discard all trailing spaces in the variable-length string fields of a dataset.
UniqueRecords	Used to specify whether to query additional keyfields

	from the server.
UpdateAllFields (inherited from TDADatasetOptions)	Used to include all dataset fields in the generated UPDATE and INSERT statements.
UpdateBatchSize (inherited from TDADatasetOptions)	Used to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch.

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5.13.1.9.2 Properties

Properties of the **TMSDataSetOptions** class.

For a complete list of the **TMSDataSetOptions** class members, see the

[TMSDataSetOptions Members](#) topic.

Public

Name	Description
AllFieldsEditable	Not supported.
CacheCalcFields (inherited from TDADatasetOptions)	Used to enable caching of the TField.Calculated and TField.Lookup fields.
CompressBlobMode (inherited from TDADatasetOptions)	Used to store values of the BLOB fields in compressed form.
DetailDelay (inherited from TDADatasetOptions)	Used to get or set a delay in milliseconds before refreshing detail dataset while navigating master dataset.
FieldsOrigin (inherited from TDADatasetOptions)	Used for TCustomDADataset to fill the Origin property of the TField objects by appropriate value when opening a dataset.

FlatBuffers (inherited from TDADatasetOptions)	Used to control how a dataset treats data of the ftString and ftVarBytes fields.
InsertAllSetFields (inherited from TDADatasetOptions)	Used to include all set dataset fields in the generated INSERT statement
LocalMasterDetail (inherited from TDADatasetOptions)	Used for TCustomDADataset to use local filtering to establish master/detail relationship for detail dataset and does not refer to the server.
MasterFieldsNullable (inherited from TDADatasetOptions)	Allows to use NULL values in the fields by which the relation is built, when generating the query for the Detail tables (when this option is enabled, the performance can get worse).
SetFieldsReadOnly (inherited from TDADatasetOptions)	Used for a dataset to set the ReadOnly property to True for all fields that do not belong to UpdatingTable or can not be updated.
UpdateAllFields (inherited from TDADatasetOptions)	Used to include all dataset fields in the generated UPDATE and INSERT statements.
UpdateBatchSize (inherited from TDADatasetOptions)	Used to get or set a value that enables or disables batch processing support, and specifies the number of commands that can be executed in a batch.

Published

Name	Description
AutoPrepare	Used to execute automatic TCustomDADataset.Prepare on a query execution.
AutoRefresh	Used to enable automatic

	refresh of a dataset every <code>AutoRefreshInterval</code> seconds.
AutoRefreshInterval	Used to define in what time interval in seconds the Refresh or TCustomMSDataSet.RefreshQuick method of <code>DataSet</code> is called.
CheckRowVersion	Used to determine whether dataset checks for rows modifications made by another user on automatic generation of SQL statement for update or delete data.
CursorUpdate	Used to specify the way data updates reflect on database when modifying dataset by using server cursors <code>ctKeySet</code> and <code>ctDynamic</code> .
DefaultValues	Used to enable <code>TCustomMSDataSet</code> to fill the <code>DefaultExpression</code> property of <code>TField</code> objects by an appropriate value.
DescribeParams	Used to specify whether to query TMSPParam properties from the server when executing the TCustomDADataset.Prepare method.
DisableMultipleResults	Used to forbid multiple results usage by a command.
DMLRefresh	Used to refresh a record when insertion or update is performed.
EnableBCD	Used to specify whether to treat numeric fields as floating-point or BCD.
FullRefresh	Used to specify the fields to include in the automatically generated SQL statement when calling the

	TCustomDADataset.RefreshRecord method.
HideSystemUniqueFields	Used to hide system fields for the prSQL, prNativeClient and prMSOLEDB providers. The default value is True.
LastIdentityValueFunction	Determines which system function to use to obtain an identifier when adding a record. The default value is vfScopeIdentity.
LongStrings	Represents string fields with the length that is greater than 255 as TStringField.
NonBlocking	Used to fetch rows in a separate thread.
NumberRange	Used to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.
PrepareUpdateSQL	Used to automatically prepare update queries before execution.
QueryIdentity	Used to specify whether to request the Identity field value on execution of the Insert or Append method.
QueryRecCount	Used to perform additional query to get record count for this SELECT, so the RecordCount property reflects the actual number of records.
QuoteNames	Used for TCustomMSDataSet to quote all field names in autogenerated SQL statements.
ReflectChangeNotify	Indicates whether DataSet will be automatically refreshed when the underlying data on the server is changed.

RemoveOnRefresh	Used for dataset to locally remove record on refresh if it does not match filter condition (WHERE clause for refresh SQL) anymore.
RequiredFields	Used for TCustomMSDataSet to set the Required property of TField objects for the NOT NULL fields.
ReturnParams	Used to return the new values of fields to dataset after insert or update.
SetEmptyStrToNull	Force replace of empty strings with NULL values in data. Default value is False.
StrictUpdate	Used for TCustomDADataset to raise an exception when the number of updated or deleted records is not equal 1.
TrimFixedChar	Used to specify whether to discard all trailing spaces in the fixed-length string fields of a dataset.
TrimVarChar	Used to specify whether to discard all trailing spaces in the variable-length string fields of a dataset.
UniqueRecords	Used to specify whether to query additional keyfields from the server.

See Also

- [TMSDataSetOptions Class](#)
- [TMSDataSetOptions Class Members](#)

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5.13.1.9.2.1 AllFieldsEditable Property

Not supported.

Class

[TMSDataSetOptions](#)

Syntax

```
property AllFieldsEditable: boolean;
```

Remarks

Refer to [TCustomDADataset.Options](#).

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5.13.1.9.2.2 AutoPrepare Property

Used to execute automatic [TCustomDADataset.Prepare](#) on a query execution.

Class

[TMSDataSetOptions](#)

Syntax

```
property AutoPrepare: boolean;
```

Remarks

Use the AutoPrepare property to execute automatic [TCustomDADataset.Prepare](#) on a query execution. Makes sense for the cases when a query will be executed several times, for example, in Master/Detail relationships.

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5.13.1.9.2.3 AutoRefresh Property

Used to enable automatic refresh of a dataset every AutoRefreshInterval seconds.

Class

[TMSDataSetOptions](#)

Syntax

```
property AutoRefresh: boolean default False;
```

Remarks

If True, dataset will be automatically refreshed every AutoRefreshInterval seconds. If dataset has at least one key field and a TIMESTAMP field, the [TCustomMSDataSet.RefreshQuick](#) method will be executed, otherwise the Refresh method will be executed.

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5.13.1.9.2.4 AutoRefreshInterval Property

Used to define in what time interval in seconds the Refresh or [TCustomMSDataSet.RefreshQuick](#) method of DataSet is called.

Class

[TMSDataSetOptions](#)

Syntax

```
property AutoRefreshInterval: integer default 60;
```

Remarks

Use the AutoRefreshInterval property to define in what time interval in seconds the Refresh or [TCustomMSDataSet.RefreshQuick](#) method of DataSet is called.

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5.13.1.9.2.5 CheckRow Version Property

Used to determine whether dataset checks for rows modifications made by another user on automatic generation of SQL statement for update or delete data.

Class

[TMSDataSetOptions](#)

Syntax

```
property CheckRowVersion: boolean default False;
```

Remarks

Use the CheckRowVersion property to determine whether dataset checks for rows modifications made by another user on automatic generation of SQL statement for update or delete data. If the CheckRowVersion property is False and DataSet has keyfields, the WHERE clause of SQL statement is generated basing on these keyfields. If there is no primary key and no Identity field, then all non-BLOB fields will take part in generating SQL statements. If CheckRowVersion is True and DataSet has TIMESTAMP field, only this field is included into the WHERE clause of the generated SQL statement. Otherwise, all non-BLOB fields are included. All mentioned fields refer to the current [TMSQuery.UpdatingTable](#). The default value is False.

The CheckRowVersion option requires enabled [TCustomMSDataSet.Options](#).

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5.13.1.9.2.6 CursorUpdate Property

Used to specify the way data updates reflect on database when modifying dataset by using server cursors ctKeySet and ctDynamic.

Class

[TMSDataSetOptions](#)

Syntax

```
property CursorUpdate: boolean default True;
```


Remarks

Use the CursorUpdate property to specify the way data updates reflect on database when modifying dataset by using server cursors ctKeySet and ctDynamic. If the CursorUpdate property is True, all dataset modifications are passed to the database by server cursors. If the CursorUpdate property is False, all dataset updates are passed to the server by the generated automatically SQL statements or specified in [TCustomDADataset.SQLUpdate](#), [TCustomDADataset.SQLInsert](#) or [TCustomDADataset.SQLDelete](#). The default value is True.

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5.13.1.9.2.7 DefaultValue Property

Used to enable TCustomMSDataSet to fill the DefaultExpression property of TField objects by an appropriate value.

Class

[TMSDataSetOptions](#)

Syntax

```
property DefaultValue: boolean;
```

Remarks

If True, TCustomMSDataSet fills the DefaultExpression property of TField objects by an appropriate value.

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5.13.1.9.2.8 DescribeParams Property

Used to specify whether to query [TMSParam](#) properties from the server when executing the [TCustomDADataset.Prepare](#) method.

Class

[TMSDataSetOptions](#)

Syntax

```
property DescribeParams: boolean default False;
```

Remarks

Specifies whether to query [TMSParam](#) properties (Name, ParamType, DataType, Size, TableTypeName) from the server when executing the [TCustomDADataset.Prepare](#) method. The default value is False.

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5.13.1.9.2.9 DisableMultipleResults Property

Used to forbid multiple results usage by a command.

Class

[TMSDataSetOptions](#)

Syntax

```
property DisableMultipleResults: boolean default False;
```

Remarks

Use the DisableMultipleResults property to forbid using multiple results by a command.

Set this property to True to disable the multiple results usage. In this case, if you open a query with a big amount of data and you have to break the execution of this query (by calling TCustomMSDataSet.BreakExec or TDataSet.Close), the execution will be broken quickly. The default value is False.

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5.13.1.9.2.10 DMLRefresh Property

Used to refresh a record when insertion or update is performed.

Class

[TMSDataSetOptions](#)

Syntax

```
property DMLRefresh: boolean default False;
```

Remarks

Use the DMLRefresh property to refresh a record when insertion or update is performed. This feature doesn't support SQL Server Compact Edition. The default value is False.

Note: When the DMLRefresh property is set to True, the value of [TCustomDADDataSet.RefreshOptions](#) is ignored to avoid refetching field values from the server.

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5.13.1.9.2.11 EnableBCD Property

Used to specify whether to treat numeric fields as floating-point or BCD.

Class

[TMSDataSetOptions](#)

Syntax

```
property EnableBCD: boolean;
```

Remarks

Use the Enable BCD property to specify whether to treat numeric fields as floating-point or BCD. Use the EnableBCD property to specify how fields are mapped to field classes. If EnableBCD is True, decimal and numeric fields are mapped to the TBCDField class when field objects are created. If EnableBCD is False, the fields are mapped to the TFloatField class. EnableBCD determines whether numeric and decimal fields are translated as floating-point values or currency values. Currency values eliminate the rounding errors associated with the floating point math (such as a $3 * (2/3)$ resulting in 2.000000000001). The default value is False.

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5.13.1.9.2.12 FullRefresh Property

Used to specify the fields to include in the automatically generated SQL statement when calling the [TCustomDADataset.RefreshRecord](#) method.

Class

[TMSDataSetOptions](#)

Syntax

```
property FullRefresh: boolean default False;
```

Remarks

Use the FullRefresh property to specify what fields to include in the automatically generated SQL statement when calling the [TCustomDADataset.RefreshRecord](#) method. If the FullRefresh property is True, all fields from a query are included into SQL statement to refresh a single record. If FullRefresh is False, only fields from [TMSQuery.UpdatingTable](#) are included.

Note: If FullRefresh is True, the refresh of SQL statement for complex queries and views may be generated with errors. The default value is False.

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5.13.1.9.2.13 HideSystemUniqueFields Property

Used to hide system fields for the prSQL, prNativeClient and prMSOLEDB providers. The default value is True.

Class

[TMSDataSetOptions](#)

Syntax

```
property HideSystemUniqueFields: boolean default True;
```

Remarks

When the HideSystemUniqueFields property is set to True, system fields for the prSQL, prNativeClient and prMSOLEDB providers are hidden in a resulting dataset.

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5.13.1.9.2.14 LastIdentityValueFunction Property

Determines which system function to use to obtain an identifier when adding a record. The default value is vfScopeIdentity.

Class

[TMSDataSetOptions](#)

Syntax

```
property LastIdentityValueFunction: TMSLastIdentityValueFunction  
default vfScopeIdentity;
```

Remarks

Use the LastIdentityValueFunction property to determine which system function to use to obtain an identifier when adding a record.

The possible values are:

vfIdentCurrent - The IDENT_CURRENT system function is used. It returns the last identity value generated for a specified table or view. The last identity value generated can be for any session and any scope.

vfIdentity - The @@IDENTITY system function is used. It returns the last-inserted identity value.

vfScopeIdentity - The SCOPE_IDENTITY system function is used. It returns the last identity value inserted into an identity column in the same scope. A scope is a module: a stored procedure, trigger, function, or batch.

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5.13.1.9.2.15 LongStrings Property

Represents string fields with the length that is greater than 255 as TStringField.

Class

[TMSDataSetOptions](#)

Syntax

```
property LongStrings: boolean;
```

Remarks

Represents string fields with the length that is greater than 255 as TStringField, not as TMemoField. The default value is True.

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5.13.1.9.2.16 NonBlocking Property

Used to fetch rows in a separate thread.

Class

[TMSDataSetOptions](#)

Syntax

```
property NonBlocking: boolean default False;
```

Remarks

Set the NonBlocking option to True to fetch rows in a separate thread. The BeforeFetch event is called in the additional thread context that performs data fetching. This event is called every time on the Fetch method call. The AfterFetch event is called in the main thread context only once after fetching is completely finished.

In the NonBlocking mode as well as in the FetchAll=False mode an extra connection is created. When setting TCustomMSDataSet.Options.NonBlocking to True, you should keep in mind that execution of such queries blocks the current session. In order to avoid blocking, OLE DB creates an additional session as in the TCustomMSDataSet.FetchAll = False mode.

It causes the same problems as in the [TCustomMSDataSet.FetchAll](#) = False mode. This problem can be solved by using MARS ([TMSCConnectionOptions.MultipleActiveResultSets](#) = True). The current session is not blocked and OLE DB is not required to create addition session to run a query. MARS is supported since SQL Server 2005 if SQL Native Client is used as OLE DB provider.

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5.13.1.9.2.17 NumberRange Property

Used to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values.

Class

[TMSDataSetOptions](#)

Syntax

```
property NumberRange: boolean;
```

Remarks

Use the NumberRange property to set the MaxValue and MinValue properties of TIntegerField and TFloatField to appropriate values. The default value is False.

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5.13.1.9.2.18 PrepareUpdateSQL Property

Used to automatically prepare update queries before execution.

Class

[TMSDataSetOptions](#)

Syntax

```
property PrepareUpdateSQL: boolean;
```

Remarks

If True, update queries are automatically prepared before executing.

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5.13.1.9.2.19 QueryIdentity Property

Used to specify whether to request the Identity field value on execution of the Insert or Append method.

Class

[TMSDataSetOptions](#)

Syntax

```
property QueryIdentity: boolean default True;
```

Remarks

Specifies whether to request the Identity field value, if such exists, on execution the Insert or Append method. If you don't request Identity, you can have an impact on performance of Insert or Append for about 20%. Affects only the [TCustomMSDataSet.CursorType](#) cursor. If you insert a value into the SQL_VARIANT field and QueryIdentity is True, then [EOLEDBError](#) raised. The default value is True.

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5.13.1.9.2.20 QueryRecCount Property

Used to perform additional query to get record count for this SELECT, so the RecordCount property reflects the actual number of records.

Class

[TMSDataSetOptions](#)

Syntax

```
property QueryRecCount: boolean;
```

Remarks

If True, and the [TCustomMSDataSet.FetchAll](#) property is False or the NonBlocking option is True, TCustomDADataset performs additional query to get record count for this SELECT, so the RecordCount property reflects the actual number of records. Does not have any effect if the FetchAll property is True and the NonBlocking option is False.

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5.13.1.9.2.21 QuoteNames Property

Used for TCustomMSDataSet to quote all field names in autogenerated SQL statements.

Class

[TMSDataSetOptions](#)

Syntax

```
property QuoteNames: boolean;
```

Remarks

If True, TCustomMSDataSet quotes all field names in autogenerated SQL statements such as update SQL.

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5.13.1.9.2.22 ReflectChangeNotify Property

Indicates whether DataSet will be automatically refreshed when the underlying data on the server is changed.

Class

[TMSDataSetOptions](#)

Syntax

```
property ReflectChangeNotify: boolean default False;
```

Remarks

Indicates whether DataSet will be automatically refreshed when the underlying data on the server is changed. Automatic refresh happens when ReflectChangeNotify is True, the [TCustomMSDataSet.ChangeNotification](#) property is assigned, and the [TMSChangeNotification.OnChange](#) parameter is nsData. This option is available only for users of SDAC *Professional Edition* .

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5.13.1.9.2.23 RemoveOnRefresh Property

Used for dataset to locally remove record on refresh if it does not match filter condition (WHERE clause for refresh SQL) anymore.

Class

[TMSDataSetOptions](#)

Syntax

```
property RemoveOnRefresh: boolean;
```

Remarks

When the RemoveOnRefresh property is set to True, dataset locally removes record on refresh if it does not match filter condition (WHERE clause for refresh SQL) anymore. The default value is True.

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5.13.1.9.2.24 RequiredFields Property

Used for TCustomMSDataSet to set the Required property of TField objects for the NOT NULL fields.

Class

[TMSDataSetOptions](#)

Syntax

```
property RequiredFields: boolean default False;
```

Remarks

If True, TCustomMSDataSet sets the Required property of TField objects for the NOT NULL fields. It is useful when table has a trigger that updates the NOT NULL fields. The default value is False.

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5.13.1.9.2.25 ReturnParams Property

Used to return the new values of fields to dataset after insert or update.

Class

[TMSDataSetOptions](#)

Syntax

```
property ReturnParams: boolean;
```

Remarks

Use the ReturnParams property to return the new values of fields to dataset after insert or update. Actual value of a field after insert or update may be different from the value stored in the local memory if the table has a trigger. When ReturnParams is True, OUT parameters of the SQLInsert and SQLUpdate statements is assigned to corresponding fields. The default value is False.

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5.13.1.9.2.26 SetEmptyStrToNull Property

Force replace of empty strings with NULL values in data. Default value is False.

Class

[TMSDataSetOptions](#)

Syntax

```
property SetEmptyStrToNull: boolean;
```

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5.13.1.9.2.27 StrictUpdate Property

Used for TCustomDADataset to raise an exception when the number of updated or deleted records is not equal 1.

Class

[TMSDataSetOptions](#)

Syntax

```
property StrictUpdate: boolean;
```

Remarks

TCustomDADataset raises an exception when the number of updated or deleted records is not equal 1. Setting this option also causes an exception if the RefreshRecord procedure returns more than one record. Does not affect [TCustomMSDataSet.CursorType](#) if CursorUpdate is True. The default value is True. In order for this option to work correctly, the SQL Server NOCOUNT option should be OFF (this is the default value). If NOCOUNT is ON, SQL Server returns 0 instead of the actual affected rows count. SDAC does not care for this option itself in order to avoid additional round trips to server.

We do not recommend using the StrictUpdate option with tables on which a trigger is defined, because this will cause problems if there are commands that modify data in the trigger. But if you need to use this combination, you should call the SET NOCOUNT ON command at the very beginning of the trigger to suppress sending affected rows count for SQL statements executed within the trigger.

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5.13.1.9.2.28 TrimFixedChar Property

Used to specify whether to discard all trailing spaces in the fixed-length string fields of a dataset.

Class

[TMSDataSetOptions](#)

Syntax

```
property TrimFixedChar: boolean;
```

Remarks

Use the TrimFixedChar property to specify whether to discard all trailing spaces in the fixed-length string fields of a dataset. The default value is True.

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5.13.1.9.2.29 TrimVarChar Property

Used to specify whether to discard all trailing spaces in the variable-length string fields of a dataset.

Class

[TMSDataSetOptions](#)

Syntax

```
property TrimVarChar: boolean;
```

Remarks

Use the TrimVarChar property to specify whether to discard all trailing spaces in the variable-length string fields of a dataset. The default value is False.

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5.13.1.9.2.30 UniqueRecords Property

Used to specify whether to query additional keyfields from the server.

Class

[TMSDataSetOptions](#)

Syntax

```
property UniqueRecords: boolean default True;
```

Remarks

Use the UniqueRecords property to specify whether to query additional keyfields from the server. If UniqueRecords is False, keyfields aren't queried from the server when they are not included in the query explicitly. For example, the result of the query execution "SELECT ShipName FROM Orders" holds the only field - ShipName. When used with the [TCustomDADataset.ReadOnly](#) property set to True, the UniqueRecords option gives insignificant advantage of performance. But in this case SQLRefresh will be generated in simplified way. If UniqueRecord is True, keyfields needed for the complete automatic generation of SQLInsert, SQLUpdate, SQLDelete or SQLRefresh statements are queried from the server implicitly. For example, the result of query execution "SELECT ShipName FROM Orders" holds at least two fields - ShipName and OrderID. The default value is False. Has effect only for the [TCustomMSDataSet.CursorType](#) cursor.

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5.13.1.10 TMSDataSource Class

TMSDataSource provides an interface between a SDAC dataset components and data-aware controls on a form.

For a list of all members of this type, see [TMSDataSource](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSDataSource = class(TCRDataSource);
```

Remarks

TMSDataSource provides an interface between a SDAC dataset components and data-aware controls on a form.

TMSDataSource inherits its functionality directly from the TDataSource component.

At design-time assign individual data-aware components' DataSource properties from their drop-down listboxes.

Inheritance Hierarchy

[TCRDataSource](#)

TMSDataSource

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5.13.1.10.1 Members

[TMSDataSource](#) class overview.

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5.13.1.11 TMSEncryptor Class

The class that performs encrypting and decrypting of data.

For a list of all members of this type, see [TMSEncryptor](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSDecryptor = class(TCREncryptor);
```

Inheritance Hierarchy

[TCREncryptor](#)

TMSEncryptor

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5.13.1.11.1 Members

[TMSEncryptor](#) class overview.

Properties

Name	Description
DataHeader (inherited from TCREncryptor)	Specifies whether the additional information is stored with the encrypted data.
EncryptionAlgorithm (inherited from TCREncryptor)	Specifies the algorithm of data encryption.
HashAlgorithm (inherited from TCREncryptor)	Specifies the algorithm of generating hash data.
InvalidHashAction (inherited from TCREncryptor)	Specifies the action to perform on data fetching when hash data is invalid.
Password (inherited from TCREncryptor)	Used to set a password that is used to generate a key for encryption.

Methods

Name	Description
SetKey (inherited from TCREncryptor)	Sets a key, using which data is encrypted.

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5.13.1.12 TMSFileStream Class

A class for managing FILESTREAM data using Win32 API.

For a list of all members of this type, see [TMSFileStream](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSFileStream = class(TStream);
```


Remarks

Use the TMSFileStream class to manage FILESTREAM data using Win32 API. This class inherits almost all its functionality from the TStream class, except the Close method. It's necessary to call the Close method before the transaction commits or rolls back FILESTREAM data.

See Also

- [TCustomMSDataSet.GetFileStreamForField](#)

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5.13.1.12.1 Members

[TMSFileStream](#) class overview.

Methods

Name	Description
Close	Used to close an opened file handle associated with FILESTREAM data.
Flush	Used to write all buffered data to the file associated with FILESTREAM data.

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5.13.1.12.2 Methods

Methods of the **TMSFileStream** class.

For a complete list of the **TMSFileStream** class members, see the [TMSFileStream Members](#) topic.

Public

Name	Description
------	-------------

Close	Used to close an opened file handle associated with FILESTREAM data.
Flush	Used to write all buffered data to the file associated with FILESTREAM data.

See Also

- [TMSFileStream Class](#)
- [TMSFileStream Class Members](#)

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5.13.1.12.2.1 Close Method

Used to close an opened file handle associated with FILESTREAM data.

Class

[TMSFileStream](#)

Syntax

```
procedure Close;
```

Remarks

Closes an opened file handle associated with FILESTREAM data. It's necessary to call this method before the transaction commits or rolls back FILESTREAM data. Failing to close the handle will cause server-side resource leaks.

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5.13.1.12.2.2 Flush Method

Used to write all buffered data to the file associated with FILESTREAM data.

Class

[TMSFileStream](#)

Syntax

```
procedure Flush;
```

Remarks

Writes all buffered data to the file associated with FILESTREAM data. To use this method, you should create [TMSFileStream](#) with access rights for writing.

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5.13.1.13 TMSMetadata Class

A component for obtaining metainformation about database objects from the server.

For a list of all members of this type, see [TMSMetadata](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSMetadata = class(TDAMetaData);
```

Remarks

The TMSMetaData component is used to obtain metainformation from the server about objects in the database, such as tables, table columns, stored procedures, etc in the form of a table. TMSMetaData publishes properties of [TDAMetaData](#).

To get the information you are interested in, you should initially select the proper object type in the [TMSMetadata.ObjectType](#) property. After that you may open TMSMetadata and view the result like in usual dataset (in the DB-aware controls or from code). This dataset may be too big for viewing because information about all objects of the specified type is shown. To get the information only about objects you are interested in, you should specify appropriate filters in properties like DatabaseName, SchemaName, TableName, etc. To ascertain which properties are applicable to the selected object type, refer to the table given in the description of the ObjectType property.

Example

Here is a small example demonstrating obtaining information about default column values of a table.

```

procedure TForm.ButtonClick(Sender: TObject);
var
  FNameCol, FieldDefCol: TField;
  DefValue: string;
begin
  MSMetadata.ObjectType := otColumns;
  MSMetadata.DatabaseName := EditDatabaseName.Text;
  MSMetadata.TableName := EditTableName.Text;
  MSMetadata.Open;
  FNameCol := MSMetadata.FieldByName('COLUMN_NAME');
  FieldDefCol := MSMetadata.FieldByName('COLUMN_DEFAULT');
  Memo.Lines.Clear;
  if MSMetadata.RecordCount = 0 then
    Memo.Lines.Add('Specified object not found')
  else
    while not MSMetadata.Eof do begin
      if FieldDefCol.IsNull then
        DefValue := '> Not defined <'
      else
        DefValue := FieldDefCol.AsString;
      Memo.Lines.Add(Format('Field Name: %s;    Default value: %s', [FNameCol.AsString, DefValue]));
      MSMetadata.Next;
    end;
  end;

```

Inheritance Hierarchy

[TMemDataSet](#)

[TDAMetaData](#)

TMSMetadata

See Also

- [TCustomDADataset.Debug](#)
- [TCustomDASQL.Debug](#)
- [DBMonitor](#)
- [TCustomMSDataSet](#)
- [TDAMetaData](#)

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5.13.1.13.1 Members

[TMSMetadata](#) class overview.

Properties

Name	Description
AssemblyID	Used to specify the assembly ID that constitutes object type descriptor used to retrieve metadata information from the server.
AssemblyName	Used to specify the assembly name that constitutes object type descriptor used to retrieve metadata information from the server.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
ColumnName	Used to specify the column name that constitutes object type descriptor used to retrieve metadata information from the server.
Connection (inherited from TDAMetaData)	Used to specify a connection object to use to connect to a data store.
ConstraintName	Used to specify the constraint name that constitutes object type descriptor used to retrieve metadata information from the server.
DatabaseName	Used to specify the database name that constitutes object type descriptor used to retrieve metadata information from the server.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.

IndexName	Used to specify the index name that constitutes object type descriptor used to retrieve metadata information from the server.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
LinkedServer	Used to specify the server name that constitutes object type descriptor used to retrieve metadata information from the server.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MetaDataKind (inherited from TDAMetaData)	Used to specify which kind of metainformation to show.
ObjectType	Used to specify the object type metadata information will be requested from the server.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReferencedAssemblyID	Used to specify the referenced assembly ID that constitutes object type descriptor used to retrieve metadata information from the server.
Restrictions (inherited from TDAMetaData)	Used to provide one or more conditions restricting the list of objects to be described.
SchemaCollectionName	Used to specify the XML schema collection name that constitutes object type descriptor used to retrieve

	metadata information from the server.
SchemaName	Used to specify the schema name that constitutes object type descriptor used to retrieve metadata information from the server.
StoredProcName	Used to specify the stored procedure name that constitutes object type descriptor used to retrieve metadata information from the server.
TableName	Used to specify the table name that constitutes object type descriptor used to retrieve metadata information from the server.
TargetNamespaceURI	Used to specify the XML schema collection name that constitutes object type descriptor used to retrieve metadata information from the server.
UDTName	Used to specify the User-Defined Type name that constitutes object type descriptor used to retrieve metadata information from the server.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Methods

Name	Description
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached

	updates to a database.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetMetaDataKinds (inherited from TDAMetaData)	Used to get values acceptable in the MetaDataKind property.
GetRestrictions (inherited from TDAMetaData)	Used to find out which restrictions are applicable to a certain MetaDataKind.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from TMemDataSet)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.

RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.

OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.
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5.13.1.13.2 Properties

Properties of the **TMSMetadata** class.

For a complete list of the **TMSMetadata** class members, see the [TMSMetadata Members](#) topic.

Public

Name	Description
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
Connection (inherited from TDAMetaData)	Used to specify a connection object to use to connect to a data store.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MetaDataKind (inherited from TDAMetaData)	Used to specify which kind of metainformation to show.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is

	applied to a dataset.
Restrictions (inherited from TDAMetaData)	Used to provide one or more conditions restricting the list of objects to be described.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Published

Name	Description
AssemblyID	Used to specify the assembly ID that constitutes object type descriptor used to retrieve metadata information from the server.
AssemblyName	Used to specify the assembly name that constitutes object type descriptor used to retrieve metadata information from the server.
ColumnName	Used to specify the column name that constitutes object type descriptor used to retrieve metadata information from the server.
ConstraintName	Used to specify the constraint name that constitutes object type descriptor used to retrieve metadata information from the server.
DatabaseName	Used to specify the database name that constitutes object type descriptor used to retrieve metadata information from the server.
IndexName	Used to specify the index name that constitutes object

	type descriptor used to retrieve metadata information from the server.
LinkedServer	Used to specify the server name that constitutes object type descriptor used to retrieve metadata information from the server.
ObjectType	Used to specify the object type metadata information will be requested from the server.
ReferencedAssemblyID	Used to specify the referenced assembly ID that constitutes object type descriptor used to retrieve metadata information from the server.
SchemaCollectionName	Used to specify the XML schema collection name that constitutes object type descriptor used to retrieve metadata information from the server.
SchemaName	Used to specify the schema name that constitutes object type descriptor used to retrieve metadata information from the server.
StoredProcName	Used to specify the stored procedure name that constitutes object type descriptor used to retrieve metadata information from the server.
TableName	Used to specify the table name that constitutes object type descriptor used to retrieve metadata information from the server.
TargetNamespaceURI	Used to specify the XML schema collection name that constitutes object type descriptor used to retrieve metadata information from

	the server.
UDTName	Used to specify the User-Defined Type name that constitutes object type descriptor used to retrieve metadata information from the server.

See Also

- [TMSMetadata Class](#)
- [TMSMetadata Class Members](#)

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5.13.1.13.2.1 AssemblyID Property

Used to specify the assembly ID that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property AssemblyID: integer default 0;
```

Remarks

Use the AssemblyID property to specify the ID of the assembly which together with [AssemblyName](#), schema, database and/or other optional names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to the [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [AssemblyName](#)

- [DatabaseName](#)
- [SchemaName](#)
- [StoredProcName](#)
- [ColumnName](#)
- [IndexName](#)
- [ConstraintName](#)

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5.13.1.13.2.2 AssemblyName Property

Used to specify the assembly name that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property AssemblyName: string;
```

Remarks

Use the AssemblyName property to specify the name of the assembly which together with [AssemblyID](#), schema, database and/or other optional names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to the [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [AssemblyID](#)
- [DatabaseName](#)
- [SchemaName](#)

- [StoredProcName](#)
- [ColumnName](#)
- [IndexName](#)
- [ConstraintName](#)

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5.13.1.13.2.3 ColumnName Property

Used to specify the column name that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property ColumnName: string;
```

Remarks

Use the ColumnName property to specify the column name which together with table, schema and database names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [DatabaseName](#)
- [SchemaName](#)
- [TableName](#)

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5.13.1.13.2.4 ConstraintName Property

Used to specify the constraint name that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property ConstraintName: string;
```

Remarks

Use the ConstraintName property to specify the constraint name which together with table, schema and database names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to the [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [DatabaseName](#)
- [SchemaName](#)
- [TableName](#)

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5.13.1.13.2.5 DatabaseName Property

Used to specify the database name that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax


```
property DatabaseName: string;
```

Remarks

Use the DatabaseName property to specify the database name which together with table, schema and/or other optional names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [SchemaName](#)
- [TableName](#)
- [StoredProcName](#)
- [ColumnName](#)
- [IndexName](#)
- [ConstraintName](#)

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5.13.1.13.2.6 IndexName Property

Used to specify the index name that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property IndexName: string;
```

Remarks

Use the IndexName property to specify the index name which together with table, schema

and database names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to the [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [DatabaseName](#)
- [SchemaName](#)
- [TableName](#)

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5.13.1.13.2.7 LinkedServer Property

Used to specify the server name that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property LinkedServer: string;
```

Remarks

Use the LinkedServer property to specify the name of the server which together with other optional names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to the [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)

- [DatabaseName](#)
- [SchemaName](#)
- [StoredProcName](#)
- [ColumnName](#)
- [IndexName](#)
- [ConstraintName](#)

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5.13.1.13.2.8 ObjectType Property

Used to specify the object type metadata information will be requested from the server.

Class

[TMSMetadata](#)

Syntax

```
property objectType: TMSObjectType default otDatabases;
```

Remarks

Use the ObjectType property to specify the object type which metadata will be requested from the server.

The following table lists the names of applicable restriction properties for each object type and also equivalent schema rowset name as it's described in [Microsoft's MSDN OLE DB Library](#) (see oledb.chm file for the in-depth information on each object type).

See Also

- [DatabaseName](#)
- [SchemaName](#)
- [TableName](#)
- [StoredProcName](#)
- [ColumnName](#)

- [IndexName](#)
- [ConstraintName](#)

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5.13.1.13.2.9 ReferencedAssemblyID Property

Used to specify the referenced assembly ID that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property ReferencedAssemblyID: integer default 0;
```

Remarks

Use the ReferencedAssemblyID property to specify the ID of the referenced assembly which together with [AssemblyName](#), [AssemblyID](#), schema, database and/or other optional names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to the [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [AssemblyName](#)
- [AssemblyID](#)
- [DatabaseName](#)
- [SchemaName](#)
- [StoredProcName](#)
- [ColumnName](#)

- [IndexName](#)
- [ConstraintName](#)

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5.13.1.13.2.10 SchemaCollectionName Property

Used to specify the XML schema collection name that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property SchemaCollectionName: string;
```

Remarks

Use the SchemaCollectionName property to specify the name of the XML schema collection which together with schema and database names and/or other optional names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to the [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [DatabaseName](#)
- [SchemaName](#)
- [StoredProcName](#)
- [ColumnName](#)
- [IndexName](#)
- [ConstraintName](#)
- [TargetNamespaceURI](#)

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5.13.1.13.2.11 SchemaName Property

Used to specify the schema name that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property SchemaName: string;
```

Remarks

Use the SchemaName property to specify the schema name which together with table, database and/or other optional names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to the [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [DatabaseName](#)
- [TableName](#)
- [StoredProcName](#)
- [ColumnName](#)
- [IndexName](#)
- [ConstraintName](#)

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5.13.1.13.2.12 StoredProcName Property

Used to specify the stored procedure name that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property StoredProcName: string;
```

Remarks

Use the StoredProcName property to specify the stored procedure name which together with table, schema and database names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to the [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [DatabaseName](#)
- [SchemaName](#)
- [TableName](#)

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5.13.1.13.2.13 TableName Property

Used to specify the table name that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property TableName: string;
```

Remarks

Use the TableName property to specify the table name which together with schema, database and/or other optional names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to the [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [DatabaseName](#)
- [SchemaName](#)
- [StoredProcName](#)
- [ColumnName](#)
- [IndexName](#)
- [ConstraintName](#)

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5.13.1.13.2.14 TargetNamespaceURI Property

Used to specify the XML schema collection name that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property TargetNamespaceURI: string;
```

Remarks

Use the TargetNamespaceURI property to specify the name of the XML schema collection

which together with schema and database names and/or other optional names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to the [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [DatabaseName](#)
- [SchemaName](#)
- [StoredProcName](#)
- [ColumnName](#)
- [IndexName](#)
- [ConstraintName](#)
- [SchemaCollectionName](#)

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5.13.1.13.2.15 UDTName Property

Used to specify the User-Defined Type name that constitutes object type descriptor used to retrieve metadata information from the server.

Class

[TMSMetadata](#)

Syntax

```
property UDTName: string;
```

Remarks

Use the UDTName property to specify the name of the User-Defined Type which together with schema and database names constitutes object type descriptor that is used to retrieve metadata information from the server.

Refer to the [ObjectType](#) property to get the complete listing of all object types to which this property is applicable. In all other cases this property is merely ignored.

See Also

- [ObjectType](#)
- [DatabaseName](#)
- [SchemaName](#)
- [StoredProcName](#)
- [ColumnName](#)
- [IndexName](#)
- [ConstraintName](#)

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5.13.1.14 TMSPParam Class

A class that is used to set the values of individual parameters passed with queries or stored procedures.

For a list of all members of this type, see [TMSPParam](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSPParam = class (TDAParam) ;
```

Remarks

Use the properties of TMSPParam to set the value of a parameter. Objects that use parameters create TMSPParam objects to represent these parameters. For example, TMSPParam objects are used by TMSSQL, TCustomMSDataSet.

TMSPParam shares many properties with TField, as both describe the value of a field in a dataset. However, a TField object has several properties to describe the field binding, and

how the field is displayed, edited, or calculated that are not needed in a TMSPParam object. Conversely, TMSPParam includes properties that indicate how the field value is passed as a parameter.

Inheritance Hierarchy

[TDAPParam](#)

TMSPParam

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5.13.1.14.1 Members

[TMSPParam](#) class overview.

Properties

Name	Description
AsBlob (inherited from TDAPParam)	Used to set and read the value of the BLOB parameter as string.
AsBlobRef (inherited from TDAPParam)	Used to set and read the value of the BLOB parameter as a TBlob object.
AsFloat (inherited from TDAPParam)	Used to assign the value for a float field to a parameter.
AsInteger (inherited from TDAPParam)	Used to assign the value for an integer field to the parameter.
AsLargeInt (inherited from TDAPParam)	Used to assign the value for a LargeInteger field to the parameter.
AsMemo (inherited from TDAPParam)	Used to assign the value for a memo field to the parameter.
AsMemoRef (inherited from TDAPParam)	Used to set and read the value of the memo parameter as a TBlob object.
AsSQLTimeStamp (inherited from TDAPParam)	Used to specify the value of the parameter when it

	represents a SQL timestamp field.
AsString (inherited from TDAParam)	Used to assign the string value to the parameter.
AsTable	Used to assign a recordset to the Table-Valued Parameter.
AsWideString (inherited from TDAParam)	Used to assign the Unicode string value to the parameter.
DataType (inherited from TDAParam)	Indicates the data type of the parameter.
IsNull (inherited from TDAParam)	Used to indicate whether the value assigned to a parameter is NULL.
ParamType (inherited from TDAParam)	Used to indicate the type of use for a parameter.
Size (inherited from TDAParam)	Specifies the size of a string type parameter.
TableName	Used to indicate the table type name of a Table-Valued Parameter.
Value (inherited from TDAParam)	Used to represent the value of the parameter as Variant.

Methods

Name	Description
AssignField (inherited from TDAParam)	Assigns field name and field value to a param.
AssignFieldValue (inherited from TDAParam)	Assigns the specified field properties and value to a parameter.
LoadFromFile (inherited from TDAParam)	Places the content of a specified file into a TDAParam object.
LoadFromStream (inherited from TDAParam)	Places the content from a stream into a TDAParam object.
SetBlobData (inherited from TDAParam)	Overloaded. Writes the data from a specified buffer to BLOB.

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5.13.1.14.2 Properties

Properties of the **TMSParam** class.

For a complete list of the **TMSParam** class members, see the [TMSParam Members](#) topic.

Public

Name	Description
AsBlob (inherited from TDAParam)	Used to set and read the value of the BLOB parameter as string.
AsBlobRef (inherited from TDAParam)	Used to set and read the value of the BLOB parameter as a TBlob object.
AsFloat (inherited from TDAParam)	Used to assign the value for a float field to a parameter.
AsInteger (inherited from TDAParam)	Used to assign the value for an integer field to the parameter.
AsLargeInt (inherited from TDAParam)	Used to assign the value for a LargeInteger field to the parameter.
AsMemo (inherited from TDAParam)	Used to assign the value for a memo field to the parameter.
AsMemoRef (inherited from TDAParam)	Used to set and read the value of the memo parameter as a TBlob object.
AsSQLTimeStamp (inherited from TDAParam)	Used to specify the value of the parameter when it represents a SQL timestamp field.
AsString (inherited from TDAParam)	Used to assign the string value to the parameter.
AsTable	Used to assign a recordset to the Table-Valued Parameter.
AsWideString (inherited from TDAParam)	Used to assign the Unicode string value to the

	parameter.
IsNull (inherited from TDAParam)	Used to indicate whether the value assigned to a parameter is NULL.
TableName	Used to indicate the table type name of a Table-Valued Parameter.

Published

Name	Description
DataType (inherited from TDAParam)	Indicates the data type of the parameter.
ParamType (inherited from TDAParam)	Used to indicate the type of use for a parameter.
Size (inherited from TDAParam)	Specifies the size of a string type parameter.
Value (inherited from TDAParam)	Used to represent the value of the parameter as Variant.

See Also

- [TMSParam Class](#)
- [TMSParam Class Members](#)

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5.13.1.14.2.1 AsTable Property

Used to assign a recordset to the Table-Valued Parameter.

Class

[TMSParam](#)

Syntax

```
property AsTable: TMSSQLTableObject;
```

Remarks

Use the AsTable property to assign a recordset to the Table-Valued Parameter. Setting

AsTable will set the DataType property to ftDataSet.

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5.13.1.14.2.2 TableTypeName Property

Used to indicate the table type name of a Table-Valued Parameter.

Class

[TMSPParam](#)

Syntax

```
property TableTypeName: string;
```

Remarks

Use the TableTypeName property to determine the table type name of a Table-Valued Parameter.

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5.13.1.15 TMSPParams Class

Used to control TMSPParam objects.

For a list of all members of this type, see [TMSPParams](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSParams = class(TDAParams);
```

Remarks

Use TMSParams to manage a list of TMSPParam objects for an object that uses field parameters. For example, TMSStoredProc objects and TMSQuery objects use TMSParams objects to create and access their parameters.

Inheritance Hierarchy

[TDAParams](#)

TMSParams

See Also

- [TMSPParam](#)
- [TCustomDASQL.Params](#)
- [TCustomDADataSet.Params](#)

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5.13.1.15.1 Members

[TMSParams](#) class overview.

Properties

Name	Description
Items (inherited from TDAParams)	Used to iterate through all parameters.

Methods

Name	Description
FindParam (inherited from TDAParams)	Searches for a parameter with the specified name.
ParamByName (inherited from TDAParams)	Searches for a parameter with the specified name.

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5.13.1.16 TMSQuery Class

A component for executing queries and operating record sets. It also provides flexible way to update data.

For a list of all members of this type, see [TMSQuery](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSQuery = class(TCustomMSDataSet);
```

Remarks

TMSQuery is a direct descendant of the [TCustomMSDataSet](#) component. It publishes most of its inherited properties and events so that they can be manipulated at design-time.

Use TMSQuery to perform fetching, insertion, deletion and update of record by dynamically generated SQL statements. TMSQuery provides automatic blocking of records, their checking before edit and refreshing after post. Set SQL, SQLInsert, SQLDelete, SQLRefresh, and SQLUpdate properties to define SQL statements for subsequent accesses to the database server. There is no restriction to their syntax, so any SQL statement is allowed. Usually you need to use INSERT, DELETE, and UPDATE statements but you also may use stored procedures in more diverse cases.

To modify records, you can specify KeyFields. If they are not specified, TMSQuery will retrieve primary keys for UpdatingTable from metadata. TMSQuery can automatically update only one table. Updating table is defined by the UpdatingTable property if this property is set. Otherwise, the table a field of which is the first field in the field list in the SELECT clause is used as an updating table.

The SQLInsert, SQLDelete, SQLUpdate, SQLRefresh properties support automatic binding of parameters which have identical names to fields captions. To retrieve the value of a field as it was before the operation use the field name with the 'OLD_' prefix. This is especially useful when doing field comparisons in the WHERE clause of the statement. Use the [TCustomDADataset.BeforeUpdateExecute](#) event to assign the value to additional parameters and the [TCustomDADataset.AfterUpdateExecute](#) event to read them.

Inheritance Hierarchy

[TMemDataSet](#)

[TCustomDADataset](#)

[TCustomMSDataSet](#)

TMSQuery

See Also

- [Updating Data with SDAC Dataset Components](#)
- [Master/Detail Relationships](#)
- [TMSStoredProc](#)
- [TMSTable](#)

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5.13.1.16.1 Members

[TMSQuery](#) class overview.

Properties

Name	Description
BaseSQL (inherited from TCustomDADataset)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
ChangeNotification (inherited from TCustomMSDataSet)	Points to a TMSChangeNotification component.
CommandTimeout (inherited from TCustomMSDataSet)	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Conditions (inherited from TCustomDADataset)	Used to add WHERE conditions to a query
Connection (inherited from TCustomMSDataSet)	Used to specify a connection object that will be used to connect to a data store.
CursorType (inherited from TCustomMSDataSet)	Cursor types supported by SQL Server.
DataTypeMap (inherited from TCustomDADataset)	Used to set data type mapping rules

Debug (inherited from TCustomDADataset)	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields (inherited from TCustomDADataset)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from TCustomDADataset)	Used to keep dataset opened after connection is closed.
Encryption (inherited from TCustomMSDataset)	Used to specify encryption options in a dataset.
FetchAll	Defines whether to request all records of the query from database server when the dataset is being opened.
FetchRows (inherited from TCustomDADataset)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from TCustomDADataset)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from TCustomDADataset)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataset)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from TCustomDADataset)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataset)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from TCustomDADataset)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.

LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
LockMode	Used to specify what kind of lock will be performed when editing a record.
MacroCount (inherited from TCustomDADataset)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDADataset)	Makes it possible to change SQL queries easily.
MasterFields (inherited from TCustomDADataset)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from TCustomDADataset)	Used to specify the data source component which binds current dataset to the master one.
Options (inherited from TCustomMSDataSet)	Used to specify the behaviour of a TCustomMSDataSet object.
ParamCheck (inherited from TCustomDADataset)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from TCustomDADataset)	Used to indicate how many parameters are there in the Params property.
Params (inherited from TCustomMSDataSet)	Contains parameters for a query's SQL statement.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is

	applied to a dataset.
ReadOnly (inherited from TCustomDADataset)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from TCustomDADataset)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from TCustomDADataset)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from TCustomMSDataset)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from TCustomDADataset)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from TCustomDADataset)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from TCustomDADataset)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying an update to a dataset.

UniDirectional (inherited from TCustomDADataset)	Used if an application does not need bidirectional access to records in the result set.
UpdateObject (inherited from TCustomMSDataSet)	Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.
UpdatingTable	Used to specify which table in a query is assumed to be the target for subsequent data-modification queries as a result of user incentive to insert, update or delete records.

Methods

Name	Description
AddWhere (inherited from TCustomDADataset)	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from TCustomDADataset)	Breaks execution of the SQL statement on the server.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.

CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
CreateBlobStream (inherited from TCustomDADataset)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
CreateProcCall (inherited from TCustomMSDataSet)	Serves for the creating of a stored procedures call.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
DeleteWhere (inherited from TCustomDADataset)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
Execute (inherited from TCustomDADataset)	Overloaded. Executes a SQL statement on the server.
Executing (inherited from TCustomDADataset)	Indicates whether SQL statement is still being executed.
Fetched (inherited from TCustomDADataset)	Used to find out whether TCustomDADataset has fetched all rows.
Fetching (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is still fetching rows.
FetchingAll (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is fetching all rows to the end.
FindKey (inherited from TCustomDADataset)	Searches for a record which contains specified field values.
FindMacro (inherited from TCustomDADataset)	Finds a macro with the specified name.
FindNearest (inherited from TCustomDADataset)	Moves the cursor to a specific record or to the first record in the dataset that

	matches or is greater than the values specified in the KeyValues parameter.
FindParam (inherited from TCustomMSDataSet)	Indicates whether a parameter with the specified name exists in a dataset.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from TCustomDADataset)	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject (inherited from TCustomDADataset)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from TCustomDADataset)	Retrieves the precision of a number field.
GetFieldScale (inherited from TCustomDADataset)	Retrieves the scale of a number field.
GetFileStreamForField (inherited from TCustomMSDataSet)	Used to create the TMSFileStream object for working with FILESTREAM data.
GetKeyFieldNames (inherited from TCustomDADataset)	Provides a list of available key field names.
GetOrderBy (inherited from TCustomDADataset)	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent (inherited from TCustomDADataset)	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.

Lock (inherited from TCustomMSDataSet)	Overloaded. Locks the current records to prevent multiple users' access to it.
LockTable (inherited from TCustomMSDataSet)	Locks a table to prevent multiple access to it.
MacroByName (inherited from TCustomDADataset)	Finds a macro with the specified name.
OpenNext (inherited from TCustomMSDataSet)	Opens next rowset in the statement.
ParamByName (inherited from TCustomMSDataSet)	Provides access to a parameter by its name.
Prepare (inherited from TCustomDADataset)	Allocates, opens, and parses cursor for a query.
RefreshQuick (inherited from TCustomMSDataSet)	An optimized procedure to retrieve the changes applied to the server by other clients to the particular client side.
RefreshRecord (inherited from TCustomDADataset)	Actualizes field values for the current record.
RestoreSQL (inherited from TCustomDADataset)	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL (inherited from TCustomDADataset)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy (inherited from TCustomDADataset)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range

	of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved (inherited from TCustomDADataset)	Determines if the SQL property value was saved to the BaseSQL property.
UnLock (inherited from TCustomDADataset)	Releases a record lock.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
AfterExecute (inherited from TCustomDADataset)	Occurs after a component has executed a query to database.
AfterFetch (inherited from TCustomDADataset)	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute (inherited from TCustomMSDataSet)	Occurs after executing insert, delete, update, lock and refresh operation.
BeforeFetch (inherited from TCustomDADataset)	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute (inherited from TCustomMSDataSet)	Occurs before executing insert, delete, update, lock and refresh operation.

OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

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5.13.1.16.2 Properties

Properties of the **TMSQuery** class.

For a complete list of the **TMSQuery** class members, see the [TMSQuery Members](#) topic.

Public

Name	Description
BaseSQL (inherited from TCustomDADataset)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
ChangeNotification (inherited from TCustomMSDataSet)	Points to a TMSChangeNotification component.
CommandTimeout (inherited from TCustomMSDataSet)	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Conditions (inherited from TCustomDADataset)	Used to add WHERE conditions to a query
Connection (inherited from TCustomMSDataSet)	Used to specify a connection object that will be used to connect to a data store.
CursorType (inherited from TCustomMSDataSet)	Cursor types supported by SQL Server.

DataTypeMap (inherited from TCustomDADataset)	Used to set data type mapping rules
Debug (inherited from TCustomDADataset)	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields (inherited from TCustomDADataset)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from TCustomDADataset)	Used to keep dataset opened after connection is closed.
Encryption (inherited from TCustomMSDataSet)	Used to specify encryption options in a dataset.
FetchRows (inherited from TCustomDADataset)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from TCustomDADataset)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from TCustomDADataset)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from TCustomDADataset)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from TCustomDADataset)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the

	Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from TCustomDADataset)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDADataset)	Makes it possible to change SQL queries easily.
MasterFields (inherited from TCustomDADataset)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from TCustomDADataset)	Used to specify the data source component which binds current dataset to the master one.
Options (inherited from TCustomMSDataSet)	Used to specify the behaviour of a TCustomMSDataSet object.
ParamCheck (inherited from TCustomDADataset)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from TCustomDADataset)	Used to indicate how many parameters are there in the Params property.
Params (inherited from TCustomMSDataSet)	Contains parameters for a query's SQL statement.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from TCustomDADataset)	Used to prevent users from updating, inserting, or deleting data in the dataset.

RefreshOptions (inherited from TCustomDADataset)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from TCustomDADataset)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from TCustomMSDataset)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from TCustomDADataset)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from TCustomDADataset)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from TCustomDADataset)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional (inherited from TCustomDADataset)	Used if an application does not need bidirectional access to records in the result set.

UpdateObject (inherited from TCustomMSDataSet)	Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Published

Name	Description
FetchAll	Defines whether to request all records of the query from database server when the dataset is being opened.
LockMode	Used to specify what kind of lock will be performed when editing a record.
UpdatingTable	Used to specify which table in a query is assumed to be the target for subsequent data-modification queries as a result of user incentive to insert, update or delete records.

See Also

- [TMSQuery Class](#)
- [TMSQuery Class Members](#)

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5.13.1.16.2.1 FetchAll Property

Defines whether to request all records of the query from database server when the dataset is being opened.

Class

[TMSQuery](#)

Syntax

```
property FetchAll: boolean;
```

Remarks

When set to True, all records of the query are requested from database server when the dataset is being opened. When set to False, records are retrieved when a data-aware component or a program requests it. If a query can return a lot of records, set this property to False if initial response time is important.

When the FetchAll property is False, the first call to [TMemDataSet.Locate](#) and [TMemDataSet.LocateEx](#) methods may take a lot of time to retrieve additional records to the client side.

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5.13.1.16.2.2 LockMode Property

Used to specify what kind of lock will be performed when editing a record.

Class

[TMSQuery](#)

Syntax

```
property LockMode: TLockMode;
```

Remarks

Use the LockMode property to define what kind of lock will be performed when editing a record. Locking a record is useful in creating multi-user applications. It prevents modification of a record by several users at the same time.

Locking is performed by the RefreshRecord method.

The default value is ImNone.

See Also

- [TMSStoredProc.LockMode](#)
- [TMSTable.LockMode](#)

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5.13.1.16.2.3 UpdatingTable Property

Used to specify which table in a query is assumed to be the target for subsequent data-modification queries as a result of user incentive to insert, update or delete records.

Class

[TMSQuery](#)

Syntax

```
property UpdatingTable: string;
```

Remarks

Use the UpdatingTable property to specify which table in a query is assumed to be the target for the subsequent data-modification queries as a result of user incentive to insert, update or delete records.

This property is used on Insert, Update, Delete or RefreshRecord (see also [TCustomMSDataSet.Options](#)) if appropriate SQL (SQLInsert, SQLUpdate or SQLDelete) is not provided.

If UpdatingTable is not set then the first table used in a query is assumed to be the target.

All fields from other than target table have their ReadOnly properties set to True (if [TCustomMSDataSet.Options](#))

With [TCustomMSDataSet.CursorType](#) UpdatingTable can be used only if [TCustomMSDataSet.Options](#) = False.

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5.13.1.17 TMSSQL Class

A component for executing SQL statements and calling stored procedures on the database server.

For a list of all members of this type, see [TMSSQL](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSSQL = class(TCustomDASQL);
```

Remarks

The TMSSQL component is a direct descendant of the [TCustomDASQL](#) class.

Use The TMSSQL component when a client application must execute SQL statement or the PL/SQL block, and call stored procedure on the database server. The SQL statement should not retrieve rows from the database.

Inheritance Hierarchy

[TCustomDASQL](#)

TMSSQL

See Also

- [TMSQuery](#)

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5.13.1.17.1 Members

[TMSSQL](#) class overview.

Properties

Name	Description
ChangeCursor (inherited from TCustomDASQL)	Enables or disables changing screen cursor

	when executing commands in the NonBlocking mode.
CommandTimeout	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Connection	Used to specify a connection object that will be used to connect to a data store.
Debug (inherited from TCustomDASQL)	Used to display the statement that is being executed and the values and types of its parameters.
DescribeParams	Used to specify whether to query TMSPParam properties from the server when executing the TCustomDASQL.Prepare method.
FinalSQL (inherited from TCustomDASQL)	Used to return a SQL statement with expanded macros.
MacroCount (inherited from TCustomDASQL)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDASQL)	Makes it possible to change SQL queries easily.
NonBlocking	Used to execute a SQL statement in a separate thread.
ParamCheck (inherited from TCustomDASQL)	Used to specify whether parameters for the Params property are implicitly generated when the SQL property is being changed.
ParamCount (inherited from TCustomDASQL)	Indicates the number of parameters in the Params property.
Params	Contains parameters for a query's SQL statement.
ParamValues (inherited from TCustomDASQL)	Used to get or set the values of individual field

	parameters that are identified by name.
PermitPrepare	This option is not supported any more.
Prepared (inherited from TCustomDASQL)	Used to indicate whether a query is prepared for execution.
RowsAffected (inherited from TCustomDASQL)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SQL (inherited from TCustomDASQL)	Used to provide a SQL statement that a TCustomDASQL component executes when the Execute method is called.

Methods

Name	Description
BreakExec (inherited from TCustomDASQL)	Breaks execution of an SQL statement on the server.
Execute (inherited from TCustomDASQL)	Overloaded. Executes a SQL statement on the server.
ExecuteForXML	Overloaded. Provides data in readable view for the SELECT statements written using the FOR XML clause.
Executing (inherited from TCustomDASQL)	Checks whether TCustomDASQL still executes a SQL statement.
FindMacro (inherited from TCustomDASQL)	Finds a macro with the specified name.
FindParam	Determines if a parameter with the specified name exists in a dataset.
MacroByName (inherited from TCustomDASQL)	Finds a macro with the specified name.
ParamByName	Sets or uses parameter information for a specific parameter based on its name.

Prepare (inherited from TCustomDASQL)	Allocates, opens, and parses cursor for a query.
UnPrepare (inherited from TCustomDASQL)	Frees the resources allocated for a previously prepared query on the server and client sides.
WaitExecuting (inherited from TCustomDASQL)	Waits until TCustomDASQL executes a SQL statement.

Events

Name	Description
AfterExecute (inherited from TCustomDASQL)	Occurs after a SQL statement has been executed.

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5.13.1.17.2 Properties

Properties of the **TMSSQL** class.

For a complete list of the **TMSSQL** class members, see the [TMSSQL Members](#) topic.

Public

Name	Description
ChangeCursor (inherited from TCustomDASQL)	Enables or disables changing screen cursor when executing commands in the NonBlocking mode.
Debug (inherited from TCustomDASQL)	Used to display the statement that is being executed and the values and types of its parameters.
FinalSQL (inherited from TCustomDASQL)	Used to return a SQL statement with expanded macros.
MacroCount (inherited from TCustomDASQL)	Used to get the number of macros associated with the Macros property.

Macros (inherited from TCustomDASQL)	Makes it possible to change SQL queries easily.
ParamCheck (inherited from TCustomDASQL)	Used to specify whether parameters for the Params property are implicitly generated when the SQL property is being changed.
ParamCount (inherited from TCustomDASQL)	Indicates the number of parameters in the Params property.
ParamValues (inherited from TCustomDASQL)	Used to get or set the values of individual field parameters that are identified by name.
Prepared (inherited from TCustomDASQL)	Used to indicate whether a query is prepared for execution.
RowsAffected (inherited from TCustomDASQL)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SQL (inherited from TCustomDASQL)	Used to provide a SQL statement that a TCustomDASQL component executes when the Execute method is called.

Published

Name	Description
CommandTimeout	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Connection	Used to specify a connection object that will be used to connect to a data store.
DescribeParams	Used to specify whether to query TMSPParam properties from the server when executing the

	TCustomDASQL.Prepare method.
NonBlocking	Used to execute a SQL statement in a separate thread.
Params	Contains parameters for a query's SQL statement.
PermitPrepare	This option is not supported any more.

See Also

- [TMSSQL Class](#)
- [TMSSQL Class Members](#)

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5.13.1.17.2.1 CommandTimeout Property

Used to specify the wait time before terminating the attempt to execute a command and generating an error.

Class

[TMSSQL](#)

Syntax

```
property CommandTimeout: integer default 0;
```

Remarks

The time in seconds to wait for the command to execute.

The default value is 0. The 0 value indicates no limit (an attempt to execute a command will wait indefinitely).

If a command is successfully executed prior to the expiration of the seconds specified, CommandTimeout has no effect. Otherwise, the 'Query timeout expired' error is generated by SQL Server. This error has the DB_E_ABORTLIMITREACHED OLEDB error code.

For more information about OLEDB Errors, refer to <http://technet.microsoft.com/en-us/library/>

ms171852.aspx

Samples

Delphi

```
MSSQL.CommandTimeout := 5; // wait 5 seconds for the command to execute
MSSQL.SQL.Text := 'long-lasting query';
try
    MSSQL.Execute;
except
    on E: EOledbError do begin
        if E.ErrorCode = DB_E_ABORTLIMITREACHED then // the 'Query timeout expired'
            ShowMessage(E.Message);
        raise;
    end;
end;
```

Note: To run this code, it is needed to add the OLEDBAccess and OLEDBC units to the USES clause of the unit.

C++Builder

```
MSSQL->CommandTimeout = 5; // wait 5 seconds for the command to execute
MSSQL->SQL->Text = "long-lasting query";
try
{
    MSSQL->Execute();
}
catch (EOledbError &E)
{
    if (E.ErrorCode == DB_E_ABORTLIMITREACHED) // the 'Query timeout expired'
        ShowMessage(E.Message);
    throw;
}
```

Note: To run this code, it is needed to include the oledberr.h header file to the unit.

See Also

- [TMSConnection.ConnectionTimeout](#)

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5.13.1.17.2.2 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

[TMSSQL](#)

Syntax

```
property Connection: TCustomMSConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store.

Set at design-time by selecting from the list of provided [TCustomMSConnection](#) descendant objects.

At runtime, set the Connection property to reference an existing object of a [TCustomMSConnection](#) descendant.

See Also

- [TCustomMSConnection](#)

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5.13.1.17.2.3 DescribeParams Property

Used to specify whether to query [TMSPParam](#) properties from the server when executing the [TCustomDASQL.Prepare](#) method.

Class

[TMSSQL](#)

Syntax

```
property DescribeParams: boolean default False;
```

Remarks

Specifies whether to query [TMSPParam](#) properties (Name, ParamType, DataType, Size, TableTypeName) from the server when executing the [TCustomDASQL.Prepare](#) method. The default value is False.

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5.13.1.17.2.4 NonBlocking Property

Used to execute a SQL statement in a separate thread.

Class

[TMSSQL](#)

Syntax

```
property NonBlocking: boolean;
```

Remarks

Set the NonBlocking option to True to execute a SQL statement in a separate thread.

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5.13.1.17.2.5 Params Property

Contains parameters for a query's SQL statement.

Class

[TMSSQL](#)

Syntax

```
property Params: TMSParams stored False;
```

Remarks

Contains parameters for a query's SQL statement.

Access Params at runtime to view and set parameter names, values, and data types dynamically (at design time use the Parameters editor to set the parameter information). Params is a zero-based array of parameter records. Index specifies the array element to access.

An easier way to set and retrieve parameter values when the name of each parameter is known is to call ParamByName.

See Also

- [TMSParam](#)
- [ParamByName](#)

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5.13.1.17.2.6 PermitPrepare Property

This option is not supported any more.

Class

[TMSSQL](#)

Syntax

```
property PermitPrepare: boolean stored False;
```

Remarks

This option is out of date and isn't supported any more. The default behavior is the same to that when PermitPrepare is set to False. To get the same behaviour as when PermitPrepare is set to True, you need to execute the [TCustomDASQL.Prepare](#) method explicitly.

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5.13.1.17.3 Methods

Methods of the **TMSSQL** class.

For a complete list of the **TMSSQL** class members, see the [TMSSQL Members](#) topic.

Public

Name	Description
BreakExec (inherited from TCustomDASQL)	Breaks execution of an SQL satatement on the server.
Execute (inherited from TCustomDASQL)	Overloaded. Executes a SQL statement on the server.

ExecuteForXML	Overloaded. Provides data in readable view for the SELECT statements written using the FOR XML clause.
Executing (inherited from TCustomDASQL)	Checks whether TCustomDASQL still executes a SQL statement.
FindMacro (inherited from TCustomDASQL)	Finds a macro with the specified name.
FindParam	Determines if a parameter with the specified name exists in a dataset.
MacroByName (inherited from TCustomDASQL)	Finds a macro with the specified name.
ParamByName	Sets or uses parameter information for a specific parameter based on its name.
Prepare (inherited from TCustomDASQL)	Allocates, opens, and parses cursor for a query.
UnPrepare (inherited from TCustomDASQL)	Frees the resources allocated for a previously prepared query on the server and client sides.
WaitExecuting (inherited from TCustomDASQL)	Waits until TCustomDASQL executes a SQL statement.

See Also

- [TMSSQL Class](#)
- [TMSSQL Class Members](#)

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5.13.1.17.3.1 ExecuteForXML Method

Provides data in readable view for the SELECT statements written using the [FOR XML](#) clause.

Class

[TMSSQL](#)

Overload List

Name	Description
ExecuteForXML(Stream: TStream; OutputEncoding: TMSOutputEncoding)	Provides data in readable view for the SELECT statements written using the FOR XML clause.
ExecuteForXML(out XML: string)	Provides data in readable view for the SELECT statements written using the FOR XML clause.

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Provides data in readable view for the SELECT statements written using the [FOR XML](#) clause.

Class

[TMSSQL](#)

Syntax

```
procedure ExecuteForXML(Stream: TStream; OutputEncoding: TMSOutputEncoding); overload;
```

Parameters

Stream

Holds the stream to read data from.

OutputEncoding

Holds the encoding in which the result will be returned.

Remarks

SQL Server returns data in a specific format when queries with the [FOR XML](#) clause are opened using the TDataSet.Open method. In order to obtain data in readable view for the SELECT statements written using the FOR XML clause, you should use one of these overloaded procedures.

The TMSSQLOutputEncoding type is declared in the MSAccess unit.

See Also

- [TCustomDASQL.Execute](#)

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Provides data in readable view for the SELECT statements written using the [FOR XML](#) clause.

Class

[TMSSQL](#)

Syntax

```
procedure ExecuteForXML(out XML: string); overload; procedure  
ExecuteForXML(out XML: string); overload;
```

Parameters

XML

Is an output parameter where the result of the query execution is written.

Remarks

SQL Server returns data in a specific format when queries with the [FOR XML](#) clause are opened using the TDataSet.Open method. In order to obtain data in readable view for the SELECT statements written using the FOR XML, clause, you should use one of these overloaded procedures.

See Also

- [TCustomDASQL.Execute](#)

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5.13.1.17.3.2 FindParam Method

Determines if a parameter with the specified name exists in a dataset.

Class

[TMSSQL](#)

Syntax

```
function FindParam(const value: string): TMSParam;
```

Parameters

Value

holds the name of the param for which to search.

Return Value

the TMSParam object for the specified Name. If a TMSParam object with matching name was not found, returns nil.

Remarks

Call the FindParam method to determine if a parameter with the specified name exists in a dataset. Name is the name of the param for which to search. If FindParam finds a param with a matching name, it returns a TMSParam object for the specified Name. Otherwise it returns nil.

See Also

- [Params](#)
- [ParamByName](#)

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5.13.1.17.3.3 ParamByName Method

Sets or uses parameter information for a specific parameter based on its name.

Class

[TMSSQL](#)

Syntax

```
function ParamByName(const value: string): TMSParam;
```

Parameters

Value

Holds the Parameter value.

Return Value

the parameter, if a match was found. Otherwise, an exception is raised.

Remarks

Call the `ParamByName` method to set or use parameter information for a specific parameter based on its name. Name is the name of the parameter for which to retrieve information. `ParamByName` is used to set the parameter's value at runtime and returns a [TMSPParam](#) object.

Example

For example, the following statement retrieves the current value of a parameter called "Contact" into an edit box:

```
Edit1.Text := Query1.ParamsByName('Contact').AsString;
```

See Also

- [TMSPParam](#)
- [Params](#)
- [FindParam](#)

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5.13.1.18 TMSStoredProc Class

A component for accessing and executing stored procedures and functions.

For a list of all members of this type, see [TMSStoredProc](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSStoredProc = class(TCustomMSStoredProc);
```

Remarks

Use `TMSStoredProc` to access stored procedures on the database server.

You need only to define the `StoredProcName` property, and the SQL statement to call the stored procedure will be generated automatically.

Use the Execute method at runtime to generate request that instructs server to execute procedure and return parameters in the Params property.

Inheritance Hierarchy

[TMemDataSet](#)

[TCustomDADataset](#)

[TCustomMSDataSet](#)

[TCustomMSStoredProc](#)

TMSStoredProc

See Also

- [TMSQuery](#)
- [TMSSQL](#)
- [Updating Data with SDAC Dataset Components](#)

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5.13.1.18.1 Members

[TMSStoredProc](#) class overview.

Properties

Name	Description
BaseSQL (inherited from TCustomDADataset)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
ChangeNotification (inherited from TCustomMSDataSet)	Points to a TMSChangeNotification component.
CommandTimeout (inherited from TCustomMSDataSet)	Used to specify the wait time before terminating the attempt to execute a command and generating an

	error.
Conditions (inherited from TCustomDADataset)	Used to add WHERE conditions to a query
Connection (inherited from TCustomMSDataset)	Used to specify a connection object that will be used to connect to a data store.
CursorType (inherited from TCustomMSDataset)	Cursor types supported by SQL Server.
DataTypeMap (inherited from TCustomDADataset)	Used to set data type mapping rules
Debug (inherited from TCustomDADataset)	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields (inherited from TCustomDADataset)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from TCustomDADataset)	Used to keep dataset opened after connection is closed.
Encryption (inherited from TCustomMSDataset)	Used to specify encryption options in a dataset.
FetchAll (inherited from TCustomMSDataset)	Used to decrease the time of retrieving additional records to the client side when calling TMemDataSet.Locate and TMemDataSet.LocateEx for the first time.
FetchRows (inherited from TCustomDADataset)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from TCustomDADataset)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from TCustomDADataset)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with

	expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from TCustomDADataset)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from TCustomDADataset)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
LockMode	Used to specify what kind of lock will be performed when editing a record.
MacroCount (inherited from TCustomDADataset)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDADataset)	Makes it possible to change SQL queries easily.
MasterFields (inherited from TCustomDADataset)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from TCustomDADataset)	Used to specify the data source component which binds current dataset to the master one.
Options (inherited from TCustomMSDataSet)	Used to specify the behaviour of a

	TCustomMSDataSet object.
ParamCheck (inherited from TCustomDADataset)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from TCustomDADataset)	Used to indicate how many parameters are there in the Params property.
Params (inherited from TCustomMSDataSet)	Contains parameters for a query's SQL statement.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from TCustomDADataset)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from TCustomDADataset)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from TCustomDADataset)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from TCustomMSDataSet)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from TCustomDADataset)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from TCustomDADataset)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used

	to perform a record lock.
SQLRecCount (inherited from TCustomDADataset)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying an update to a dataset.
StoredProcName	Used to specify the name of the stored procedure to call on the server.
UniDirectional (inherited from TCustomDADataset)	Used if an application does not need bidirectional access to records in the result set.
UpdateObject (inherited from TCustomMSDataSet)	Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.
UpdatingTable (inherited from TCustomMSStoredProc)	Specifies which table in a query is assumed to be the target for subsequent data-modification queries as a result of user incentive to insert, update or delete records.

Methods

Name	Description
------	-------------

AddWhere (inherited from TCustomDADataset)	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from TCustomDADataset)	Breaks execution of the SQL statement on the server.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
CreateBlobStream (inherited from TCustomDADataset)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
CreateProcCall (inherited from TCustomMSDataSet)	Serves for the creating of a stored procedures call.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
DeleteWhere (inherited from TCustomDADataset)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
ExecProc (inherited from TCustomMSStoredProc)	Executes SQL statements on the server.
Execute (inherited from TCustomDADataset)	Overloaded. Executes a SQL statement on the server.

Executing (inherited from TCustomDADataset)	Indicates whether SQL statement is still being executed.
Fetched (inherited from TCustomDADataset)	Used to find out whether TCustomDADataset has fetched all rows.
Fetching (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is still fetching rows.
FetchingAll (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is fetching all rows to the end.
FindKey (inherited from TCustomDADataset)	Searches for a record which contains specified field values.
FindMacro (inherited from TCustomDADataset)	Finds a macro with the specified name.
FindNearest (inherited from TCustomDADataset)	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam (inherited from TCustomMSDataset)	Indicates whether a parameter with the specified name exists in a dataset.
GetBlob (inherited from TMemDataset)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from TCustomDADataset)	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject (inherited from TCustomDADataset)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from TCustomDADataset)	Retrieves the precision of a number field.
GetFieldScale (inherited from TCustomDADataset)	Retrieves the scale of a number field.
GetFileStreamForField (inherited from TCustomMSDataset)	Used to create the TMSFileStream object for working with FILESTREAM data.

GetKeyFieldNames (inherited from TCustomDADataset)	Provides a list of available key field names.
GetOrderBy (inherited from TCustomDADataset)	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent (inherited from TCustomDADataset)	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock (inherited from TCustomMSDataSet)	Overloaded. Locks the current records to prevent multiple users' access to it.
LockTable (inherited from TCustomMSDataSet)	Locks a table to prevent multiple access to it.
MacroByName (inherited from TCustomDADataset)	Finds a macro with the specified name.
OpenNext (inherited from TCustomMSDataSet)	Opens next rowset in the statement.
ParamByName (inherited from TCustomMSDataSet)	Provides access to a parameter by its name.
Prepare (inherited from TCustomDADataset)	Allocates, opens, and parses cursor for a query.
PrepareSQL (inherited from TCustomMSStoredProc)	Builds a query for TCustomMSStoredProc based on the Params and StoredProcName properties, and assign it to the SQL property.
RefreshQuick (inherited from TCustomMSDataSet)	An optimized procedure to retrieve the changes applied to the server by other clients to the particular client side.
RefreshRecord (inherited from TCustomDADataset)	Actualizes field values for the current record.

RestoreSQL (inherited from TCustomDADataset)	Restores the SQL property modified by AddWhere and SetOrderBy.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL (inherited from TCustomDADataset)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy (inherited from TCustomDADataset)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved (inherited from TCustomDADataset)	Determines if the SQL property value was saved to the BaseSQL property.
UnLock (inherited from TCustomDADataset)	Releases a record lock.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are

	enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
AfterExecute (inherited from TCustomDADataset)	Occurs after a component has executed a query to database.
AfterFetch (inherited from TCustomDADataset)	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute (inherited from TCustomMSDataSet)	Occurs after executing insert, delete, update, lock and refresh operation.
BeforeFetch (inherited from TCustomDADataset)	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute (inherited from TCustomMSDataSet)	Occurs before executing insert, delete, update, lock and refresh operation.
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

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5.13.1.18.2 Properties

Properties of the **TMSStoredProc** class.

For a complete list of the **TMSStoredProc** class members, see the [TMSStoredProc Members](#) topic.

Public

Name	Description
BaseSQL (inherited from TCustomDADataset)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
ChangeNotification (inherited from TCustomMSDataSet)	Points to a TMSCChangeNotification component.
CommandTimeout (inherited from TCustomMSDataSet)	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Conditions (inherited from TCustomDADataset)	Used to add WHERE conditions to a query
Connection (inherited from TCustomMSDataSet)	Used to specify a connection object that will be used to connect to a data store.
CursorType (inherited from TCustomMSDataSet)	Cursor types supported by SQL Server.
DataTypeMap (inherited from TCustomDADataset)	Used to set data type mapping rules
Debug (inherited from TCustomDADataset)	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields (inherited from TCustomDADataset)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from TCustomDADataset)	Used to keep dataset opened after connection is closed.
Encryption (inherited from TCustomMSDataSet)	Used to specify encryption options in a dataset.
FetchAll (inherited from TCustomMSDataSet)	Used to decrease the time of retrieving additional records to the client side when calling

	TMemDataSet.Locate and TMemDataSet.LocateEx for the first time.
FetchRows (inherited from TCustomDADataset)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from TCustomDADataset)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from TCustomDADataset)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from TCustomDADataset)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from TCustomDADataset)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from TCustomDADataset)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDADataset)	Makes it possible to change SQL queries easily.
MasterFields (inherited from TCustomDADataset)	Used to specify the names

	of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from TCustomDADataset)	Used to specify the data source component which binds current dataset to the master one.
Options (inherited from TCustomMSDataSet)	Used to specify the behaviour of a TCustomMSDataSet object.
ParamCheck (inherited from TCustomDADataset)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from TCustomDADataset)	Used to indicate how many parameters are there in the Params property.
Params (inherited from TCustomMSDataSet)	Contains parameters for a query's SQL statement.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from TCustomDADataset)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from TCustomDADataset)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from TCustomDADataset)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from TCustomMSDataSet)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from TCustomDADataset)	Used to provide a SQL statement that a query

	component executes when its Open method is called.
SQLDelete (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from TCustomDADataset)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from TCustomDADataset)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional (inherited from TCustomDADataset)	Used if an application does not need bidirectional access to records in the result set.
UpdateObject (inherited from TCustomMSDataSet)	Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.
UpdatingTable (inherited from TCustomMSStoredProc)	Specifies which table in a query is assumed to be the target for subsequent data-

	modification queries as a result of user incentive to insert, update or delete records.
--	---

Published

Name	Description
LockMode	Used to specify what kind of lock will be performed when editing a record.
StoredProcName	Used to specify the name of the stored procedure to call on the server.

See Also

- [TMSStoredProc Class](#)
- [TMSStoredProc Class Members](#)

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5.13.1.18.2.1 LockMode Property

Used to specify what kind of lock will be performed when editing a record.

Class

[TMSStoredProc](#)

Syntax

```
property LockMode: TLockMode;
```

Remarks

Use the LockMode property to define what kind of lock will be performed when editing a record. Locking a record is useful in creating multi-user applications. It prevents modification of a record by several users at the same time.

Locking is performed by the RefreshRecord method.

The default value is `ImNone`.

See Also

- [TMSQuery.LockMode](#)
- [TMSTable.LockMode](#)

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5.13.1.18.2.2 StoredProcName Property

Used to specify the name of the stored procedure to call on the server.

Class

[TMSStoredProc](#)

Syntax

```
property StoredProcName: string;
```

Remarks

Use the `StoredProcName` property to specify the name of the stored procedure to call on the server. If `StoredProcName` does not match the name of an existing stored procedure on the server, then when the application attempts to prepare the procedure prior to execution, an exception is raised.

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5.13.1.19 TMSTable Class

A component for retrieving and updating data in a single table without writing SQL statements.

For a list of all members of this type, see [TMSTable](#) members.

Unit

[MSAccess](#)

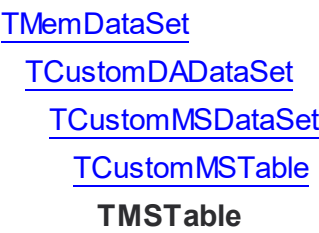
Syntax


```
TMSTable = class(TCustomMSTable);
```

Remarks

The TMSTable component allows retrieving and updating data in a single table without writing SQL statements. Use TMSTable to access data in a table or view. Use the TableName property to specify table name. TMSTable uses the KeyFields property to build SQL statements for updating table data. KeyFields is a string containing a semicolon-delimited list of the field names.

Inheritance Hierarchy



See Also

- [Updating Data with SDAC Dataset Components](#)
- [Master/Detail Relationships](#)
- [Performance of Obtaining Data](#)
- [TCustomMSDataSet](#)
- [TMSQuery](#)
- [TCustomMSTable](#)

[TMSTable](#) class overview.

Properties

Name	Description
BaseSQL (inherited from TCustomDADataset)	Used to return SQL text

	without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
ChangeNotification (inherited from TCustomMSDataSet)	Points to a TMSChangeNotification component.
CommandTimeout (inherited from TCustomMSDataSet)	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Conditions (inherited from TCustomDADataset)	Used to add WHERE conditions to a query
Connection (inherited from TCustomMSDataSet)	Used to specify a connection object that will be used to connect to a data store.
CursorType (inherited from TCustomMSDataSet)	Cursor types supported by SQL Server.
DataTypeMap (inherited from TCustomDADataset)	Used to set data type mapping rules
Debug (inherited from TCustomDADataset)	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields (inherited from TCustomDADataset)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from TCustomDADataset)	Used to keep dataset opened after connection is closed.
Encryption (inherited from TCustomMSDataSet)	Used to specify encryption options in a dataset.
FetchAll	Defines whether to request all records of the query from database server when the dataset is being opened.
FetchRows (inherited from TCustomDADataset)	Used to define the number of rows to be transferred

	across the network at the same time.
FilterSQL (inherited from TCustomDADataset)	Used to change the WHERE clause of SELECT statement and reopen a query.
FinalSQL (inherited from TCustomDADataset)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from TCustomDADataset)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from TCustomDADataset)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
LockMode	Used to specify what kind of lock will be performed when editing a record.
MacroCount (inherited from TCustomDADataset)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDADataset)	Makes it possible to change SQL queries easily.
MasterFields (inherited from TCustomDADataset)	Used to specify the names of one or more fields that are used as foreign keys for

	dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from TCustomDADataset)	Used to specify the data source component which binds current dataset to the master one.
Options (inherited from TCustomMSDataSet)	Used to specify the behaviour of a TCustomMSDataSet object.
OrderFields	Used to build ORDER BY clause of SQL statements.
ParamCheck (inherited from TCustomDADataset)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from TCustomDADataset)	Used to indicate how many parameters are there in the Params property.
Params (inherited from TCustomMSDataSet)	Contains parameters for a query's SQL statement.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from TCustomDADataset)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from TCustomDADataset)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from TCustomDADataset)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from TCustomMSDataSet)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from TCustomDADataset)	Used to provide a SQL statement that a query

	component executes when its Open method is called.
SQLDelete (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from TCustomDADataset)	Used to specify the SQL statement that will be used when applying an insertion to a dataset.
SQLLock (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from TCustomDADataset)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying an update to a dataset.
TableName	Used to specify the name of the database table this component encapsulates.
UniDirectional (inherited from TCustomDADataset)	Used if an application does not need bidirectional access to records in the result set.
UpdateObject (inherited from TCustomMSDataSet)	Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Methods

Name	Description
AddWhere (inherited from TCustomDADataset)	Adds condition to the WHERE clause of SELECT statement in the SQL property.
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
BreakExec (inherited from TCustomDADataset)	Breaks execution of the SQL statement on the server.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
CreateBlobStream (inherited from TCustomDADataset)	Used to obtain a stream for reading data from or writing data to a BLOB field, specified by the Field parameter.
CreateProcCall (inherited from TCustomMSDataSet)	Serves for the creating of a stored procedures call.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
DeleteWhere (inherited from TCustomDADataset)	Removes WHERE clause from the SQL property and assigns the BaseSQL property.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
Execute (inherited from TCustomDADataset)	Overloaded. Executes a SQL statement on the

	server.
Executing (inherited from TCustomDADataset)	Indicates whether SQL statement is still being executed.
Fetched (inherited from TCustomDADataset)	Used to find out whether TCustomDADataset has fetched all rows.
Fetching (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is still fetching rows.
FetchingAll (inherited from TCustomDADataset)	Used to learn whether TCustomDADataset is fetching all rows to the end.
FindKey (inherited from TCustomDADataset)	Searches for a record which contains specified field values.
FindMacro (inherited from TCustomDADataset)	Finds a macro with the specified name.
FindNearest (inherited from TCustomDADataset)	Moves the cursor to a specific record or to the first record in the dataset that matches or is greater than the values specified in the KeyValues parameter.
FindParam (inherited from TCustomMSDataset)	Indicates whether a parameter with the specified name exists in a dataset.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
GetDataType (inherited from TCustomDADataset)	Returns internal field types defined in the MemData and accompanying modules.
GetFieldObject (inherited from TCustomDADataset)	Returns a multireference shared object from field.
GetFieldPrecision (inherited from TCustomDADataset)	Retrieves the precision of a number field.
GetFieldScale (inherited from TCustomDADataset)	Retrieves the scale of a number field.
GetFileStreamForField (inherited from TCustomMSDataset)	Used to create the TMSFileStream object for working with FILESTREAM

	data.
GetKeyFieldNames (inherited from TCustomDADataset)	Provides a list of available key field names.
GetOrderBy (inherited from TCustomDADataset)	Retrieves an ORDER BY clause from a SQL statement.
GotoCurrent (inherited from TCustomDADataset)	Sets the current record in this dataset similar to the current record in another dataset.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Lock (inherited from TCustomMSDataSet)	Overloaded. Locks the current records to prevent multiple users' access to it.
LockTable (inherited from TCustomMSDataSet)	Locks a table to prevent multiple access to it.
MacroByName (inherited from TCustomDADataset)	Finds a macro with the specified name.
OpenNext (inherited from TCustomMSDataSet)	Opens next rowset in the statement.
ParamByName (inherited from TCustomMSDataSet)	Provides access to a parameter by its name.
Prepare (inherited from TCustomDADataset)	Allocates, opens, and parses cursor for a query.
PrepareSQL (inherited from TCustomMSTable)	Determines KeyFields and build query of TCustomMSTable.
RefreshQuick (inherited from TCustomMSDataSet)	An optimized procedure to retrieve the changes applied to the server by other clients to the particular client side.
RefreshRecord (inherited from TCustomDADataset)	Actualizes field values for the current record.
RestoreSQL (inherited from TCustomDADataset)	Restores the SQL property modified by AddWhere and

	SetOrderBy.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveSQL (inherited from TCustomDADataset)	Saves the SQL property value to BaseSQL.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetOrderBy (inherited from TCustomDADataset)	Builds an ORDER BY clause of a SELECT statement.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
SQLSaved (inherited from TCustomDADataset)	Determines if the SQL property value was saved to the BaseSQL property.
UnLock (inherited from TCustomDADataset)	Releases a record lock.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.

UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.
--	--

Events

Name	Description
AfterExecute (inherited from TCustomDADataset)	Occurs after a component has executed a query to database.
AfterFetch (inherited from TCustomDADataset)	Occurs after dataset finishes fetching data from server.
AfterUpdateExecute (inherited from TCustomMSDataSet)	Occurs after executing insert, delete, update, lock and refresh operation.
BeforeFetch (inherited from TCustomDADataset)	Occurs before dataset is going to fetch block of records from the server.
BeforeUpdateExecute (inherited from TCustomMSDataSet)	Occurs before executing insert, delete, update, lock and refresh operation.
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

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5.13.1.19.2 Properties

Properties of the **TMSTable** class.

For a complete list of the **TMSTable** class members, see the [TMSTable Members](#) topic.

Public

Name	Description
------	-------------

BaseSQL (inherited from TCustomDADataset)	Used to return SQL text without any changes performed by AddWhere, SetOrderBy, and FilterSQL.
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
ChangeNotification (inherited from TCustomMSDataSet)	Points to a TMSChangeNotification component.
CommandTimeout (inherited from TCustomMSDataSet)	Used to specify the wait time before terminating the attempt to execute a command and generating an error.
Conditions (inherited from TCustomDADataset)	Used to add WHERE conditions to a query
Connection (inherited from TCustomMSDataSet)	Used to specify a connection object that will be used to connect to a data store.
CursorType (inherited from TCustomMSDataSet)	Cursor types supported by SQL Server.
DataTypeMap (inherited from TCustomDADataset)	Used to set data type mapping rules
Debug (inherited from TCustomDADataset)	Used to display the statement that is being executed and the values and types of its parameters.
DetailFields (inherited from TCustomDADataset)	Used to specify the fields that correspond to the foreign key fields from MasterFields when building master/detail relationship.
Disconnected (inherited from TCustomDADataset)	Used to keep dataset opened after connection is closed.
Encryption (inherited from TCustomMSDataSet)	Used to specify encryption options in a dataset.
FetchRows (inherited from TCustomDADataset)	Used to define the number of rows to be transferred across the network at the same time.
FilterSQL (inherited from TCustomDADataset)	Used to change the WHERE

	clause of SELECT statement and reopen a query.
FinalSQL (inherited from TCustomDADataset)	Used to return SQL text with all changes performed by AddWhere, SetOrderBy, and FilterSQL, and with expanded macros.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
IsQuery (inherited from TCustomDADataset)	Used to check whether SQL statement returns rows.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
KeyFields (inherited from TCustomDADataset)	Used to build SQL statements for the SQLDelete, SQLInsert, and SQLUpdate properties if they were empty before updating the database.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
MacroCount (inherited from TCustomDADataset)	Used to get the number of macros associated with the Macros property.
Macros (inherited from TCustomDADataset)	Makes it possible to change SQL queries easily.
MasterFields (inherited from TCustomDADataset)	Used to specify the names of one or more fields that are used as foreign keys for dataset when establishing detail/master relationship between it and the dataset specified in MasterSource.
MasterSource (inherited from TCustomDADataset)	Used to specify the data source component which binds current dataset to the

	master one.
Options (inherited from TCustomMSDataSet)	Used to specify the behaviour of a TCustomMSDataSet object.
ParamCheck (inherited from TCustomDADataset)	Used to specify whether parameters for the Params property are generated automatically after the SQL property was changed.
ParamCount (inherited from TCustomDADataset)	Used to indicate how many parameters are there in the Params property.
Params (inherited from TCustomMSDataSet)	Contains parameters for a query's SQL statement.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
ReadOnly (inherited from TCustomDADataset)	Used to prevent users from updating, inserting, or deleting data in the dataset.
RefreshOptions (inherited from TCustomDADataset)	Used to indicate when the editing record is refreshed.
RowsAffected (inherited from TCustomDADataset)	Used to indicate the number of rows which were inserted, updated, or deleted during the last query operation.
SmartFetch (inherited from TCustomMSDataSet)	The SmartFetch mode is used for fast navigation through a huge amount of records and to minimize memory consumption.
SQL (inherited from TCustomDADataset)	Used to provide a SQL statement that a query component executes when its Open method is called.
SQLDelete (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying a deletion to a record.
SQLInsert (inherited from TCustomDADataset)	Used to specify the SQL statement that will be used when applying an insertion

	to a dataset.
SQLLock (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to perform a record lock.
SQLRecCount (inherited from TCustomDADataset)	Used to specify the SQL statement that is used to get the record count when opening a dataset.
SQLRefresh (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used to refresh current record by calling the TCustomDADataset.RefreshRecord procedure.
SQLUpdate (inherited from TCustomDADataset)	Used to specify a SQL statement that will be used when applying an update to a dataset.
UniDirectional (inherited from TCustomDADataset)	Used if an application does not need bidirectional access to records in the result set.
UpdateObject (inherited from TCustomMSDataSet)	Used to point to an update object component which provides SQL statements that perform updates of read-only datasets.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Published

Name	Description
FetchAll	Defines whether to request all records of the query from database server when the dataset is being opened.
LockMode	Used to specify what kind of lock will be performed when editing a record.

OrderFields	Used to build ORDER BY clause of SQL statements.
TableName	Used to specify the name of the database table this component encapsulates.

See Also

- [TMSTable Class](#)
- [TMSTable Class Members](#)

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5.13.1.19.2.1 FetchAll Property

Defines whether to request all records of the query from database server when the dataset is being opened.

Class

[TMSTable](#)

Syntax

```
property FetchAll: boolean;
```

Remarks

When set to True, all records of the query are requested from database server when the dataset is being opened. When set to False, records are retrieved when a data-aware component or a program requests it. If a query can return a lot of records, set this property to False if initial response time is important.

When the FetchAll property is False, the first call to [TMemDataSet.Locate](#) and [TMemDataSet.LocateEx](#) methods may take a lot of time to retrieve additional records to the client side.

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5.13.1.19.2.2 LockMode Property

Used to specify what kind of lock will be performed when editing a record.

Class

[TMSTable](#)

Syntax

```
property LockMode: TLockMode;
```

Remarks

Use the LockMode property to define what kind of lock will be performed when editing a record. Locking a record is useful in creating multi-user applications. It prevents modification of a record by several users at the same time.

Locking is performed by the RefreshRecord method.

The default value is ImNone.

See Also

- [TMSStoredProc.LockMode](#)
- [TMSQuery.LockMode](#)

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5.13.1.19.2.3 OrderFields Property

Used to build ORDER BY clause of SQL statements.

Class

[TMSTable](#)

Syntax

```
property orderFields: string;
```

Remarks

TMSTable uses the OrderFields property to build ORDER BY clause of SQL statements. To set several field names to this property separate them with commas.

TMSTable is reopened when OrderFields is being changed.

See Also

- [TMSTable](#)

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5.13.1.19.2.4 TableName Property

Used to specify the name of the database table this component encapsulates.

Class

[TMSTable](#)

Syntax

```
property TableName: string;
```

Remarks

Use the TableName property to specify the name of the database table this component encapsulates. If [TCustomDADataset.Connection](#) is assigned at design time, select a valid table name from the TableName drop-down list in Object Inspector.

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5.13.1.20 TMSTableData Class

A component for working with user-defined table types in SQL Server 2008.

For a list of all members of this type, see [TMSTableData](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSTableData = class(TMemDataSet);
```

Remarks

The TMSTableData allows working with table types in SQL Server 2008. Use the [TMSTableData.TableTypeName](#) property to specify the table type.

When adding, changing, and deleting operations in dataset, data are stored in an internal cache on the client side. Data are sent to the server only as data of Table-Valued Parameters when a stored procedure is executed. To assign dataset contents to a parameter use the Table property.

Inheritance Hierarchy

[TMemDataSet](#)

TMSTableData

See Also

- [Using Table-Valued Parameters](#)

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5.13.1.20.1 Members

[TMSTableData](#) class overview.

Properties

Name	Description
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
Connection	Specifies a connection object that will be used to connect to a data store.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.

LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
Table	Used for assigning data from TMSTableData to a stored procedure parameter.
TableTypeName	Specifies the name of user-defined table type to work with.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Methods

Name	Description
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.

DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from TMemDataSet)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.

SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

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5.13.1.20.2 Properties

Properties of the **TMSTableData** class.

For a complete list of the **TMSTableData** class members, see the [TMSTableData Members](#) topic.

Public

Name	Description
------	-------------

CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
Table	Used for assigning data from TMSTableData to a stored procedure parameter.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Published

Name	Description
Connection	Specifies a connection object that will be used to connect to a data store.
TableTypeName	Specifies the name of user-defined table type to work with.

See Also

- [TMSTableData Class](#)
- [TMSTableData Class Members](#)

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5.13.1.20.2.1 Connection Property

Specifies a connection object that will be used to connect to a data store.

Class

[TMSTableData](#)

Syntax

```
property Connection: TCustomMSConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store.

Set at design-time by selecting from the list of provided TCustomMSConnection or its descendant class objects.

At runtime, set the Connection property to reference an existing TCustomMSConnection object.

See Also

- [TCustomMSConnection](#)

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5.13.1.20.2.2 Table Property

Used for assigning data from TMSTableData to a stored procedure parameter.

Class

[TMSTableData](#)

Syntax

```
property Table: TMSSQLTableObject;
```

Remarks

Use the Table property to assign data from TMSTableData to a stored procedure parameter.

Example

```
MSStoredProc.ParamByName('TVP').AsTable := MSTableData.Table;
```

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5.13.1.20.2.3 TableTypeName Property

Specifies the name of user-defined table type to work with.

Class

[TMSTableData](#)

Syntax

```
property TableTypeName: string;
```

Remarks

Use the TableTypeName property to specify the name of user-defined table type to work with.

If Connection is assigned at design time, you can select a valid table type name from the TableTypeName drop-down list in Object Inspector.

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5.13.1.21 TMSUDTField Class

A field class providing native access to the CLR User-defined Types (UDT) fields of SQL Server.

For a list of all members of this type, see [TMSUDTField](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSUDTField = class(TBlobField);
```

Remarks

This field class is designed to provide native access to the CLR User-defined Types (UDT) fields of SQL Server. UDT fields are mapped to TMSUDTField only if SQL Native Client is used as [TMSConnection.Options](#). Otherwise, UDT fields are mapped to TVarBytesField.

You can get information about the underlying UDT using [TMSUDTField.AssemblyTypename](#), [TMSUDTField.UDTCatalogname](#), [TMSUDTField.UDTName](#), [TMSUDTField.UDTSchemaname](#). Extended abilities of UDT fields are accessible in Win32 applications through the [TMSUDTField.AsUDT](#) property.

Note: The CLR integration is disabled by default, so you should enable it to work with UDT. [http://msdn2.microsoft.com/library/ms254506\(VS.80\).aspx](http://msdn2.microsoft.com/library/ms254506(VS.80).aspx) of MSDN describes how to enable CLR support for SQL Server.

See Also

- [Working with User Defined Types \(UDT\)](#)
- [TMSUDTField.AsUDT](#)

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5.13.1.21.1 Members

[TMSUDTField](#) class overview.

Properties

Name	Description
AssemblyTypename	Used to indicate the type name prefixed by namespace.

AsUDT	Used to access properties and methods of CLR User-defined Types (UDT) from the Win32 applications.
UDTCatalogname	Used to indicate the name of the catalog where UDT is defined.
UDTName	Used to indicate the name of the assembly containing the UDT class.
UDTSchemaname	Used to indicate the name of the schema where UDT is defined.

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5.13.1.21.2 Properties

Properties of the **TMSUDTField** class.

For a complete list of the **TMSUDTField** class members, see the [TMSUDTField Members](#) topic.

Public

Name	Description
AssemblyTypeName	Used to indicate the type name prefixed by namespace.
AsUDT	Used to access properties and methods of CLR User-defined Types (UDT) from the Win32 applications.
UDTCatalogname	Used to indicate the name of the catalog where UDT is defined.
UDTName	Used to indicate the name of the assembly containing the UDT class.
UDTSchemaname	Used to indicate the name of the schema where UDT is defined.

See Also

- [TMSUDTField Class](#)
- [TMSUDTField Class Members](#)

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5.13.1.21.2.1 AssemblyTypeName Property

Used to indicate the type name prefixed by namespace.

Class

[TMSUDTField](#)

Syntax

```
property AssemblyTypeName: string;
```

Remarks

Indicates the type name prefixed by namespace if applicable.

This property is read-only.

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5.13.1.21.2.2 AsUDT Property

Used to access properties and methods of CLR User-defined Types (UDT) from the Win32 applications.

Class

[TMSUDTField](#)

Syntax

```
property AsUDT: Variant;
```

Remarks

The AsUDT property lets you access properties and methods of CLR User-defined Types (UDT) from your Win32 applications. In order to use this functionality, you should create a CLR assembly that implements your new UDT, register this assembly in SQL Server, and create a table containing a column based on your UDT. Also it is necessary to put the CLR assembly implementing your UDT into the directory with your application using SDAC, or register it in GAC.

After that you can open tables with UDT fields, cast these fields to TMSUDTField, and invoke members of your UDT through the AsUDT property.

For detailed information on what is UDT, how to create and use it, please refer to [this topic](#) of MSDN.

Note: if you use this functionality in your application, you will need to deploy the *Devart.Sdac.UDTProxy.dll* file along with it. This file should be present in the directory with your application, or registered in GAC. You will find this file in the Bin folder of your SDAC installation directory.

Note: This functionality has certain restrictions, like:

- .NET framework 2 or higher should be installed on the client computer;
- can be used only in Win32 applications;
- restrictions of User-defined Types itself, see [here](#) for more details.

Example

You can open tables with UDT fields, cast these fields to TMSUDTField, and invoke members of your UDT through the AsUDT property like it is shown in the code below.

This code is taken from the UDT demo of the SDAC General demo. Please refer to this demo for an example. Also the UDT demo includes an implementation of the test UDT named Square.

```
var  
Square: variant;  
begin  
MSQuery.Edit;  
Square := (MSQuery.FieldByName('c_square') as TMSUDTField).AsUDT;  
Square.Move(StrToInt(edBaseX.Text), StrToInt(edBaseY.Text));  
MSQuery.Post;  
end;
```

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5.13.1.21.2.3 UDTCatalogname Property

Used to indicate the name of the catalog where UDT is defined.

Class

[TMSUDTField](#)

Syntax

```
property UDTCatalogname: string;
```

Remarks

Indicates the name of the catalog where UDT is defined.

This property is read-only.

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5.13.1.21.2.4 UDTName Property

Used to indicate the name of the assembly containing the UDT class.

Class

[TMSUDTField](#)

Syntax

```
property UDTName: string;
```

Remarks

Indicates the name of the assembly containing the UDT class.

This property is read-only.

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5.13.1.21.2.5 UDTSchemaname Property

Used to indicate the name of the schema where UDT is defined.

Class

[TMSUDTField](#)

Syntax

```
property UDTSchemaname: string;
```

Remarks

Indicates the name of the schema where UDT is defined.

This property is read-only.

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5.13.1.22 TMSUpdateSQL Class

A component for tuning update operations for the DataSet component.

For a list of all members of this type, see [TMSUpdateSQL](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSUpdateSQL = class(TCustomDAUpdateSQL);
```

Remarks

Use the TMSUpdateSQL component to provide DML statements for the dataset components that return read-only result set. This component also allows setting objects that can be used for executing update operations. You may prefer to use directly SQLInsert, SQLUpdate, and SQLDelete properties of the [TCustomDADataset](#) descendants.

Inheritance Hierarchy

[TCustomDAUpdateSQL](#)

TMSUpdateSQL

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5.13.1.22.1 Members

[TMSUpdateSQL](#) class overview.

Properties

Name	Description
DataSet (inherited from TCustomDAUpdateSQL)	Used to hold a reference to the TCustomDADataSet object that is being updated.
DeleteObject (inherited from TCustomDAUpdateSQL)	Provides ability to perform advanced adjustment of the delete operations.
DeleteSQL (inherited from TCustomDAUpdateSQL)	Used when deleting a record.
InsertObject (inherited from TCustomDAUpdateSQL)	Provides ability to perform advanced adjustment of insert operations.
InsertSQL (inherited from TCustomDAUpdateSQL)	Used when inserting a record.
LockObject (inherited from TCustomDAUpdateSQL)	Provides ability to perform advanced adjustment of lock operations.
LockSQL (inherited from TCustomDAUpdateSQL)	Used to lock the current record.
ModifyObject (inherited from TCustomDAUpdateSQL)	Provides ability to perform advanced adjustment of modify operations.
ModifySQL (inherited from TCustomDAUpdateSQL)	Used when updating a record.
RefreshObject (inherited from TCustomDAUpdateSQL)	Provides ability to perform advanced adjustment of refresh operations.
RefreshSQL (inherited from TCustomDAUpdateSQL)	Used to specify an SQL statement that will be used for refreshing the current record by TCustomDADataSet.RefreshRecord procedure.

SQL (inherited from TCustomDAUpdateSQL)	Used to return a SQL statement for one of the ModifySQL, InsertSQL, or DeleteSQL properties.
--	--

Methods

Name	Description
Apply (inherited from TCustomDAUpdateSQL)	Sets parameters for a SQL statement and executes it to update a record.
ExecSQL (inherited from TCustomDAUpdateSQL)	Executes a SQL statement.

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5.13.1.23 TMSXMLField Class

A class providing access to the SQL Server xml data type.

For a list of all members of this type, see [TMSXMLField](#) members.

Unit

[MSAccess](#)

Syntax

```
TMSXMLField = class(TWideMemoField);
```

Remarks

TMSXMLField provides access to the SQL Server xml data type.

The TMSXMLField.DataType property values equal to ftXML. You can access actual XML document using the AsString and [TMSXMLField.XML](#) properties.

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5.13.1.23.1 Members

[TMSXMLField](#) class overview.

Properties

Name	Description
SchemaCollection	Contains information about typed XML column.
Typed	Indicates if an XML column is typed.
XML	Returns an XML document or a fragment of XML document as string.

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5.13.1.23.2 Properties

Properties of the **TMSXMLField** class.

For a complete list of the **TMSXMLField** class members, see the [TMSXMLField Members](#) topic.

Public

Name	Description
SchemaCollection	Contains information about typed XML column.
Typed	Indicates if an XML column is typed.
XML	Returns an XML document or a fragment of XML document as string.

See Also

- [TMSXMLField Class](#)
- [TMSXMLField Class Members](#)

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5.13.1.23.2.1 SchemaCollection Property

Contains information about typed XML column.

Class

[TMSXMLField](#)

Syntax

```
property schemaCollection: TMSSchemaCollection;
```

Remarks

Contains the following XML schema information about a typed XML column.

Name	The name of a catalog in which an XML schema collection is defined. Empty for an untyped XML column.
CatalogName	The name of a schema in which an XML schema collection is defined. Empty for an untyped XML column.
SchemaName	The name of XML schema collection. Empty for an untyped XML column.

See Also

- [Typed](#)

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5.13.1.23.2.2 Typed Property

Indicates if an XML column is typed.

Class

[TMSXMLField](#)

Syntax

```
property Typed: boolean;
```

Remarks

Indicates whether an XML column is typed. If XML column is typed, the [SchemaCollection](#)

property is filled.

See Also

- [SchemaCollection](#)

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5.13.1.23.2.3 XML Property

Returns an XML document or a fragment of XML document as string.

Class

[TMSXMLField](#)

Syntax

```
property XML: string;
```

Remarks

Returns an XML document or a fragment of XML document as string.

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5.13.2 Types

Types in the **MSAccess** unit.

Types

Name	Description
TMSChangeNotificationEvent	This type is used for the TMSChangeNotification.OnChange event.
TMSUpdateExecuteEvent	This type is used for the TCustomMSDataSet.AfterUpdateExecute and TCustomMSDataSet.BeforeUpdateExecute events.

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5.13.2.1 TMSChangeNotificationEvent Procedure Reference

This type is used for the [TMSChangeNotification.OnChange](#) event.

Unit

[MSAccess](#)

Syntax

```
TMSChangeNotificationEvent = procedure (Sender: TObject; DataSet: TCustomMSDataSet; NotificationInfo: TMSNotificationInfo; NotificationSource: TMSNotificationSource; NotificationType: TMSNotificationType) of object;
```

Parameters

Sender

An object that raised the event.

DataSet

NotificationInfo

NotificationSource

NotificationType

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5.13.2.2 TMSUpdateExecuteEvent Procedure Reference

This type is used for the [TCustomMSDataSet.AfterUpdateExecute](#) and [TCustomMSDataSet.BeforeUpdateExecute](#) events.

Unit

[MSAccess](#)

Syntax

```
TMSUpdateExecuteEvent = procedure (Sender: TCustomMSDataSet; StatementTypes: TStatementTypes; Params: TMSParams) of object;
```

Parameters

Sender

An object that raised the event.

StatementTypes

Holds the type of the SQL statement being executed.

Params

Holds the parameters with which the SQL statement will be executed.

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5.13.3 Enumerations

Enumerations in the **MSAccess** unit.

Enumerations

Name	Description
TIsolationLevel	Specifies the extent to which all outside transactions interfere with the subsequent transactions of the current connection.
TMSLockType	Specifies the parameters for locking the current record.
TMSNotificationInfo	Indicates the reason of the notification.
TMSNotificationSource	Indicates the source of notification.
TMSNotificationType	Indicates if this notification is generated because of change or by subscription.
TMSObjectType	Enumerates the object types supported by TMSMetadata.

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5.13.3.1 TIsolationLevel Enumeration

Specifies the extent to which all outside transactions interfere with the subsequent transactions of the current connection.

Unit

[MSAccess](#)

Syntax

```
TransactionLevel = (ilReadCommitted, ilReadUnCommitted,  
ilRepeatableRead, ilIsolated, ilSnapshot);
```

Values

Value	Meaning
ilIsolated	The most restricted level of transaction isolation. Database server isolates data involved in current transaction by putting additional processing on range locks. Used to put aside all undesired effects observed in the concurrent accesses to the same set of data, but may lead to a greater latency at times of a congested database environment.
ilReadCommitted	Sets isolation level at which transaction cannot see changes made by outside transactions until they are committed. Only dirty reads (changes made by uncommitted transactions) are eliminated by this state of the isolation level. The default value.
ilReadUnCommitted	The most unrestricted level of the transaction isolation. All types of data access interferences are possible. Mainly used for browsing database and to receive instant data with prospective changes.
ilRepeatableRead	Prevents concurrent transactions from modifying data in the current uncommitted transaction. This level eliminates dirty reads as well as nonrepeatable reads (repeatable reads of the same data in one transaction before and after outside transactions may have started and committed).
ilSnapshot	Uses row versioning. Provides transaction-level read consistency. A data snapshot is taken when the snapshot transaction starts, and remains consistent for the duration of a transaction.

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[Request Support](#)[DAC Forum](#)[Provide Feedback](#)**5.13.3.2 TMSLockType Enumeration**

Specifies the parameters for locking the current record.

Unit

[MSAccess](#)

Syntax

```
TMSLockType = (ltUpdate, ltExclusive);
```

Values

Value	Meaning
ltExclusive	The locked record can be neither read nor updated until the lock is released.
ltUpdate	The locked record can be read by others, but it cannot be updated until the lock is released.

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5.13.3.3 TMSNotificationInfo Enumeration

Indicates the reason of the notification.

Unit

[MSAccess](#)

Syntax

```
TMSNotificationInfo = (niAlter, niDelete, niDrop, niError, niInsert, niInvalid, niIsolation, niOptions, niPreviousFire, niQuery, niResource, niRestart, niTemplateLimit, niTruncate, niUnknown, niUpdate);
```

Values

Value	Meaning
niAlter	One or more underlying server objects were modified.
niDelete	Data in one or more tables referenced in the underlying query was deleted by a DELETE statement.
niDrop	One or more underlying objects were dropped.
niError	An internal error occurred in SQL Server.
niInsert	Data in one or more tables referenced in the underlying query was changed by an INSERT statement.
niInvalid	A provided statement does not support notifications (INSERT, UPDATE, etc. statement). See this MSDN topic for the detailed

	information about supported statements.
niIsolation	The isolation mode is not valid for query notifications (for example, Snapshot).
niOptions	The connection options were not provided correctly.
niPreviousFire	A previous statement has caused query notifications to fire under the current transaction.
niQuery	A SELECT statement that does not correspond to restrictions was provided.
niResource	The notification subscription was removed as there may be not enough server resources.
niRestart	SQL Server was restarted.
niTemplateLimit	One or more tables used in a query reached the maximum number of allowed templates.
niTruncate	One or more tables used in the underlying query were truncated.
niUnknown	An option sent by the server was not recognized.
niUpdate	Data in one or more underlying tables was changed by an UPDATE statement.

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5.13.3.4 TMSNotificationSource Enumeration

Indicates the source of notification.

Unit

[MSAccess](#)

Syntax

```
TMSNotificationSource = (nsClient, nsData, nsDatabase,
nsEnvironment, nsExecution, nsObject, nsStatement, nsSystem,
nsTimeout, nsUnknown);
```

Values

Value	Meaning
nsClient	Client is the reason of the notification.
nsData	Data in one or more tables referenced in the underlying query was changed.
nsDatabase	Database state was changed.

nsEnvironment	Environment changes that are incompatible with Change notification were applied.
nsExecution	An error occurred during execution.
nsObject	One of the underlying objects was changed (altered, dropped, etc.).
nsStatement	The provided query does not support notifications.
nsSystem	A system-related event has occurred (like server restart).
nsTimeout	The subscription timeout has been expired.
nsUnknown	Used when an option is not recognized.

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5.13.3.5 TMSNotificationType Enumeration

Indicates if this notification is generated because of change or by subscription.

Unit

[MSAccess](#)

Syntax

```
TMSNotificationType = (ntChange, ntSubscribe, ntUnknown);
```

Values

Value	Meaning
ntChange	Data on the server was actually changed.
ntSubscribe	Notification subscription failed when creating.
ntUnknown	Used when an option is not recognized.

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5.13.3.6 TMSObjectType Enumeration

Enumerates the object types supported by TMSMetadata.

Unit

[MSAccess](#)

Syntax

```
TMSObjectType = (otDatabases, otTables, otTableConstraints,
otColumns, otIndexes, otStoredProcs, otStoredProcParams,
otColumnPrivileges, otForeignKeys, otPrimaryKeys, otLinkedServers,
otServerTypes, otSchemata, otStatistics, otAliases, otSynonyms,
otViews, otSystemTables, otGlobalTempTables, otLocalTempTables,
otSystemViews, otAliasesInfo, otTablesInfo, otSynonymsInfo,
otSystemTablesInfo, otViewsInfo, otGlobalTempTablesInfo,
otLocalTempTablesInfo, otExternalTablesInfo, otSystemViewsInfo,
otTablePrivileges, otAssemblies, otAssemblyDependencies,
otUserTypes, otXMLCollections, otCheckConstraints,
otCheckConstraintsByTable, otTableStatistics);
```

Values

Value	Meaning
otAliases	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES Rowset
otAliasesInfo	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES_INFO Rowset
otAssemblies	Restrictions: DatabaseName, SchemaName, AssemblyName, AssemblyID Rowset name: DBSCHEMA_SQL_ASSEMBLIES Rowset
otAssemblyDependencies	Restrictions: DatabaseName, SchemaName, AssemblyID, ReferencedAssemblyID Rowset name: DBSCHEMA_SQL_ASSEMBLY_DEPENDENCIES Rowset
otCheckConstraints	Restrictions: DatabaseName, SchemaName, ConstraintName Rowset name: CHECK_CONSTRAINTS Rowset
otCheckConstraintsByTable	Restrictions: DatabaseName, SchemaName, TableName, ConstraintName Rowset name: CHECK_CONSTRAINTS_BY_TABLE Rowset
otColumnPrivileges	Restrictions: DatabaseName, SchemaName, TableName, ColumnName Rowset name: COLUMN_PRIVILEGES Rowset
otColumns	Restrictions: DatabaseName, SchemaName, TableName, ColumnName Rowset name: COLUMNS Rowset
otDatabases	Restrictions: DatabaseName Rowset name: CATALOGS Rowset
otExternalTablesInfo	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES_INFO Rowset
otForeignKeys	Restrictions: DatabaseName, SchemaName, TableName

	Rowset name: FOREIGN_KEYS Rowset
otGlobalTempTables	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES Rowset
otGlobalTempTablesInfo	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES_INFO Rowset
otIndexes	Restrictions: DatabaseName, SchemaName, TableName Rowset name: INDEXES Rowset
otLinkedServers	Restrictions: LinkedServer Rowset name: DBSCHEMA LINKEDSERVERS Rowset
otLocalTempTables	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES Rowset
otLocalTempTablesInfo	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES_INFO Rowset
otPrimaryKeys	Restrictions: DatabaseName, SchemaName, TableName Rowset name: PRIMARY_KEYS Rowset
otSchemata	Restrictions: DatabaseName, SchemaName Rowset name: SCHEMATA Rowset
otServerTypes	Restrictions: Rowset name: PROVIDER_TYPES Rowset
otStatistics	Restrictions: DatabaseName, SchemaName, TableName Rowset name: STATISTICS Rowset
otStoredProcParams	Restrictions: DatabaseName, SchemaName, TableName Rowset name: STATISTICS Rowset
otStoredProcs	Restrictions: DatabaseName, SchemaName, StoredProcName Rowset name: PROCEDURES Rowset
otSynonyms	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES Rowset
otSynonymsInfo	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES_INFO Rowset
otSystemTables	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES Rowset
otSystemTablesInfo	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES_INFO Rowset
otSystemViews	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES Rowset
otSystemViewsInfo	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES_INFO Rowset
otTableConstraints	Restrictions: DatabaseName, SchemaName, TableName, ConstraintName Rowset name: TABLE_CONSTRAINTS Rowset
otTablePrivileges	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLE_PRIVILEGES Rowset

otTables	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES Rowset
otTablesInfo	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES_INFO Rowset
otTableStatistics	Restrictions: DatabaseName, SchemaName, TableName, StatisticsName Rowset name: TABLE_STATISTICS Rowset
otUserTypes	Restrictions: DatabaseName, SchemaName, UDTName Rowset name: DBSCHEMA_SQL_USER_TYPES Rowset
otViews	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES Rowset
otViewsInfo	Restrictions: DatabaseName, SchemaName, TableName Rowset name: TABLES_INFO Rowset
otXMLCollections	Restrictions: DatabaseName, SchemaName, SchemaCollectionName, TargetNamespaceURI Rowset name: DBSCHEMA_XML_COLLECTIONS Rowset

Remarks

Every member of this enumeration specifies restrictions and has representation in the MSDN OLE DB schema rowset name.

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5.13.4 Variables

Variables in the **MSAccess** unit.

Variables

Name	Description
UseUpdateOptimization	In SDAC 4.00.0.4 update statements execution was optimized. This optimization changed the behaviour of affected rows count retrieval for the tables with triggers.

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5.13.4.1 __UseUpdateOptimization Variable

In SDAC 4.00.0.4 update statements execution was optimized. This optimization changed the behaviour of affected rows count retrieval for the tables with triggers.

Unit

[MSAccess](#)

Syntax

```
__UseUpdateOptimization: boolean;
```

Remarks

In SDAC 4.00.0.4 update statements execution was optimized. This optimization changed the behaviour of affected rows count retrieval for the tables with triggers. If a trigger performs modifications of other records reacting on a modification in the underlying table, SQL Server sends several values of affected rows count (including for modifications made by a trigger). Prior to SDAC 4.00.0.4 the first value was considered as affected rows count, when in SDAC 4.00.0.4 and higher it's the last value. However neither of these two approaches can be considered correct, as there can be triggers that snap into action both before modification and after modification. There is no way to determine which of the values returned by SQL Server is the correct value of affected rows count. Therefore we do not recommend using the [RowsAffected](#) property when updating tables with triggers.

The [StrictUpdate](#) mode is based on RowsAffected, therefore we also do not recommend using StrictUpdate when updating tables with triggers.

If you want to disable this optimization, set the __UseUpdateOptimization variable to False.

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5.13.5 Constants

Constants in the **MSAccess** unit.

Constants

Name	Description
------	-------------

SDACVersion	Read this constant to get the current version number for SDAC.
-----------------------------	--

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5.13.5.1 SDACVersion Constant

Read this constant to get the current version number for SDAC.

Unit

[MSAccess](#)

Syntax

```
SDACVersion = '11.1.0';
```

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5.14 MSClasses

This unit contains implementation of SQL Server classes.

Enumerations

Name	Description
TApplicationIntent	Specifies the application workload type when connecting to a server.
TCompactCommitMode	Specifies the way of buffer pool flushing on transaction commit.
TCompactVersion	Used in TMSCompactEdition to define the version of SQL Server Compact Edition.
TMSAuthentication	Specifies the authentication service used by database server to identify a user.
TMSCursorType	Cursor types supported by

	SQL Server.
TMSInitMode	Specifies file modes for opening a database file.
TMSLastIdentityValueFunction	Determines which system function to use to obtain an identifier when adding a record.
TMSOutputEncoding	Used to create encoding in TMSSQL.ExecuteForXML .
TMSPProvider	Use this property to specify a provider from the list of supported providers.
TNativeClientVersion	Used in TMSConnection to define the version of SQL Native Client.

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5.14.1 Enumerations

Enumerations in the **MSClasses** unit.

Enumerations

Name	Description
TApplicationIntent	Specifies the application workload type when connecting to a server.
TCompactCommitMode	Specifies the way of buffer pool flushing on transaction commit.
TCompactVersion	Used in TMSCompactEdition to define the version of SQL Server Compact Edition.
TMSAuthentication	Specifies the authentication service used by database server to identify a user.
TMSCursorType	Cursor types supported by SQL Server.
TMSInitMode	Specifies file modes for opening a database file.

TMSLastIdentityValueFunction	Determines which system function to use to obtain an identifier when adding a record.
TMSOutputEncoding	Used to create encoding in TMSSQL.ExecuteForXML .
TMSPProvider	Use this property to specify a provider from the list of supported providers.
TNativeClientVersion	Used in TMSConnection to define the version of SQL Native Client.

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5.14.1.1 TApplicationIntent Enumeration

Specifies the application workload type when connecting to a server.

Unit

[MSClasses](#)

Syntax

```
TApplicationIntent = (aiReadWrite, aiReadOnly);
```

Values

Value	Meaning
aiReadOnly	Client requests a read workload.
aiReadWrite	Client requests a read-write workload.

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5.14.1.2 TCompactCommitMode Enumeration

Specifies the way of buffer pool flushing on transaction commit.

Unit

[MSClasses](#)

Syntax

```
TCompactCommitMode = (cmAsynchCommit, cmSynchCommit);
```

Values

Value	Meaning
cmAsynchCommit	Asynchronous commit to disk. The default value.
cmSynchCommit	Synchronous commit to disk.

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5.14.1.3 TCompactVersion Enumeration

Used in TMSCompactEdition to define the version of SQL Server Compact Edition.

Unit

[MSClasses](#)

Syntax

```
TCompactVersion = (cvAuto, cv30, cv35);
```

Values

Value	Meaning
cv30	Use SQL Server Compact Edition version 3.0 or 3.1.
cv35	Use SQL Server Compact Edition version 3.5.
cvAuto	Tries to define the server version using the version of database file. If it is impossible, tries to work as with cv35 value assigned, if this is also impossible - as with cv30.

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5.14.1.4 TMSAuthentication Enumeration

Specifies the authentication service used by database server to identify a user.

Unit

[MSClasses](#)

Syntax

```
TMSAuthentication = (auWindows, auServer);
```

Values

Value	Meaning
auServer	An alternative way of identifying users by database server. To establish a connection valid TCustomDACConnection.Username and TCustomDACConnection.Password either hardcoded into application or provided in the server login prompt fields are required. The default value.
auWindows	Uses Windows NT/2000/XP integrated security, or "SSPI" (Security Support Provider Interface). The Username, Password, and LoginPrompt properties are ignored.

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5.14.1.5 TMSCursorType Enumeration

Cursor types supported by SQL Server.

Unit

[MSClasses](#)

Syntax

```
TMSCursorType = (ctDefaultResultSet, ctStatic, ctKeyset, ctDynamic, ctBaseTable);
```

Values

Value	Meaning
ctBaseTable	Base table cursor. This cursor is used for working with Compact

	<p>Edition. This cursor is the fastest of the SQL server cursors and the only cursor that interacts directly with the storage engine. This allows to increase the speed of data access several times. Data modifications, deletions, and insertions by other users are visible. If UniDirectional=False, the cursor is used only when fetching data, and Data updates are reflected on database by SQL statements execution. In order to use the cursor also for data modification it is necessary to set the UniDirectional property to True. But in this case the cursor does not support bookmarks and cannot be represented in multiline controls such as DBGrid.</p>
ctDefaultResultSet	<p>By the old SQL Server terminology is the Firehose cursor. It serves for the fastest data fetch from server to the client side. Allows to run batches. Data updates are reflected in the database only by SQL statements execution. The default value.</p>
ctDynamic	<p>Dynamic cursor. Used when data is not cached at the server and fetch is performed row by row as required. Doesn't support bookmarks and cannot be represented in multiline controls such as DBGrid. Data modifications, deletions, and insertions by other users are visible. Data updates are reflected on database both by SQL statements execution and server cursors means.</p>
ctKeyset	<p>Allows to cache only keyfields at the server. Fetching is performed row by row when a data-aware component or a program requests it. Records added by other users are not visible, and records deleted by other users are inaccessible. Data updates are reflected in the database both by SQL statements execution and server cursors means.</p>
ctStatic	<p>Static copying of records. Query execution results are cashed at the server. Fetch is performed row by row when a data-aware component or a program requests it. When a cursor is opened, all newly added updates are invisible. Used mostly for reporting.</p>

Remarks

ctStatic, ctKeyset, and ctDynamic cursors are server cursors. So the

[TCustomDADataset.FetchRows](#), [TCustomMSDataSet.FetchAll](#),

[TMemDataSet.CachedUpdates](#) properties don't have any influence on such cursors and only the Options.CursorUpdate option does.

The default value is ctDefaultResultSet.

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5.14.1.6 TMSInitMode Enumeration

Specifies file modes for opening a database file.

Unit

[MSClasses](#)

Syntax

```
TMSInitMode = (imReadOnly, imReadWrite, imExclusive, imShareRead);
```

Values

Value	Meaning
imExclusive	Database file is opened for exclusive use. This mode prevents others from opening this database file.
imReadOnly	Database file is opened for reading. Any modification operations are not allowed.
imReadWrite	Both read and write operations are allowed. The default value.
imShareRead	The database file is opened for reading and writing only by one user. Other users can not read or write to the database file.

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5.14.1.7 TMSLastIdentityValueFunction Enumeration

Determines which system function to use to obtain an identifier when adding a record.

Unit

[MSClasses](#)

Syntax

```
TMSLastIdentityValueFunction = (vfScopeIdentity, vfIdentCurrent, vfIdentity);
```

Values

Value	Meaning
vfIdentCurrent	The IDENT_CURRENT system function is used. It returns the last identity value generated for a specified table or view. The last

	identity value generated can be for any session and any scope.
vfIdentity	The @@IDENTITY system function is used. It returns the last-inserted identity value.
vfScopeIdentity	The SCOPE_IDENTITY system function is used. It returns the last identity value inserted into an identity column in the same scope. A scope is a module: a stored procedure, trigger, function, or batch.

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5.14.1.8 TMSOutputEncoding Enumeration

Used to create encoding in [TMSSQL.ExecuteForXML](#).

Unit

[MSClasses](#)

Syntax

```
TMSOutputEncoding = (oeANSI, oeUTF8, oeUnicode);
```

Values

Value	Meaning
oeANSI	1-byte ANSI encoding.
oeUnicode	2-byte Unicode encoding.
oeUTF8	UTF-8 variable-length encoding.

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5.14.1.9 TMSProvider Enumeration

Use this property to specify a provider from the list of supported providers.

Unit

[MSClasses](#)

Syntax

```
TMSProvider = (prAuto, prSQL, prNativeClient, prCompact, prDirect, prMSOLEDB);
```

Values

Value	Meaning
prAuto	<p>prAuto is the default value of the Provider property. With default value, SDAC will use one of the supported providers in the following order:</p> <ol style="list-style-type: none"> 1. prNativeClient 2. prMSOLEDB 3. prSQL <p>First SDAC checks whether SQL Server Native Client is installed on your system. If SQL Server Native Client is not found, SDAC looks for Microsoft OLE DB Driver for SQL Server. If neither SQLNCLI nor MSOLEDBSQL is installed on your system, the driver will use Microsoft OLE DB Provider for SQL Server.</p>
prCompact	SQL Server Compact Edition provider.
prDirect	Connect to SQL Server directly via TCP/IP.
prMSOLEDB	Uses Microsoft OLE DB Driver for SQL Server (MSOLEDBSQL). You need to have the driver installed on your system to use this value for Provider.
prNativeClient	Uses the SQL Native Client. It should be installed on the computer to use this Provider value. This provider offers the maximum functionality set.
prSQL	Uses the provider preinstalled with Windows, which has limited functionality.

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5.14.1.10 TNativeClientVersion Enumeration

Used in TMSConnection to define the version of SQL Native Client.

Unit

[MSClasses](#)

Syntax

```
TNativeClientVersion = (ncAuto, nc2005, nc2008, nc2012);
```

Values

Value	Meaning
nc2005	SQL Native Client 9 is used. SQL Native Client 9 is shipped with SQL Server versions since SQL Server 2005.
nc2008	SQL Native Client 10 is used. SQL Native Client 10 is shipped with SQL Server 2008.
nc2012	SQL Native Client 11 is used. SQL Native Client 11 is shipped with SQL Server 2012.
ncAuto	SDAC looks for an available SQL Native Client provider in the following sequence: Native Client 11, Native Client 10, Native Client 9. The first found provider from the sequence is used.

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5.15 MSCompactConnection

This unit contains implementation of the TMSCompactConnection class.

Classes

Name	Description
TMSCompactConnection	A component for establishing connection to Microsoft SQL Server Compact Edition , providing customized login support, and performing transaction control.
TMSCompactConnectionOptions	This class allows setting up the behaviour of the TMSCompactConnection class.

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5.15.1 Classes

Classes in the **MSCompactConnection** unit.

Classes

Name	Description
TMSCompactConnection	A component for establishing connection to Microsoft SQL Server Compact Edition , providing customized login support, and performing transaction control.
TMSCompactConnectionOptions	This class allows setting up the behaviour of the TMSCompactConnection class.

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5.15.1.1 TMSCompactConnection Class

A component for establishing connection to [Microsoft SQL Server Compact Edition](#) , providing customized login support, and performing transaction control.

For a list of all members of this type, see [TMSCompactConnection](#) members.

Unit

[MSCompactConnection](#)

Syntax

```
TMSCompactConnection = class(TCustomMSConnection);
```

Remarks

The TMSCompactConnection component is used to establish connection to [Microsoft SQL Server Compact Edition](#) , provide customized login support, and perform transaction control.

TMSCompactConnection publishes connection-related properties derived from its ancestor class [TCustomMSConnection](#).

Note: if you would like to use SDAC in a service, console or just in a separate thread, you need to call Colnitalize for each thread. Also call CoUnlnitalize when the thread is finished.

Inheritance Hierarchy

[TCustomDACConnection](#)

[TCustomMSConnection](#)

TMSCompactConnection

See Also

- [TCustomMSDataSet.Connection](#)
- [TMSSQL.Connection](#)
- [MSDN: Microsoft SQL Server Compact Edition](#)

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5.15.1.1.1 Members

[TMSCompactConnection](#) class overview.

Properties

Name	Description
ClientVersion (inherited from TCustomMSConnection)	Contains the version of Microsoft OLE DB Provider for SQL Server.
ConnectDialog (inherited from TCustomDACConnection)	Allows to link a TCustomConnectDialog component.
ConnectionString (inherited from TCustomDACConnection)	Used to specify the connection information, such as: UserName, Password, Server, etc.
ConvertEOL (inherited from TCustomDACConnection)	Allows customizing line breaks in string fields and parameters.
Database	Used to specify the database name that is a default source of data for SQL queries once a

	connection is established.
InitMode	Used to specify the file mode to be used for opening a database file.
InTransaction (inherited from TCustomDAConnection)	Indicates whether the transaction is active.
IsolationLevel (inherited from TCustomMSConnection)	Used to specify the extent to which all outside transactions interfere with subsequent transactions of the current connection.
LockEscalation	Specifies the number of locks to perform before escalating from row to table or from page to table..
LockTimeout	Used to specify the time for which a transaction will wait for a lock.
LoginPrompt (inherited from TCustomDAConnection)	Specifies whether a login dialog appears immediately before opening a new connection.
Options	Used to specify the behaviour of a TMSCompactConnection object.
Password (inherited from TCustomDAConnection)	Serves to supply a password for login.
Pooling (inherited from TCustomDAConnection)	Enables or disables using connection pool.
PoolingOptions (inherited from TCustomDAConnection)	Specifies the behaviour of connection pool.
Server (inherited from TCustomDAConnection)	Serves to supply the server name for login.
ServerVersion (inherited from TCustomMSConnection)	Contains the exact number of the SQL Server version.
TransactionCommitMode	Used to specify the way the buffer pool will be flushed on transaction commit.
Username (inherited from TCustomDAConnection)	Used to supply a user name for login.

Methods

Name	Description
ApplyUpdates (inherited from TCustomDAConnection)	Overloaded. Applies changes in datasets.
AssignConnect (inherited from TCustomMSConnection)	Shares database connection between the TCustomMSConnection components.
Commit (inherited from TCustomDAConnection)	Commits current transaction.
Connect (inherited from TCustomDAConnection)	Establishes a connection to the server.
CreateDataSet (inherited from TCustomMSConnection)	Returns a new object of the TCustomMSDataset class and associates it with this connection object.
CreateSQL (inherited from TCustomMSConnection)	Returns a new instance of the TMSSQL class and associates it with this connection object.
Disconnect (inherited from TCustomDAConnection)	Performs disconnect.
ExecProc (inherited from TCustomDAConnection)	Allows to execute stored procedure or function providing its name and parameters.
ExecProcEx (inherited from TCustomDAConnection)	Allows to execute a stored procedure or function.
ExecSQL (inherited from TCustomDAConnection)	Executes a SQL statement with parameters.
ExecSQLEx (inherited from TCustomDAConnection)	Executes any SQL statement outside the TQuery or TSQL components.
GetDatabaseNames (inherited from TCustomDAConnection)	Returns a database list from the server.
GetKeyFieldNames (inherited from TCustomDAConnection)	Provides a list of available key field names.
GetStoredProcNames (inherited from TCustomDAConnection)	Returns a list of stored procedures from the server.
GetTableNames (inherited from TCustomDAConnection)	Provides a list of available tables names.

<u>TCustomDACConnection</u>)	
<u>MonitorMessage</u> (inherited from <u>TCustomDACConnection</u>)	Sends a specified message through the <u>TCustomDASQLMonitor</u> component.
<u>OpenDatasets</u> (inherited from <u>TCustomMSConnection</u>)	Opens several datasets as one batch.
<u>Ping</u> (inherited from <u>TCustomDACConnection</u>)	Used to check state of connection to the server.
<u>RemoveFromPool</u> (inherited from <u>TCustomDACConnection</u>)	Marks the connection that should not be returned to the pool after disconnect.
<u>Rollback</u> (inherited from <u>TCustomDACConnection</u>)	Discards all current data changes and ends transaction.
<u>StartTransaction</u> (inherited from <u>TCustomDACConnection</u>)	Begins a new user transaction.

Events

Name	Description
<u>OnConnectionLost</u> (inherited from <u>TCustomDACConnection</u>)	This event occurs when connection was lost.
<u>OnError</u> (inherited from <u>TCustomDACConnection</u>)	This event occurs when an error has arisen in the connection.

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5.15.1.1.2 Properties

Properties of the **TMSCompactConnection** class.

For a complete list of the **TMSCompactConnection** class members, see the [TMSCompactConnection Members](#) topic.

Public

Name	Description
ClientVersion (inherited from TCustomMSConnection)	Contains the version of Microsoft OLE DB Provider for SQL Server.
ConnectDialog (inherited from TCustomDAConnection)	Allows to link a TCustomConnectDialog component.
ConnectionString (inherited from TCustomDAConnection)	Used to specify the connection information, such as: UserName, Password, Server, etc.
ConvertEOL (inherited from TCustomDAConnection)	Allows customizing line breaks in string fields and parameters.
InTransaction (inherited from TCustomDAConnection)	Indicates whether the transaction is active.
IsolationLevel (inherited from TCustomMSConnection)	Used to specify the extent to which all outside transactions interfere with subsequent transactions of the current connection.
LoginPrompt (inherited from TCustomDAConnection)	Specifies whether a login dialog appears immediately before opening a new connection.
Password (inherited from TCustomDAConnection)	Serves to supply a password for login.
Pooling (inherited from TCustomDAConnection)	Enables or disables using connection pool.
PoolingOptions (inherited from TCustomDAConnection)	Specifies the behaviour of connection pool.
Server (inherited from TCustomDAConnection)	Serves to supply the server name for login.
ServerVersion (inherited from TCustomMSConnection)	Contains the exact number of the SQL Server version.
Username (inherited from TCustomDAConnection)	Used to supply a user name for login.

Published

Name	Description
Database	Used to specify the

	database name that is a default source of data for SQL queries once a connection is established.
InitMode	Used to specify the file mode to be used for opening a database file.
LockEscalation	Specifies the number of locks to perform before escalating from row to table or from page to table..
LockTimeout	Used to specify the time for which a transaction will wait for a lock.
Options	Used to specify the behaviour of a TMSCompactConnection object.
TransactionCommitMode	Used to specify the way the buffer pool will be flushed on transaction commit.

See Also

- [TMSCompactConnection Class](#)
- [TMSCompactConnection Class Members](#)

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5.15.1.1.2.1 Database Property

Used to specify the database name that is a default source of data for SQL queries once a connection is established.

Class

[TMSCompactConnection](#)

Syntax

```
property Database: string;
```

Remarks

Use the Database property to specify the name of the database to be used once a connection is open.

If the Database property points to an existent database, the database will be opened.

If the Database property points to a non-existent database in a correct system path, further behavior depends on the value of the [TMSCompactConnectionOptions.ForceCreateDatabase](#) property.

If the Database property is set to ":memory:", a new temporary in-memory database will be created and opened.

If the Database property is empty, a new temporary on-disk database will be created and opened.

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5.15.1.1.2.2 InitMode Property

Used to specify the file mode to be used for opening a database file.

Class

[TMSCompactConnection](#)

Syntax

```
property InitMode: TMSInitMode default DefaultInitMode;
```

Remarks

Use the InitMode property to specify the file mode that will be used to open the database file.

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5.15.1.1.2.3 LockEscalation Property

Specifies the number of locks to perform before escalating from row to table or from page to table..

Class

[TMSCompactConnection](#)

Syntax

```
property LockEscalation: integer default  
defaultDefaultLockEscalation;
```

Remarks

Specifies how many locks should be performed before escalating from row to table or from page to table.

The default value is 100.

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5.15.1.1.2.4 LockTimeout Property

Used to specify the time for which a transaction will wait for a lock.

Class

[TMSCompactConnection](#)

Syntax

```
property LockTimeout: integer default defaultDefaultLockTimeout;
```

Remarks

Specifies how much time a transaction will wait for a lock.

Measured in milliseconds.

The default value is 2000.

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5.15.1.1.2.5 Options Property

Used to specify the behaviour of a TMSCompactConnection object.

Class

[TMSCompactConnection](#)

Syntax

```
property Options: TMSCompactConnectionOptions;
```

Remarks

Set the properties of Options to specify the behaviour of a TMSCompactConnection object.

Descriptions of all options are in the table below.

Option Name	Description
AutoShrinkThreshold	Specifies the amount of free space in the database file before automatic shrink starts.
CompactVersion	Specifies which version of SQL Server Compact will be used.
DefaultLockEscalation	Specifies how many locks should be performed before trying escalation from row to page or from page to table.
DefaultLockTimeout	Specifies how much time in milliseconds a transaction will wait for a lock.
FlushInterval	Specifies the interval at which committed transactions are flushed to disk.
ForceCreateDatabase	Used to force TMSCompactConnection to create a new database before opening a connection, if the database is not exists.
LocaleIdentifier	Used to specify the preferable locale ID.
MaxBufferSize	Specifies how much memory SQL Server Compact Edition can use before flushing changes to disk.
MaxDatabaseSize	Specified maximum size of the main database file.
TempFileDirectory	Specifies the temp file directory.
TempFileMaxSize	Specified maximum size of the temporary database file.

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5.15.1.1.2.6 TransactionCommitMode Property

Used to specify the way the buffer pool will be flushed on transaction commit.

Class

[TMSCompactConnection](#)

Syntax

```
property TransactionCommitMode: TCompactCommitMode default
DefaultTransactionCommitMode;
```

Remarks

Specifies in what way the buffer pool will be flushed on transaction commit.

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5.15.1.2 TMSCompactConnectionOptions Class

This class allows setting up the behaviour of the TMSCompactConnection class.

For a list of all members of this type, see [TMSCompactConnectionOptions](#) members.

Unit

[MSCompactConnection](#)

Syntax

```
TMSCompactConnectionOptions = class(TCustomMSConnectionOptions);
```

Inheritance Hierarchy

[TDACConnectionOptions](#)

[TCustomMSConnectionOptions](#)

TMSCompactConnectionOptions

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5.15.1.2.1 Members

[TMSCompactConnectionOptions](#) class overview.

Properties

Name	Description
AllowImplicitConnect (inherited from TDAConnectionOptions)	Specifies whether to allow or not implicit connection opening.
AutoShrinkThreshold	Specifies the amount of free space in the database file before automatic shrink starts.
CompactVersion	Specifies which version of SQL Server Compact will be used.
DefaultLockEscalation	Specifies how many locks should be performed before trying escalation from row to page or from page to table.
DefaultLockTimeout	Specifies how much time in milliseconds a transaction will wait for a lock.
DefaultSortType (inherited from TDAConnectionOptions)	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
DisconnectedMode (inherited from TDAConnectionOptions)	Used to open a connection only when needed for performing a server call and closes after performing the operation.
Encrypt (inherited from TCustomMSConnectionOptions)	Specifies if data should be encrypted before sending it over the network.
FlushInterval	Specifies the interval at which committed transactions are flushed to disk.

ForceCreateDatabase	Used to force TMSCompactConnection to create a new database before opening a connection, if the database is not exists.
KeepDesignConnected (inherited from TDAConnectionOptions)	Used to prevent an application from establishing a connection at the time of startup.
LocaleIdentifier	Used to specify the preferable locale ID.
LocalFailover (inherited from TDAConnectionOptions)	If True, the TCustomDAConnection.OnConnectionLost event occurs and a failover operation can be performed after connection breaks.
MaxBufferSize	Specifies how much memory SQL Server Compact Edition can use before flushing changes to disk.
MaxDatabaseSize	Specified maximum size of the main database file.
NumericType (inherited from TCustomMSConnectionOptions)	Specifies the format of storing and representing the NUMERIC (DECIMAL) fields for all TCustomMSDataSets associated with the given connection.
Provider (inherited from TCustomMSConnectionOptions)	Used to specify a provider from the list of supported providers.
QuotedIdentifier (inherited from TCustomMSConnectionOptions)	Causes Microsoft SQL Server to follow the SQL-92 rules regarding quotation mark delimiting identifiers and literal strings.
TempFileDirectory	Specifies the temp file directory.
TempFileMaxSize	Specified maximum size of the temporary database file.
UseWideMemos (inherited from	Used to manage field type

TCustomMSConnectionOptions)	creation for the NTEXT data type.
--	-----------------------------------

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5.15.1.2.2 Properties

Properties of the **TMSCompactConnectionOptions** class.

For a complete list of the **TMSCompactConnectionOptions** class members, see the [TMSCompactConnectionOptions Members](#) topic.

Public

Name	Description
DefaultSortType (inherited from TDACConnectionOptions)	Used to determine the default type of local sorting for string fields. It is used when a sort type is not specified explicitly after the field name in the TMemDataSet.IndexFieldNames property of a dataset.
DisconnectedMode (inherited from TDACConnectionOptions)	Used to open a connection only when needed for performing a server call and closes after performing the operation.
Encrypt (inherited from TCustomMSConnectionOptions)	Specifies if data should be encrypted before sending it over the network.
KeepDesignConnected (inherited from TDACConnectionOptions)	Used to prevent an application from establishing a connection at the time of startup.
LocalFailover (inherited from TDACConnectionOptions)	If True, the TCustomDAConnection.OnConnectionLost event occurs and a failover operation can be performed after connection breaks.
NumericType (inherited from	Specifies the format of storing and representing the

<u>TCustomMSConnectionOptions</u>)	NUMERIC (DECIMAL) fields for all <u>TCustomMSDataSets</u> associated with the given connection.
<u>Provider</u> (inherited from <u>TCustomMSConnectionOptions</u>)	Used to specify a provider from the list of supported providers.
<u>QuotedIdentifier</u> (inherited from <u>TCustomMSConnectionOptions</u>)	Causes Microsoft SQL Server to follow the SQL-92 rules regarding quotation mark delimiting identifiers and literal strings.
<u>UseWideMemos</u> (inherited from <u>TCustomMSConnectionOptions</u>)	Used to manage field type creation for the NTEXT data type.

Published

Name	Description
<u>AllowImplicitConnect</u> (inherited from <u>TDACConnectionOptions</u>)	Specifies whether to allow or not implicit connection opening.
<u>AutoShrinkThreshold</u>	Specifies the amount of free space in the database file before automatic shrink starts.
<u>CompactVersion</u>	Specifies which version of SQL Server Compact will be used.
<u>DefaultLockEscalation</u>	Specifies how many locks should be performed before trying escalation from row to page or from page to table.
<u>DefaultLockTimeout</u>	Specifies how much time in milliseconds a transaction will wait for a lock.
<u>FlushInterval</u>	Specifies the interval at which committed transactions are flushed to disk.
<u>ForceCreateDatabase</u>	Used to force TMSCompactConnection to create a new database

	before opening a connection, if the database is not exists.
LocaleIdentifier	Used to specify the preferable locale ID.
MaxBufferSize	Specifies how much memory SQL Server Compact Edition can use before flushing changes to disk.
MaxDatabaseSize	Specified maximum size of the main database file.
TempFileDirectory	Specifies the temp file directory.
TempFileMaxSize	Specified maximum size of the temporary database file.

See Also

- [TMSCompactConnectionOptions Class](#)
- [TMSCompactConnectionOptions Class Members](#)

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5.15.1.2.2.1 AutoShrinkThreshold Property

Specifies the amount of free space in the database file before automatic shrink starts.

Class

[TMSCompactConnectionOptions](#)

Syntax

```
property AutoShrinkThreshold: integer default defaultAutoShrinkThreshold;
```

Remarks

Use the AutoShrinkThreshold property to specify the amount of free space in the database file before automatic shrink starts. Measured in percents. The default value is 60.

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5.15.1.2.2.2 CompactVersion Property

Specifies which version of SQL Server Compact will be used.

Class

[TMSCompactConnectionOptions](#)

Syntax

```
property CompactVersion: TCompactVersion;
```

Remarks

Use the CompactVersion property to specify which version of SQL Server Compact will be used. Useful when there are SQL Server Compact 3.0 and 3.5 installed on the same computer. The default value is cvAuto. It means that if both server versions were installed simultaneously, SQL Server Compact 3.5 will be used.

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5.15.1.2.2.3 DefaultLockEscalation Property

Specifies how many locks should be performed before trying escalation from row to page or from page to table.

Class

[TMSCompactConnectionOptions](#)

Syntax

```
property DefaultLockEscalation: integer default  
defaultDefaultLockEscalation;
```

Remarks

Use the DefaultLockEscalation property to specify how many locks should be performed before trying escalation from row to page or from page to table. The default value is 100.

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5.15.1.2.2.4 DefaultLockTimeout Property

Specifies how much time in milliseconds a transaction will wait for a lock.

Class

[TMSCompactConnectionOptions](#)

Syntax

```
property DefaultLockTimeout: integer;
```

Remarks

Use the DefaultLockTimeout property to specify how much time in milliseconds a transaction will wait for a lock. The default value is 2000 ms.

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5.15.1.2.2.5 FlushInterval Property

Specifies the interval at which committed transactions are flushed to disk.

Class

[TMSCompactConnectionOptions](#)

Syntax

```
property FlushInterval: integer default DefaultFlushInterval;
```

Remarks

Use the FlushInterval property to specify the interval at which committed transactions are flushed to disk. Measured in seconds. The default value is 10.

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5.15.1.2.2.6 ForceCreateDatabase Property

Used to force TMSCompactConnection to create a new database before opening a connection, if the database is not exists.

Class

[TMSCompactConnectionOptions](#)

Syntax

```
property ForceCreateDatabase: boolean;
```

Remarks

By default, when connecting to a database, SQL Server does not check whether there exists the specified file. If the [TMSCompactConnection.Database](#) property points to a non-existent database in correct system path, a new empty database will be created and opened, and no warning message will be displayed. In the case if an incorrect database name was entered by mistake, this behavior can lead to misunderstandings and errors in the operation of the software.

If the TMSCompactConnectionOptions.ForceDatabaseCreate property is set to False, before establishing a connection to the database, [TMSCompactConnection](#) will check whether the specified file exists. If the file does not exist, an appropriate exception will be raised.

If the TMSConnectionOptions.ForceDatabaseCreate property is set to True, no checking will be performed and a new database will be created.

The default value of the TMSCompactConnectionOptions.ForceCreateDatabase property is False.

The default value of the TMSConnectionOptions.ForceDatabaseCreate property is False.

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5.15.1.2.2.7 LocaleIdentifier Property

Used to specify the preferable locale ID.

Class

[TMSCompactConnectionOptions](#)

Syntax

```
property LocaleIdentifier: string stored False;
```

Remarks

Use the LocaleIdentifier property to specify the locale ID. The default value is the system default locale. LocaleIdentifier can be set using either locale ID:

```
MSCompactConnection.Options.LocaleIdentifier := '1033';
```

, or locale name:

```
MSCompactConnection.Options.LocaleIdentifier := 'English (United States)';
```

It is better to use locale IDs because locale names may be different on different Windows versions.

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5.15.1.2.2.8 MaxBufferSize Property

Specifies how much memory SQL Server Compact Edition can use before flushing changes to disk.

Class

[TMSCompactConnectionOptions](#)

Syntax

```
property MaxBufferSize: integer default DefaultMaxBufferSize;
```

Remarks

Use the MaxBufferSize property to specify how much memory SQL Server Compact Edition can use before flushing changes to disk. Measured in kilobytes. The default value is 640.

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5.15.1.2.2.9 MaxDatabaseSize Property

Specified maximum size of the main database file.

Class

[TMSCompactConnectionOptions](#)

Syntax

```
property MaxDatabaseSize: integer default DefaultMaxDatabaseSize;
```

Remarks

Specified maximum size of the main database file. Measured in megabytes. The default value is 128.

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5.15.1.2.2.10 TempFileDirectory Property

Specifies the temp file directory.

Class

[TMSCompactConnectionOptions](#)

Syntax

```
property TempFileDirectory: string;
```

Remarks

Use the TempFileDirectory property to specify the temp file directory. If this option is not assigned, the current database is used as a temporary database.

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5.15.1.2.2.11 TempFileMaxSize Property

Specified maximum size of the temporary database file.

Class

[TMSCompactConnectionOptions](#)

Syntax

```
property TempFileMaxSize: integer default DefaultTempFileMaxSize;
```

Remarks

Specified maximum size of the temporary database file. Measured in megabytes. The default value is 128.

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5.16 MSConnectionPool

This unit contains the TMSConnectionPoolManager class for managing connection pool.

Classes

Name	Description
TMSConnectionPoolManager	A class of methods that are used for managing SDAC connection pool.

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5.16.1 Classes

Classes in the **MSConnectionPool** unit.

Classes

Name	Description
TMSConnectionPoolManager	A class of methods that are used for managing SDAC

connection pool.

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5.16.1.1 TMSConnectionPoolManager Class

A class of methods that are used for managing SDAC connection pool.

For a list of all members of this type, see [TMSConnectionPoolManager](#) members.

Unit

[MSConnectionPool](#)

Syntax

```
TMSConnectionPoolManager = class(TCRConnectionPoolManager);
```

Remarks

Use the TMSConnectionPoolManager methods to manage SDAC connection pool.

Inheritance Hierarchy

TCRConnectionPoolManager
TMSConnectionPoolManager

See Also

- [Connection Pooling](#)

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5.16.1.1.1 Members

[TMSConnectionPoolManager](#) class overview.

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5.17 MSDataTypeMap

This unit contains the implementation of mapping between SQL Server and Delphi data types.

Constants

Name	Description
msBigint	Used to map bigint to Delphi data types.
msBinary	Used to map binary to Delphi data types.
msBit	Used to map bit to Delphi data types.
msChar	Used to map char to Delphi data types.
msDate	Used to map date to Delphi data types.
msDatetime	Used to map datetime to Delphi data types.
msDatetime2	Used to map datetime2 to Delphi data types.
msDatetimeoffset	Used to map datetimeoffset to Delphi data types.
msDecimal	Used to map decimal to Delphi data types.
msFloat	Used to map float to Delphi data types.
msImage	Used to map image to Delphi data types.
msInt	Used to map int to Delphi data types.
msMoney	Used to map money to Delphi data types.
msNChar	Used to map nchar to Delphi data types.
msNText	Used to map ntext to Delphi data types.
msNumeric	Used to map numeric to Delphi data types.
msNVarChar	Used to map nvarchar to Delphi data types.

msReal	Used to map real to Delphi data types.
msSmalldatetime	Used to map smalldatetime to Delphi data types.
msSmallint	Used to map smallint to Delphi data types.
msSmallmoney	Used to map smallmoney to Delphi data types.
msSqlVariant	Used to map sql_variant to Delphi data types.
msText	Used to map text to Delphi data types.
msTime	Used to map time to Delphi data types.
msTimestamp	Used to map timestamp to Delphi data types.
msTinyint	Used to map tinyint to Delphi data types.
msUniqueidentifier	Used to map uniqueidentifier to Delphi data types.
msVarbinary	Used to map varbinary to Delphi data types.
msVarchar	Used to map varchar to Delphi data types.
msXml	Used to map xml to Delphi data types.

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5.17.1 Constants

Constants in the **MSDataTypeMap** unit.

Constants

Name	Description
msBigint	Used to map bigint to Delphi data types.
msBinary	Used to map binary to Delphi data types.

msBit	Used to map bit to Delphi data types.
msChar	Used to map char to Delphi data types.
msDate	Used to map date to Delphi data types.
msDatetime	Used to map datetime to Delphi data types.
msDatetime2	Used to map datetime2 to Delphi data types.
msDatetimeoffset	Used to map datetimeoffset to Delphi data types.
msDecimal	Used to map decimal to Delphi data types.
msFloat	Used to map float to Delphi data types.
msImage	Used to map image to Delphi data types.
msInt	Used to map int to Delphi data types.
msMoney	Used to map money to Delphi data types.
msNChar	Used to map nchar to Delphi data types.
msNText	Used to map ntext to Delphi data types.
msNumeric	Used to map numeric to Delphi data types.
msNVarchar	Used to map nvarchar to Delphi data types.
msReal	Used to map real to Delphi data types.
msSmalldatetime	Used to map smalldatetime to Delphi data types.
msSmallint	Used to map smallint to Delphi data types.
msSmallmoney	Used to map smallmoney to Delphi data types.
msSqlVariant	Used to map sql_variant to Delphi data types.
msText	Used to map text to Delphi data types.

	data types.
msTime	Used to map time to Delphi data types.
msTimestamp	Used to map timestamp to Delphi data types.
msTinyint	Used to map tinyint to Delphi data types.
msUniqueidentifier	Used to map uniqueidentifier to Delphi data types.
msVarbinary	Used to map varbinary to Delphi data types.
msVarchar	Used to map varchar to Delphi data types.
msXml	Used to map xml to Delphi data types.

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5.17.1.1 msBigint Constant

Used to map **bigint** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msBigint = msBase + 5;
```

Remarks

Use the **msBigint** constant to map the SQL Server **bigint** data type to Delphi data types.

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5.17.1.2 msBinary Constant

Used to map **binary** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msBinary = msBase + 23;
```

Remarks

Use the **msBinary** constant to map the SQL Server **binary** data type to Delphi data types.

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5.17.1.3 msBit Constant

Used to map **bit** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msBit = msBase + 1;
```

Remarks

Use the **msBit** constant to map the SQL Server **bit** data type to Delphi data types.

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5.17.1.4 msChar Constant

Used to map **char** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msChar = msBase + 17;
```

Remarks

Use the **msChar** constant to map the SQL Server **char** data type to Delphi data types.

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5.17.1.5 msDate Constant

Used to map **date** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msDate = msBase + 13;
```

Remarks

Use the **msDate** constant to map the SQL Server **date** data type to Delphi data types.

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5.17.1.6 msDatetime Constant

Used to map **datetime** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msDatetime = msBase + 11;
```

Remarks

Use the **msDatetime** constant to map the SQL Server **datetime** data type to Delphi data types.

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5.17.1.7 msDatetime2 Constant

Used to map **datetime2** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msDatetime2 = msBase + 15;
```

Remarks

Use the **msDatetime2** constant to map the SQL Server **datetime2** data type to Delphi data types.

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5.17.1.8 msDatetimeoffset Constant

Used to map **datetimeoffset** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msDatetimeoffset = msBase + 16;
```

Remarks

Use the **msDatetimeoffset** constant to map the SQL Server **datetimeoffset** data type to Delphi data types.

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5.17.1.9 msDecimal Constant

Used to map **decimal** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msDecimal = msBase + 6;
```

Remarks

Use the **msDecimal** constant to map the SQL Server **decimal** data type to Delphi data types.

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5.17.1.10 msFloat Constant

Used to map **float** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msFloat = msBase + 9;
```

Remarks

Use the **msFloat** constant to map the SQL Server **float** data type to Delphi data types.

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5.17.1.11 msImage Constant

Used to map **image** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msImage = msBase + 25;
```

Remarks

Use the **msImage** constant to map the SQL Server **image** data type to Delphi data types.

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5.17.1.12 msInt Constant

Used to map **int** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msInt = msBase + 4;
```

Remarks

Use the **msInt** constant to map the SQL Server **int** data type to Delphi data types.

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5.17.1.13 msMoney Constant

Used to map **money** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msMoney = msBase + 8;
```

Remarks

Use the **msMoney** constant to map the SQL Server **money** data type to Delphi data types.

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5.17.1.14 msNChar Constant

Used to map **nchar** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msNChar = msBase + 20;
```

Remarks

Use the **msNChar** constant to map the SQL Server **nchar** data type to Delphi data types.

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5.17.1.15 msNText Constant

Used to map **ntext** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msNText = msBase + 22;
```

Remarks

Use the **msNText** constant to map the SQL Server **ntext** data type to Delphi data types.

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5.17.1.16 msNumeric Constant

Used to map **numeric** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msNumeric = msDecimal;
```

Remarks

Use the **msNumeric** constant to map the SQL Server **numeric** data type to Delphi data types.

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5.17.1.17 msNVarChar Constant

Used to map **nvarchar** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msNVarChar = msBase + 21;
```

Remarks

Use the **msNVarChar** constant to map the SQL Server **nvarchar** data type to Delphi data types.

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5.17.1.18 msReal Constant

Used to map **real** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msReal = msBase + 10;
```

Remarks

Use the **msReal** constant to map the SQL Server **real** data type to Delphi data types.

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5.17.1.19 msSmalldatetime Constant

Used to map **smalldatetime** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msSmalldatetime = msBase + 12;
```

Remarks

Use the **msSmalldatetime** constant to map the SQL Server **smalldatetime** data type to Delphi data types.

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5.17.1.20 msSmallint Constant

Used to map **smallint** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msSmallint = msBase + 3;
```

Remarks

Use the **msSmallint** constant to map the SQL Server **smallint** data type to Delphi data types.

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5.17.1.21 msSmallmoney Constant

Used to map **smallmoney** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msSmallmoney = msBase + 7;
```

Remarks

Use the **msSmallmoney** constant to map the SQL Server **smallmoney** data type to Delphi data types.

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5.17.1.22 msSqlVariant Constant

Used to map **sql_variant** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msSqlVariant = msBase + 28;
```

Remarks

Use the **msSqlVariant** constant to map the SQL Server **sql_variant** data type to Delphi data types.

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5.17.1.23 msText Constant

Used to map **text** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msText = msBase + 19;
```

Remarks

Use the **msText** constant to map the SQL Server **text** data type to Delphi data types.

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5.17.1.24 msTime Constant

Used to map **time** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msTime = msBase + 14;
```

Remarks

Use the **msTime** constant to map the SQL Server **time** data type to Delphi data types.

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5.17.1.25 msTimestamp Constant

Used to map **timestamp** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msTimestamp = msBase + 26;
```

Remarks

Use the **msTimestamp** constant to map the SQL Server **timestamp** data type to Delphi data types.

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5.17.1.26 msTinyint Constant

Used to map **tinyint** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msTinyint = msBase + 2;
```

Remarks

Use the **msTinyint** constant to map the SQL Server **tinyint** data type to Delphi data types.

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5.17.1.27 msUniqueIdentifier Constant

Used to map **uniqueidentifier** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msUniqueIdentifier = msBase + 27;
```

Remarks

Use the **msUniqueIdentifier** constant to map the SQL Server **uniqueidentifier** data type to Delphi data types.

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5.17.1.28 msVarbinary Constant

Used to map **varbinary** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msVarbinary = msBase + 24;
```

Remarks

Use the **msVarbinary** constant to map the SQL Server **varbinary** data type to Delphi data types.

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5.17.1.29 msVarchar Constant

Used to map **varchar** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msVarchar = msBase + 18;
```

Remarks

Use the **msVarchar** constant to map the SQL Server **varchar** data type to Delphi data types.

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5.17.1.30 msXml Constant

Used to map **xml** to Delphi data types.

Unit

[MSDataTypeMap](#)

Syntax

```
msXml = msBase + 29;
```

Remarks

Use the **msXml** constant to map the SQL Server **xml** data type to Delphi data types.

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5.18 MSDump

This unit contains implementation of the TMSDump component.

Classes

Name	Description
TMSDump	The class that serves for storing data from tables or editable views as a script and for restoring data from a received script.
TMSDumpOptions	This class allows setting up the behaviour of the TMSDump class.

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5.18.1 Classes

Classes in the **MSDump** unit.

Classes

Name	Description
TMSDump	The class that serves for storing data from tables or editable views as a script and for restoring data from a received script.
TMSDumpOptions	This class allows setting up the behaviour of the TMSDump class.

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5.18.1.1 TMSDump Class

The class that serves for storing data from tables or editable views as a script and for restoring data from a received script.

For a list of all members of this type, see [TMSDump](#) members.

Unit

[MSDump](#)

Syntax

```
TMSDump = class(TDADump);
```

Remarks

TMSDump serves to store data from tables or editable views as a script and to restore data from a received script.

Use the [TDADump.TableNames](#) property to specify the list of objects to be stored. To launch a generating script, call the [TDADump.Backup](#) method.

TMSDump also can generate scripts for a query. Just call the [TDADump.BackupQuery](#) method and pass a query statement into it. The object list assigned to the TableNames property is ignored if you call [TDADump.BackupQuery](#). The generated script can be viewed in the [TDADump.SQL](#) property.

TMSDump works on the client side. It causes large network loading.

Inheritance Hierarchy

[TDADump](#)

TMSDump

See Also

- [TDADump.Backup](#)
- [TDADump.Restore](#)

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5.18.1.1.1 Members

[TMSDump](#) class overview.

Properties

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data

	store.
Debug (inherited from TDADump)	Used to display the statement that is being executed and the values and types of its parameters.
Options	Used to specify the behaviour of a TMSDump object.
SQL (inherited from TDADump)	Used to set or get the dump script.
TableNames (inherited from TDADump)	Used to set the names of the tables to dump.

Methods

Name	Description
Backup (inherited from TDADump)	Dumps database objects to the TDADump.SQL property.
BackupQuery (inherited from TDADump)	Dumps the results of a particular query.
BackupToFile (inherited from TDADump)	Dumps database objects to the specified file.
BackupToStream (inherited from TDADump)	Dumps database objects to the stream.
Restore (inherited from TDADump)	Executes a script contained in the SQL property.
RestoreFromFile (inherited from TDADump)	Executes a script from a file.
RestoreFromStream (inherited from TDADump)	Executes a script received from the stream.

Events

Name	Description
OnBackupProgress (inherited from TDADump)	Occurs to indicate the TDADump.Backup , M:Devart.Dac.TDADump.BackupToFile(System.String) or M:Devart.Dac.TDADump.BackupToStream(Borland.Vcl.TStream) method execution

	progress.
OnError (inherited from TDADump)	Occurs when SQL Server raises some error on TDADump.Restore .
OnRestoreProgress (inherited from TDADump)	Occurs to indicate the TDADump.Restore , TDADump.RestoreFromFile , or TDADump.RestoreFromStream method execution progress.

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5.18.1.1.2 Properties

Properties of the **TMSDump** class.

For a complete list of the **TMSDump** class members, see the [TMSDump Members](#) topic.

Published

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.
Debug (inherited from TDADump)	Used to display the statement that is being executed and the values and types of its parameters.
Options	Used to specify the behaviour of a TMSDump object.
SQL (inherited from TDADump)	Used to set or get the dump script.
TableNames (inherited from TDADump)	Used to set the names of the tables to dump.

See Also

- [TMSDump Class](#)

- [TMSDump Class Members](#)

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5.18.1.1.2.1 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

[TMSDump](#)

Syntax

```
property Connection: TMSConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a data store.

Set at design-time by selecting from the list of the provided [TMSConnection](#) objects.

At runtime, set the Connection property to reference an existing [TMSConnection](#) object.

See Also

- [TMSConnection](#)

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5.18.1.1.2.2 Options Property

Used to specify the behaviour of a TMSDump object.

Class

[TMSDump](#)

Syntax

```
property Options: TMSDumpOptions;
```

Remarks

Set the properties of Options to specify the behaviour of a TMSDump object.

Descriptions of all options are in the table below.

Option Name	Description
DisableConstraints	Allows to disable foreign keys when dumping multiple tables.
IdentityInsert	Used to add SET IDENTITY_INSERT TableName ON at the beginning of the script and SET IDENTITY_INSERT TableName OFF at the end of the script.

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5.18.1.2 TMSDumpOptions Class

This class allows setting up the behaviour of the TMSDump class.

For a list of all members of this type, see [TMSDumpOptions](#) members.

Unit

[MSDump](#)

Syntax

```
TMSDumpOptions = class(TDADumpOptions);
```

Inheritance Hierarchy

[TDADumpOptions](#)
TMSDumpOptions

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5.18.1.2.1 Members

[TMSDumpOptions](#) class overview.

Properties

Name	Description
AddDrop (inherited from TDADumpOptions)	Used to add drop statements to a script before creating statements.
CompleteInsert (inherited from TDADumpOptions)	Used to explicitly specify the table fields names when generating the INSERT SQL query. The default value is False.
DisableConstraints	Allows to disable foreign keys when dumping multiple tables.
GenerateHeader (inherited from TDADumpOptions)	Used to add a comment header to a script.
IdentityInsert	Used to add SET IDENTITY_INSERT TableName ON at the beginning of the script and SET IDENTITY_INSERT TableName OFF at the end of the script.
QuoteNames (inherited from TDADumpOptions)	Used for TDADump to quote all database object names in generated SQL statements.

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5.18.1.2.2 Properties

Properties of the **TMSDumpOptions** class.

For a complete list of the **TMSDumpOptions** class members, see the [TMSDumpOptions Members](#) topic.

Published

Name	Description
AddDrop (inherited from TDADumpOptions)	Used to add drop statements to a script before creating statements.
CompleteInsert (inherited from TDADumpOptions)	Used to explicitly specify the table fields names when

	generating the INSERT SQL query. The default value is False.
DisableConstraints	Allows to disable foreign keys when dumping multiple tables.
GenerateHeader (inherited from TDADumpOptions)	Used to add a comment header to a script.
IdentityInsert	Used to add SET IDENTITY_INSERT TableName ON at the beginning of the script and SET IDENTITY_INSERT TableName OFF at the end of the script.
QuoteNames (inherited from TDADumpOptions)	Used for TDADump to quote all database object names in generated SQL statements.

See Also

- [TMSDumpOptions Class](#)
- [TMSDumpOptions Class Members](#)

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5.18.1.2.2.1 DisableConstraints Property

Allows to disable foreign keys when dumping multiple tables.

Class

[TMSDumpOptions](#)

Syntax

```
property DisableConstraints: Boolean default False;
```

Remarks

Use the DisableConstraints property to disable foreign keys when dumping multiple tables.
The default value is False.

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5.18.1.2.2.2 IdentityInsert Property

Used to add SET IDENTITY_INSERT TableName ON at the beginning of the script and SET IDENTITY_INSERT TableName OFF at the end of the script.

Class

[TMSDumpOptions](#)

Syntax

```
property IdentityInsert: Boolean default False;
```

Remarks

Use the IdentityInsert property to add SET IDENTITY_INSERT TableName ON at the beginning of the script and SET IDENTITY_INSERT TableName OFF at the end of the script. The first line allows explicit values to be inserted into the identity column of a table and INSERT statements are generated with IDENTITY field values. Otherwise the IDENTITY field will not be included to the INSERT statements. SET IDENTITY_INSERT will not be added while the option is ON if the table does not have a field identified as IDENTITY or there are no records in the table.

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5.19 MSLoader

This unit contains implementation of the TMSLoader component.

Classes

Name	Description
TMSColumn	A component representing the attributes for column loading.
TMSLoader	TMSLoader allows to load external data into the server database.

TMSLoaderOptions	This class allows setting up the behaviour of the TMSLoader class.
----------------------------------	--

Types

Name	Description
TMSPutDataEvent	This type is used for the TMSLoader.OnPutData event.

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5.19.1 Classes

Classes in the **MSLoader** unit.

Classes

Name	Description
TMSColumn	A component representing the attributes for column loading.
TMSLoader	TMSLoader allows to load external data into the server database.
TMSLoaderOptions	This class allows setting up the behaviour of the TMSLoader class.

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5.19.1.1 TMSColumn Class

A component representing the attributes for column loading.

For a list of all members of this type, see [TMSColumn](#) members.

Unit

[MSLoader](#)

Syntax

TMSColumn = **class**([TDAColumn](#));

Remarks

Each [TMSLoader](#) uses [TDAColumns](#) to maintain a collection of TMSColumn objects. TMSColumn object represents the attributes for column loading. Every TMSColumn object corresponds to one of the table fields with the same name as its [TDAColumn.Name](#) property.

To create columns at design-time use column editor of the TMSLoader component.

Inheritance Hierarchy

[TDAColumn](#)
TMSColumn

See Also

- [TMSLoader](#)
- [TDAColumns](#)

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5.19.1.1.1 Members

[TMSColumn](#) class overview.

Properties

Name	Description
FieldType (inherited from TDAColumn)	Used to specify the types of values that will be loaded.
Name (inherited from TDAColumn)	Used to specify the field name of loading table.
Precision	Defines the size used in the definition of the physical database field for the data types that support different precision.
Scale	Used to set the scale of

	numeric values.
Size	Used to set the size of numeric values.

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5.19.1.1.2 Properties

Properties of the **TMSColumn** class.

For a complete list of the **TMSColumn** class members, see the [TMSColumn Members](#) topic.

Published

Name	Description
FieldType (inherited from TDAColumn)	Used to specify the types of values that will be loaded.
Name (inherited from TDAColumn)	Used to specify the field name of loading table.
Precision	Defines the size used in the definition of the physical database field for the data types that support different precision.
Scale	Used to set the scale of numeric values.
Size	Used to set the size of numeric values.

See Also

- [TMSColumn Class](#)
- [TMSColumn Class Members](#)

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5.19.1.1.2.1 Precision Property

Defines the size used in the definition of the physical database field for the data types that support different precision.

Class

[TMSColumn](#)

Syntax

```
property Precision: integer default 0;
```

Remarks

The Precision property can be filled automatically, when calling [TDALoader.CreateColumns](#) or when setting the [TDALoader.TableName](#) property. User can manually create fields by filling TMSColumn properties.

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5.19.1.1.2.2 Scale Property

Used to set the scale of numeric values.

Class

[TMSColumn](#)

Syntax

```
property Scale: integer default 0;
```

Remarks

Use the Scale property to set the scale of numeric values.

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5.19.1.1.2.3 Size Property

Used to set the size of numeric values.

Class

[TMSColumn](#)

Syntax

```
property Size: integer;
```

Remarks

Use the Size property to set the size of numeric values.

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5.19.1.2 TMSLoader Class

TMSLoader allows to load external data into the server database.

For a list of all members of this type, see [TMSLoader](#) members.

Unit

[MSLoader](#)

Syntax

```
TMSLoader = class (TDALoader);
```

Remarks

TMSLoader serves for fast loading of data to the server. TMSLoader functionality is based on the SQL Server memory-based bulk-copy operations using the IRowsetFastLoad interface. Simultaneous loading into multiple tables is not supported. Data loading is performed without transactions.

Inheritance Hierarchy

[TDALoader](#)

TMSLoader

See Also

- [MSDN: IRowsetFastLoad Usage and Limitations](#)

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5.19.1.2.1 Members

[TMSLoader](#) class overview.

Properties

Name	Description
Columns (inherited from TDALoader)	Used to add a TDAColumn object for each field that will be loaded.
Connection (inherited from TDALoader)	property. Used to specify TCustomDAConnection in which TDALoader will be executed.
KeepIdentity	Used to specify the way IDENTITY column values must be handled.
KeepNulls	Used to specify the way NULL values for columns with a DEFAULT constraint must be handled.
Options	Used to specify the behaviour of a TMSLoader object.
TableName (inherited from TDALoader)	Used to specify the name of the table to which data will be loaded.

Methods

Name	Description
CreateColumns (inherited from TDALoader)	Creates TDAColumn objects for all fields of the table with the same name as TDALoader.TableName .
Load (inherited from TDALoader)	Starts loading data.
LoadFromDataSet (inherited from TDALoader)	Loads data from the specified dataset.
PutColumnData (inherited from TDALoader)	Overloaded. Puts the value of individual columns.

Events

Name	Description
OnGetColumnData	Occurs when putting column values.
OnProgress (inherited from TDALoader)	Occurs if handling data loading progress of the TDALoader.LoadFromDataSet method is needed.
OnPutData	Occurs when putting loading data by rows.

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5.19.1.2.2 Properties

Properties of the **TMSLoader** class.

For a complete list of the **TMSLoader** class members, see the [TMSLoader Members](#) topic.

Public

Name	Description
Columns (inherited from TDALoader)	Used to add a TDAColumn object for each field that will be loaded.
Connection (inherited from TDALoader)	property. Used to specify TCustomDACConnection in which TDALoader will be executed.
KeepIdentity	Used to specify the way IDENTITY column values must be handled.
KeepNulls	Used to specify the way NULL values for columns with a DEFAULT constraint must be handled.
TableName (inherited from TDALoader)	Used to specify the name of the table to which data will be loaded.

Published

Name	Description
------	-------------

Options	Used to specify the behaviour of a TMSLoader object.
-------------------------	--

See Also

- [TMSLoader Class](#)
- [TMSLoader Class Members](#)

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5.19.1.2.2.1 KeepIdentity Property

Used to specify the way IDENTITY column values must be handled.

Class

[TMSLoader](#)

Syntax

```
property KeepIdentity: boolean;
```

Remarks

Use the KeepIdentity property to specify in what way IDENTITY column values must be handled. If KeepIdentity is set to False, IDENTITY columns will be initialized by the server. Any value assigned to such column in your application is ignored. If KeepIdentity is set to True, the IDENTITY property will not be available for all IDENTITY fields accepting NULL. So in this case unique values should be generated and assigned by the client application. The default value of the KeepIdentity property is False.

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5.19.1.2.2.2 KeepNulls Property

Used to specify the way NULL values for columns with a DEFAULT constraint must be handled.

Class

[TMSLoader](#)

Syntax

```
property KeepNulls: boolean;
```

Remarks

If this option is set to False, each NULL value inserted into a field with a DEFAULT constraint will be replaced with the default value. If KeepNulls is set to True, NULL values inserted into a field with a DEFAULT constraint will not be replaced with the default values. The default value of the KeepNulls property is False.

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5.19.1.2.2.3 Options Property

Used to specify the behaviour of a TMSLoader object.

Class

[TMSLoader](#)

Syntax

```
property options: TMSLoaderOptions;
```

Remarks

Use the Options property to specify the behaviour of a TMSLoader object.

Descriptions of all options are in the table below.

Option Name	Description
CheckConstraints	Used to specify if the table constraints are checked during loading.
FireTrigger	Allows table triggers to be fired with TMSLoader on SQL Server during insertion, deactivated by default.
KilobytesPerBatch	Used to specify the size of data in kilobytes to load in a single batch.
LockTable	Used to specify if the table-level lock is performed while loading is in progress.

RowsPerBatch	Used to specify the number of rows to load in a single batch.
------------------------------	---

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5.19.1.2.3 Events

Events of the **TMSLoader** class.

For a complete list of the **TMSLoader** class members, see the [TMSLoader Members](#) topic.

Public

Name	Description
OnProgress (inherited from TDALoader)	Occurs if handling data loading progress of the TDALoader.LoadFromDataSet method is needed.

Published

Name	Description
OnGetColumnData	Occurs when putting column values.
OnPutData	Occurs when putting loading data by rows.

See Also

- [TMSLoader Class](#)
- [TMSLoader Class Members](#)

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5.19.1.2.3.1 OnGetColumnData Event

Occurs when putting column values.

Class

[TMSLoader](#)

Syntax

```
property OnGetColumnData: TMSGetColumnDataEvent;
```

Remarks

Write the OnGetColumnData event handler to put column values. [TMSLoader](#) calls the OnGetColumnData event handler for each column in the loop. Column points to a [TMSLoader](#) object that corresponds to the current loading column. Use its Name or Index property to identify what column is loading. The Row parameter indicates the current loading record. [TMSLoader](#) increments the Row parameter when all columns of the current record are loaded. The first row is 1. Set IsEOF to True to stop data loading. Fill the Value parameter by column values. To start loading call the [TDALoader.Load](#) method.

Another way to load data is using the [OnPutData](#) event.

See Also

- [OnPutData](#)
- [TDALoader.Load](#)
- [TDALoader.OnGetColumnData](#)

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5.19.1.2.3.2 OnPutData Event

Occurs when putting loading data by rows.

Class

[TMSLoader](#)

Syntax

```
property OnPutData: TMSPutDataEvent;
```

Remarks

Write the OnPutData event handler to put loading data by rows. Note that rows should be

loaded from the first one in ascending order. To start loading call the [TDALoader.Load](#) method.

See Also

- [TDALoader.PutColumnData](#)
- [TDALoader.Load](#)
- [OnGetColumnData](#)
- [TDALoader.OnPutData](#)

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5.19.1.3 TMSLoaderOptions Class

This class allows setting up the behaviour of the TMSLoader class.

For a list of all members of this type, see [TMSLoaderOptions](#) members.

Unit

[MSLoader](#)

Syntax

```
TMSLoaderOptions = class(TDALoaderOptions);
```

Inheritance Hierarchy

[TDALoaderOptions](#)

TMSLoaderOptions

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5.19.1.3.1 Members

[TMSLoaderOptions](#) class overview.

Properties

Name	Description
------	-------------

CheckConstraints	Used to specify if the table constraints are checked during loading.
FireTrigger	Allows table triggers to be fired with TMSLoader on SQL Server during insertion, deactivated by default.
KilobytesPerBatch	Used to specify the size of data in kilobytes to load in a single batch.
LockTable	Used to specify if the table-level lock is performed while loading is in progress.
RowsPerBatch	Used to specify the number of rows to load in a single batch.
UseBlankValues (inherited from TDALoaderOptions)	Forces SDAC to fill the buffer with null values after loading a row to the database.

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5.19.1.3.2 Properties

Properties of the **TMSLoaderOptions** class.

For a complete list of the **TMSLoaderOptions** class members, see the [TMSLoaderOptions Members](#) topic.

Public

Name	Description
UseBlankValues (inherited from TDALoaderOptions)	Forces SDAC to fill the buffer with null values after loading a row to the database.

Published

Name	Description
------	-------------

CheckConstraints	Used to specify if the table constraints are checked during loading.
FireTrigger	Allows table triggers to be fired with TMSLoader on SQL Server during insertion, deactivated by default.
KilobytesPerBatch	Used to specify the size of data in kilobytes to load in a single batch.
LockTable	Used to specify if the table-level lock is performed while loading is in progress.
RowsPerBatch	Used to specify the number of rows to load in a single batch.

See Also

- [TMSLoaderOptions Class](#)
- [TMSLoaderOptions Class Members](#)

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5.19.1.3.2.1 CheckConstraints Property

Used to specify if the table constraints are checked during loading.

Class

[TMSLoaderOptions](#)

Syntax

```
property CheckConstraints: boolean default False;
```

Remarks

Use the CheckConstraints property to specify if the table constraints are checked during loading. If this option is set to False, the table constraints are not checked. The default value of the CheckConstraints option is False.

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5.19.1.3.2.2 FireTrigger Property

Allows table triggers to be fired with TMSLoader on SQL Server during insertion, deactivated by default.

Class

[TMSLoaderOptions](#)

Syntax

```
property FireTrigger: boolean default False;
```

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5.19.1.3.2.3 KilobytesPerBatch Property

Used to specify the size of data in kilobytes to load in a single batch.

Class

[TMSLoaderOptions](#)

Syntax

```
property kilobytesPerBatch: integer default 0;
```

Remarks

Use the KilobytesPerBatch option to specify the size of data in kilobytes to load in a single batch. The default value of this option is Unknown.

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5.19.1.3.2.4 LockTable Property

Used to specify if the table-level lock is performed while loading is in progress.

Class

[TMSLoaderOptions](#)

Syntax

```
property LockTable: boolean default False;
```

Remarks

Use the LockTable property to specify if the table-level lock is performed while loading is in progress. Setting this option to True should improve the performance greatly. If this option is set to False, the locking behaviour is determined by the table option. The default value of the LockTable option is False.

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5.19.1.3.2.5 Row sPerBatch Property

Used to specify the number of rows to load in a single batch.

Class

[TMSLoaderOptions](#)

Syntax

```
property RowsPerBatch: integer default 0;
```

Remarks

Use the RowsPerBatch property to specify the number of rows to load in a single batch. Server optimizes loading according to this value. The default value of this option is Unknown.

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5.19.2 Types

Types in the **MSLoader** unit.

Types

Name	Description
------	-------------

TMSPutDataEvent	This type is used for the TMSLoader.OnPutData event.
---------------------------------	--

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5.19.2.1 TMSPutDataEvent Procedure Reference

This type is used for the [TMSLoader.OnPutData](#) event.

Unit

[MSLoader](#)

Syntax

TMSPutDataEvent = **procedure** (Sender: [TMSLoader](#)) **of object**;

Parameters

Sender
An object that raised the event.

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5.20 MSScript

This unit contains implementation of the TMSScript component.

Classes

Name	Description
TMSScript	A component for executing several SQL statements one by one.

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5.20.1 Classes

Classes in the **MSScript** unit.

Classes

Name	Description
TMSScript	A component for executing several SQL statements one by one.

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5.20.1.1 TMSScript Class

A component for executing several SQL statements one by one.

For a list of all members of this type, see [TMSScript](#) members.

Unit

[MSScript](#)

Syntax

```
TMSScript = class(TDAScript);
```

Remarks

Often it is necessary to execute several SQL statements one by one. Known way is using a lot of components such as [TMSSQL](#). Usually it is not a good solution. With only one TMSScript component you can execute several SQL statements as one. This sequence of statements is named script. To separate single statements use semicolon (;), slash (/) or keyword 'GO' . Note that slash must be the first character in line.

Errors that occur while execution can be processed in the [TDAScript.OnError](#) event handler. By default, on error TMSScript shows exception and continues execution.

If you need to create several Stored Procedures (Functions) at a single script, use slash (/) to separate commands for creating stored procedures.

Inheritance Hierarchy

[TDA Script](#)**TMSScript**

See Also

- [TMSSQL](#)

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5.20.1.1.1 Members

[TMSScript](#) class overview.

Properties

Name	Description
Connection	Used to specify a connection object that will be used to connect to a data store.
DataSet	Used to retrieve the results of the SELECT statements execution inside a script.
Debug (inherited from TDA Script)	Used to display the script execution and all its parameter values.
Delimiter (inherited from TDA Script)	Used to set the delimiter string that separates script statements.
EndLine (inherited from TDA Script)	Used to get the current statement last line number in a script.
EndOffset (inherited from TDA Script)	Used to get the offset in the last line of the current statement.
EndPos (inherited from TDA Script)	Used to get the end position of the current statement.
Macros (inherited from TDA Script)	Used to change SQL script text in design- or run-time easily.
SQL (inherited from TDA Script)	Used to get or set script text.

StartLine (inherited from TDAScript)	Used to get the current statement start line number in a script.
StartOffset (inherited from TDAScript)	Used to get the offset in the first line of the current statement.
StartPos (inherited from TDAScript)	Used to get the start position of the current statement in a script.
Statements (inherited from TDAScript)	Contains a list of statements obtained from the SQL property.
UseOptimization	Used to bind small queries in blocks for block executing.

Methods

Name	Description
BreakExec (inherited from TDAScript)	Stops script execution.
ErrorOffset (inherited from TDAScript)	Used to get the offset of the statement if the Execute method raised an exception.
Execute (inherited from TDAScript)	Executes a script.
ExecuteFile (inherited from TDAScript)	Executes SQL statements contained in a file.
ExecuteNext (inherited from TDAScript)	Executes the next statement in the script and then stops.
ExecuteStream (inherited from TDAScript)	Executes SQL statements contained in a stream object.
FindMacro (inherited from TDAScript)	Finds a macro with the specified name.
MacroByName (inherited from TDAScript)	Finds a macro with the specified name.

Events

Name	Description
AfterExecute (inherited from TDAScript)	Occurs after a SQL script execution.

BeforeExecute (inherited from TDA Script)	Occurs when taking a specific action before executing the current SQL statement is needed.
OnError (inherited from TDA Script)	Occurs when SQL Server raises an error.

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5.20.1.1.2 Properties

Properties of the **TMSScript** class.

For a complete list of the **TMSScript** class members, see the [TMSScript Members](#) topic.

Public

Name	Description
EndLine (inherited from TDA Script)	Used to get the current statement last line number in a script.
EndOffset (inherited from TDA Script)	Used to get the offset in the last line of the current statement.
EndPos (inherited from TDA Script)	Used to get the end position of the current statement.
StartLine (inherited from TDA Script)	Used to get the current statement start line number in a script.
StartOffset (inherited from TDA Script)	Used to get the offset in the first line of the current statement.
StartPos (inherited from TDA Script)	Used to get the start position of the current statement in a script.
Statements (inherited from TDA Script)	Contains a list of statements obtained from the SQL property.

Published

Name	Description
------	-------------

Connection	Used to specify a connection object that will be used to connect to a data store.
DataSet	Used to retrieve the results of the SELECT statements execution inside a script.
Debug (inherited from TDAScript)	Used to display the script execution and all its parameter values.
Delimiter (inherited from TDAScript)	Used to set the delimiter string that separates script statements.
Macros (inherited from TDAScript)	Used to change SQL script text in design- or run-time easily.
SQL (inherited from TDAScript)	Used to get or set script text.
UseOptimization	Used to bind small queries in blocks for block executing.

See Also

- [TMSScript Class](#)
- [TMSScript Class Members](#)

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5.20.1.1.2.1 Connection Property

Used to specify a connection object that will be used to connect to a data store.

Class

[TMSScript](#)

Syntax

```
property Connection: TCustomMSConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to a

data store.

Set at design-time by selecting from the list of provided [TMSConnection](#) objects.

At run-time, set the Connection property to reference an existing [TMSConnection](#) object.

See Also

- [TMSConnection](#)

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5.20.1.1.2.2 DataSet Property

Used to retrieve the results of the SELECT statements execution inside a script.

Class

[TMSScript](#)

Syntax

```
property DataSet: TCustomMSDataSet;
```

Remarks

Set the DataSet property if you need to retrieve the results of the SELECT statements execution inside a script.

See Also

- [TDA Script.Execute](#)

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5.20.1.1.2.3 UseOptimization Property

Used to bind small queries in blocks for block executing.

Class

[TMSScript](#)

Syntax

```
property UseOptimization: boolean;
```

Remarks

If the UseOptimization property is set, small queries will be united into blocks for block executing if possible. The UseOptimization option does not affect the [TDA Script.ExecuteNext](#) method performance. It works only for the [TDA Script.Execute](#) method.

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5.21 MSServiceBroker

This unit contains implementation of the TMSServiceBroker component and auxiliary classes.

Classes

Name	Description
TMSTConversation	A base class that describes the dialog process between two services.
TMSMessage	A class representing a Service Broker message of Microsoft SQL Server.
TMSServiceBroker	A component that provides sending and receiving messages within the Service Broker system.

Enumerations

Name	Description
TMSMessageValidation	Defines the type of validation performed.

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5.21.1 Classes

Classes in the **MSServiceBroker** unit.

Classes

Name	Description
TMSTConversation	A base class that describes the dialog process between two services.
TMSMessage	A class representing a Service Broker message of Microsoft SQL Server.
TMSServiceBroker	A component that provides sending and receiving messages within the Service Broker system.

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5.21.1.1 TMSTConversation Class

A base class that describes the dialog process between two services.

For a list of all members of this type, see [TMSTConversation](#) members.

Unit

[MSServiceBroker](#)

Syntax

```
TMSTConversation = class(System.TObject);
```

Remarks

The TMSTConversation class describes the dialog process between two services.

To start a new conversation, use the [TMSServiceBroker.BeginDialog](#) method. You can finish the dialog by calling the [TMSTConversation.EndConversation](#) method.

Note: You should not create and delete TMSTConversation objects by calling the Create and Free methods directly. Use the [TMSServiceBroker.BeginDialog](#) and

[TMSTConversation.EndConversation](#) methods instead.

See Also

- [TMSMessage](#)
- [TMSServiceBroker](#)
- [TMSServiceBroker.Conversations](#)

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5.21.1.1.1 Members

[TMSTConversation](#) class overview.

Properties

Name	Description
ContractName	Stores the contact name the conversation conforms to.
FarService	Holds the service name of the second side taking part in the dialog.
GroupId	Holds the unique identifier of a conversation group.
Handle	Holds a unique identifier of the current conversation.
IsInitiator	Determines if the conversation was initiated by this side.
ServiceBroker	Determines the TMSServiceBroker object to which a conversation instance belongs.

Methods

Name	Description
BeginTimer	Provides a message of the SDialogTimerType message type after the time specified in the Timeout

	property has been expired.
EndConversation	Terminates the conversation.
EndConversationWithError	Terminates the conversation and provides the text and code of the error.
GetTransmissionStatus	Returns the status of the last sent message.
Send	Overloaded. Sends a message within a conversation.
SendEmpty	Sends an empty message within a conversation.

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5.21.1.1.2 Properties

Properties of the **TMSConversation** class.

For a complete list of the **TMSConversation** class members, see the [TMSConversation Members](#) topic.

Public

Name	Description
ContractName	Stores the contact name the conversation conforms to.
FarService	Holds the service name of the second side taking part in the dialog.
GroupId	Holds the unique identifier of a conversation group.
Handle	Holds a unique identifier of the current conversation.
IsInitiator	Determines if the conversation was initiated by this side.
ServiceBroker	Determines the TMSServiceBroker object to which a conversation instance belongs.

See Also

- [TMSConversation Class](#)
- [TMSConversation Class Members](#)

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5.21.1.1.2.1 ContractName Property

Stores the contact name the conversation conforms to.

Class

[TMSConversation](#)

Syntax

```
property ContractName: string;
```

Remarks

Stores the name of the contract that the conversation conforms to.

See Also

- [TMSServiceBroker.BeginDialog](#)

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5.21.1.1.2.2 FarService Property

Holds the service name of the second side taking part in the dialog.

Class

[TMSConversation](#)

Syntax

```
property FarService: string;
```

Remarks

The service name of the second side that is taking part in the dialog.

See Also

- [TMSServiceBroker.Service](#)

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5.21.1.1.2.3 GroupId Property

Holds the unique identifier of a conversation group.

Class

[TMSTConversation](#)

Syntax

```
property GroupId: TGuid;
```

Remarks

Use the GroupId property to store a unique identifier of the conversation group. It is used for executing Transact-SQL queries.

The value of this property can be set when calling the [TMSServiceBroker.BeginDialog](#) method with the RelatedConversation or the GroupId parameter. If TMSServiceBroker.BeginDialog was called with these parameters omitted, the GroupId will be assigned to the unique value.

If the conversation already exists, you can assign a new value for GroupId. See the description of the [MOVE CONVERSATION](#) statement in MSDN for details.

See Also

- [Handle](#)

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5.21.1.1.2.4 Handle Property

Holds a unique identifier of the current conversation.

Class

[TMSConversation](#)

Syntax

```
property Handle: TGuid;
```

Remarks

The Handle property stores a unique identifier of the current conversation. It is used for executing Transact-SQL queries. Handle is a read-only property.

See Also

- [GroupId](#)

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5.21.1.1.2.5 IsInitiator Property

Determines if the conversation was initiated by this side.

Class

[TMSConversation](#)

Syntax

```
property IsInitiator: boolean;
```

Remarks

Indicates whether the conversation was initiated by this side.

See Also

- [TMSServiceBroker.Service](#)
- [TMSServiceBroker.BeginDialog](#)

- [FarService](#)

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5.21.1.1.2.6 ServiceBroker Property

Determines the TMSServiceBroker object to which a conversation instance belongs.

Class

[TMSConversation](#)

Syntax

```
property ServiceBroker: TMSServiceBroker;
```

Remarks

Use the ServiceBroker property to identify the TMSServiceBroker object to which a conversation instance belongs.

See Also

- [TMSServiceBroker.Conversations](#)

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5.21.1.1.3 Methods

Methods of the **TMSConversation** class.

For a complete list of the **TMSConversation** class members, see the [TMSConversation Members](#) topic.

Public

Name	Description
BeginTimer	Provides a message of the SDIALOGTIMER message type after the time specified in the Timeout property has been expired.

EndConversation	Terminates the conversation.
EndConversationWithError	Terminates the conversation and provides the text and code of the error.
GetTransmissionStatus	Returns the status of the last sent message.
Send	Overloaded. Sends a message within a conversation.
SendEmpty	Sends an empty message within a conversation.

See Also

- [TMSConversation Class](#)
- [TMSConversation Class Members](#)

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5.21.1.1.3.1 BeginTimer Method

Provides a message of the SDialogTimerType message type after the time specified in the Timeout property has been expired.

Class

[TMSConversation](#)

Syntax

```
procedure BeginTimer(const Timeout: integer);
```

Parameters

Timeout
Specifies the amount of time to wait before displaying the message.

Remarks

Call the BeginTimer method to receive a message of the SDialogTimerType message type after the time specified in the Timeout property (in seconds) is expired.

See the description of the [BEGIN CONVERSATION TIMER](#) statement in MSDN for details.

See Also

- [TMSMessage](#)
- [TMSServiceBroker.CurrentMessage](#)

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5.21.1.1.3.2 EndConversation Method

Terminates the conversation.

Class

[TMSConversation](#)

Syntax

```
procedure EndConversation(const Cleanup: boolean = False);
```

Parameters

Cleanup

True, if undelivered messages should be deleted. False otherwise.

Remarks

Call the EndConversation method to terminate a conversation. The Cleanup parameter determines whether the undelivered messages will be deleted.

See the description of the [END CONVERSATION](#) statement in MSDN for details.

See Also

- [EndConversationWithError](#)
- [TMSServiceBroker.BeginDialog](#)

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5.21.1.1.3.3 EndConversationWithError Method

Terminates the conversation and provides the text and code of the error.

Class

[TMSConversation](#)

Syntax

```
procedure EndConversationWithError(const ErrorMessage: string;  
const ErrorCode: integer; const Cleanup: boolean = False);
```

Parameters

ErrorMessage

Holds the text of the error.

ErrorCode

Holds the code of the error.

Cleanup

True, if undelivered messages should be deleted. False otherwise.

Remarks

Use the EndConversationWithError method to terminate a conversation and handle the text (ErrorMessage) and code (ErrorCode) of the error. The Cleanup parameter determines whether the undelivered messages will be deleted.

See the description of the [END CONVERSATION](#) statement in MSDN for details.

See Also

- [EndConversationWithError](#)
- [TMSServiceBroker.BeginDialog](#)

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5.21.1.1.3.4 GetTransmissionStatus Method

Returns the status of the last sent message.

Class

[TMSConversation](#)

Syntax

```
function GetTransmissionStatus: string;
```

Return Value

the status of the last sent message.

Remarks

Call the GetTransmissionStatus method to return the status of the last sent message.

See the description of the [GET_TRANSMISSION_STATUS](#) statement in MSDN for details.

See Also

- [TMSConversation.Send](#)

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5.21.1.1.3.5 Send Method

Sends a message within a conversation.

Class

[TMSConversation](#)

Overload List

Name	Description
Send(const MessageBody: TBytes; const MessageType: string)	Sends a message within a conversation.
Send(const MessageBody: string; const MessageType: string)	Sends a message within a conversation.

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Sends a message within a conversation.

Class

[TMSConversation](#)

Syntax

```
procedure Send(const MessageBody: TBytes; const MessageType:  
string = ''); overload;
```

Parameters

MessageBody

Holds the message to be sent.

MessageType

Determines the type of the message being sent.

Remarks

The Send method sends a message within a conversation. The target service is determined when [creating a conversation](#).

The MessageType parameter determines the type of the message being sent. For the detailed message types description see the description of the [CREATE MESSAGE TYPE](#) statement in MSDN.

You can check the status of the last sent message by the [TMSConversation.GetTransmissionStatus](#) method.

Note: The method overload with the WideString MessageBody parameter type is not supported under Delphi 5.

See Also

- [TMSConversation.GetTransmissionStatus](#)
- [TMSConversation.SendEmpty](#)
- [TMSMessage.AsString](#)
- [TMSMessage.AsWideString](#)
- [TMSMessage.AsBytes](#)

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Sends a message within a conversation.

Class

[TMSConversation](#)

Syntax

```
procedure Send(const MessageBody: string; const MessageType:  
string = ''); overload;
```

Parameters

MessageBody

Holds the message to be sent.

MessageType

Determines the type of the message being sent.

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5.21.1.1.3.6 SendEmpty Method

Sends an empty message within a conversation.

Class

[TMSConversation](#)

Syntax

```
procedure SendEmpty(const MessageType: string = '');
```

Parameters

MessageType

Determines the type of the message being sent.

Remarks

Sends an empty message within a conversation. The target service is determined when [creating a conversation](#).

This method must be used to send an empty message. This is the only method that can be used to send a message if MessageType was created with the Validation property set to mvEmpty.

The MessageType parameter determines the type of the message being sent. For the detailed description of the message types see the description of the [CREATE MESSAGE](#)

[TYPE](#) statement in MSDN.

See Also

- [TMSConversation.Send](#)
- [TMSMessage.IsEmpty](#)

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5.21.1.2 TMSMessage Class

A class representing a Service Broker message of Microsoft SQL Server.

For a list of all members of this type, see [TMSMessage](#) members.

Unit

[MSServiceBroker](#)

Syntax

```
TMSMessage = class(System.TObject);
```

Remarks

The TMSMessage class represents a Service Broker message of Microsoft SQL Server. Use the TMSMessage class to retrieve the message body and parameters from the message obtained from a queue.

All properties of TMSMessage are read-only. Use the TMSConversation.Send method to send a message.

Each message belongs to a [conversation](#).

See Also

- [TMSServiceBroker](#)
- [TMSServiceBroker.CurrentMessage](#)

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5.21.1.2.1 Members

[TSMMessage](#) class overview.

Properties

Name	Description
AsBytes	Used to read message body as an array of bytes.
AsString	Used to read message body as an ANSI string.
AsWideString	Used to read message body as a Unicode string.
Conversation	Used to get a link to the TMSConversation object that belongs to the message.
IsEmpty	Used to ascertain whether a message contains a value.
MessageSequenceNumber	Holds the sequence number of a message within a conversation.
MessageType	Used to store the name of the message type that describes the message.
QueuingOrder	Used to store the order number of a message within a queue.
Validation	Validation for the message to be performed by the server.

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5.21.1.2.2 Properties

Properties of the **TSMMessage** class.

For a complete list of the **TSMMessage** class members, see the [TSMMessage Members](#) topic.

Public

Name	Description
AsBytes	Used to read message body as an array of bytes.
AsString	Used to read message body as an ANSI string.
AsWideString	Used to read message body as a Unicode string.
Conversation	Used to get a link to the TMSConversation object that belongs to the message.
IsEmpty	Used to ascertain whether a message contains a value.
MessageSequenceNumber	Holds the sequence number of a message within a conversation.
MessageType	Used to store the name of the message type that describes the message.
QueuingOrder	Used to store the order number of a message within a queue.
Validation	Validation for the message to be performed by the server.

See Also

- [TSMMessage Class](#)
- [TSMMessage Class Members](#)

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5.21.1.2.2.1 AsBytes Property

Used to read message body as an array of bytes.

Class

[TSMMessage](#)

Syntax


```
property AsBytes: TBytes;
```

Remarks

Use the AsBytes property to read message body as an array of bytes.

See Also

- [AsString](#)
- [AsWideString](#)
- [TMSConversation.Send](#)
- [IsEmpty](#)

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5.21.1.2.2.2 AsString Property

Used to read message body as an ANSI string.

Class

[TMSMessage](#)

Syntax

```
property AsString: string;
```

Remarks

Use the AsString property to read message body as an ANSI string.

Note: If the body of the received message stores a Unicode string value or a TBytes value, the result of AsString will be wrong.

See Also

- [AsWideString](#)
- [AsBytes](#)
- [TMSConversation.Send](#)
- [IsEmpty](#)

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5.21.1.2.2.3 AsWideString Property

Used to read message body as a Unicode string.

Class

[TSMMessage](#)

Syntax

```
property AsWideString: string;
```

Remarks

Use the AsWideString property to read message body as a Unicode string.

Note: If the body of the received message stores an ANSI string value or a TBytes value, the result of AsWideString will be wrong.

See Also

- [AsString](#)
- [AsBytes](#)
- [TMSConversation.Send](#)
- [IsEmpty](#)

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5.21.1.2.2.4 Conversation Property

Used to get a link to the TMSConversation object that belongs to the message.

Class

[TSMMessage](#)

Syntax

```
property Conversation: TMSConversation;
```

Remarks

Use the Conversation property to get a link to the TMSConversation object that belongs to the message.

See Also

- [TMSConversation](#)

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5.21.1.2.2.5 IsEmpty Property

Used to ascertain whether a message contains a value.

Class

[TSMMessage](#)

Syntax

```
property IsEmpty: boolean;
```

Remarks

Check the IsEmpty property to ascertain whether a message contains a value. If IsEmpty is set to True, the message is blank, otherwise the message has a value.

See Also

- [TMSConversation.SendEmpty](#)
- [AsString](#)
- [AsWideString](#)
- [AsBytes](#)

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5.21.1.2.2.6 MessageSequenceNumber Property

Holds the sequence number of a message within a conversation.

Class

[TMSMessage](#)

Syntax

```
property MessageSequenceNumber: Int64;
```

Remarks

Holds the sequence number of a message within a conversation.

See Also

- [QueuingOrder](#)

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5.21.1.2.2.7 MessageType Property

Used to store the name of the message type that describes the message.

Class

[TMSMessage](#)

Syntax

```
property MessageType: string;
```

Remarks

Use the MessageType property to store the name of the message type that describes the message.

If the MessageType property was not set when sending, it has the DEFAULT value.

See Also

- [TMSConversation.Send](#)

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5.21.1.2.2.8 QueuingOrder Property

Used to store the order number of a message within a queue.

Class

[TSMMessage](#)

Syntax

```
property QueuingOrder: Int64;
```

Remarks

Use the QueuingOrder property to store the order number of a message within a queue.

See Also

- [MessageSequenceNumber](#)

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5.21.1.2.2.9 Validation Property

Validation for the message to be performed by the server.

Class

[TSMMessage](#)

Syntax

```
property validation: TSMMessageValidation;
```

Remarks

Use the Validation property to validate the message to be performed by the server.

See Also

- [QueuingOrder](#)

- [MessageSequenceNumber](#)

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5.21.1.3 TMSServiceBroker Class

A component that provides [sending](#) and [receiving](#) messages within the Service Broker system.

For a list of all members of this type, see [TMSServiceBroker](#) members.

Unit

[MSServiceBroker](#)

Syntax

```
TMSServiceBroker = class(TComponent);
```

Remarks

The TMSServiceBroker component lets you [send](#) and [receive](#) messages within the SQL Server Service Broker system.

TMSServiceBroker supports synchronous and asynchronous messages receiving. Each message belongs to a conversation.

Before using the Service Broker system with a database, you should activate [Message Delivery](#) .

See Also

- [TMSSession](#)
- [TSMMessage](#)
- [TCustomMSConnection](#)

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5.21.1.3.1 Members

[TMSServiceBroker](#) class overview.

Properties

Name	Description
AsyncNotification	Used to receive messages asynchronously in a separate thread.
Connection	Used to specify a connection object that will be used to connect to the server.
ConversationCount	Conversations count in the Conversations list.
Conversations	Used for storing the list of available conversations.
CurrentMessage	The current message received by the Receive method.
FetchRows	Used to determine the amount of rows that will be received from the server at a time.
Queue	This property determines queue for the specified service .
Service	Used to set the service name that will be used for sending and receiving messages.
WaitTimeout	Used to specify the time to wait until a message arrives to the server.

Methods

Name	Description
BeginDialog	Overloaded. Initiates a dialog from one TMSServiceBroker.Service to another service.
CreateServerObjects	Creates a service and a queue on the server.
DropServerObjects	Removes both the service with the name assigned to

	the TMSServiceBroker.Service property and the queue with the name TMSServiceBroker.Service name + ' Queue'.
GetContractNames	Delivers contract name from the server.
GetMessageTypeNames	Delivers the names of message types from the server.
GetQueueNames	Delivers queue names from the server.
GetServiceNames	Delivers queue names from the server.
Receive	Designed for receiving messages from a queue on the server from the specified service .

Events

Name	Description
OnBeginConversation	Occurs when a new object of the TMSConversation class is being created.
OnEndConversation	Occurs when an existing conversation is being closed.
OnMessage	Occurs when a new message is received in the asynchronous mode.

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5.21.1.3.2 Properties

Properties of the **TMSServiceBroker** class.

For a complete list of the **TMSServiceBroker** class members, see the [TMSServiceBroker Members](#) topic.

Public

Name	Description
ConversationCount	Conversations count in the Conversations list.
Conversations	Used for storing the list of available conversations.
CurrentMessage	The current message received by the Receive method.
Queue	This property determines queue for the specified service .

Published

Name	Description
AsyncNotification	Used to receive messages asynchronously in a separate thread.
Connection	Used to specify a connection object that will be used to connect to the server.
FetchRows	Used to determine the amount of rows that will be received from the server at a time.
Service	Used to set the service name that will be used for sending and receiving messages.
WaitTimeout	Used to specify the time to wait until a message arrives to the server.

See Also

- [TMSServiceBroker Class](#)
- [TMSServiceBroker Class Members](#)

Reserved.

5.21.1.3.2.1 AsyncNotification Property

Used to receive messages asynchronously in a separate thread.

Class

[TMSServiceBroker](#)

Syntax

```
property AsyncNotification: boolean default False;
```

Remarks

If the AsyncNotification property is set to True, messages will be received asynchronously in a separate thread. Each message receiving in asynchronous mode triggers the OnMessage event. For working in asynchronous mode, an additional connection to the server is automatically created.

The default value is False.

See Also

- [OnMessage](#)
- [Receive](#)

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5.21.1.3.2.2 Connection Property

Used to specify a connection object that will be used to connect to the server.

Class

[TMSServiceBroker](#)

Syntax

```
property Connection: TMSConnection;
```

Remarks

Use the Connection property to specify a connection object that will be used to connect to the server.

Set at design time by selecting from the list of available connection objects.

At runtime, set the Connection property to an instance of a [TCustomMSConnection](#) object.

See Also

- [TCustomMSConnection](#)

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5.21.1.3.2.3 ConversationCount Property

Conversations count in the [Conversations](#) list.

Class

[TMSServiceBroker](#)

Syntax

```
property ConversationCount: integer;
```

Remarks

Conversations count in the [Conversations](#) list.

See Also

- [Conversations](#)
- [BeginDialog](#)
- [CurrentMessage](#)
- [Receive](#)
- [OnBeginConversation](#)
- [OnEndConversation](#)

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5.21.1.3.2.4 Conversations Property(Indexer)

Used for storing the list of available conversations.

Class

[TMSServiceBroker](#)

Syntax

```
property Conversations[Index: Integer]: TMSConversation; default;
```

Parameters

Index

Indicates the index of the conversation object, where 0 is the index of the first object, 1 is the index of the second object, and so on.

Remarks

This property stores the list of available conversations. A new conversation object can be added to this list in two ways:

- when calling the `BeginDialog` method;
- when [receiving](#) an incoming message.

Note: This list is not synchronized with the list on the server. For example, if an initiator has created a conversation instance (by calling the [BeginDialog](#) method), a conversation instance on the target side will be created only after receiving the first message.

Analogously, when receiving a message with the `SEndDialogType` or `SErrorType` message type, the conversation on the server is already completed. But this conversation will be removed from the list after the next call to the [Receive](#) method.

See Also

- [ConversationCount](#)
- [BeginDialog](#)
- [CurrentMessage](#)
- [Receive](#)
- [OnBeginConversation](#)
- [OnEndConversation](#)

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5.21.1.3.2.5 CurrentMessage Property

The current message received by the [Receive](#) method.

Class

[TMSServiceBroker](#)

Syntax

```
property CurrentMessage: TSMMessage;
```

Remarks

The current message received by the [Receive](#) method.

See Also

- [Conversations](#)
- [BeginDialog](#)
- [Receive](#)
- [OnBeginConversation](#)
- [OnEndConversation](#)

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5.21.1.3.2.6 FetchRows Property

Used to determine the amount of rows that will be received from the server at a time.

Class

[TMSServiceBroker](#)

Syntax

```
property FetchRows: integer default 0;
```

Remarks

Use the FetchRows property to determine the amount of rows that will be received from the server at a time.

See Also

- [Receive](#)
- [TSMMessage](#)

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5.21.1.3.2.7 Queue Property

This property determines queue for the specified [service](#).

Class

[TMSServiceBroker](#)

Syntax

```
property Queue: string;
```

Remarks

This property determines queue for the specified [service](#).

See Also

- [Service](#)
- [GetQueueNames](#)
- [MSDN: CREATE QUEUE](#)

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5.21.1.3.2.8 Service Property

Used to set the service name that will be used for sending and receiving messages.

Class

[TMSServiceBroker](#)

Syntax

```
property Service: string;
```

Remarks

Use the Service property to set the service name that will be used for sending and receiving messages.

See Also

- [Queue](#)
- [GetServiceNames](#)
- [TMSConversation.FarService](#)
- [MSDN: CREATE SERVICE](#)

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5.21.1.3.2.9 WaitTimeout Property

Used to specify the time to wait until a message arrives to the server.

Class

[TMSServiceBroker](#)

Syntax

```
property waitTimeout: integer default - 1;
```

Remarks

If the [Receive](#) method was called and there are no messages on the server, it will wait until at least one message arrives or WaitTimeout expires. The WaitTimeout is measured in

milliseconds.

The possible values of WaitTimeout are the following:

Value	Meaning
-1	Do not wait (the default value).
0	Wait for an infinite interval while at least one message arrives.
1 and more	Wait for the specified interval or until a message arrives.

See Also

- [Receive](#)

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5.21.1.3.3 Methods

Methods of the **TMSServiceBroker** class.

For a complete list of the **TMSServiceBroker** class members, see the [TMSServiceBroker Members](#) topic.

Public

Name	Description
BeginDialog	Overloaded. Initiates a dialog from one TMSServiceBroker.Service to another service.
CreateServerObjects	Creates a service and a queue on the server.
DropServerObjects	Removes both the service with the name assigned to the TMSServiceBroker.Service property and the queue with the name TMSServiceBroker.Service name + ' Queue'.
GetContractNames	Delivers contract name from the server.
GetMessageTypeNames	Delivers the names of message types from the

	server.
GetQueueNames	Delivers queue names from the server.
GetServiceNames	Delivers queue names from the server.
Receive	Designed for receiving messages from a queue on the server from the specified service .

See Also

- [TMSServiceBroker Class](#)
- [TMSServiceBroker Class Members](#)

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5.21.1.3.3.1 BeginDialog Method

Initiates a dialog from one [Service](#) to another service.

Class

[TMSServiceBroker](#)

Overload List

Name	Description
BeginDialog(const TargetService: string; const TargetDatabase: string; const UseEncryption: boolean; RelatedConversation: TMSConversation; const LifeTime: integer; const Contract: string)	Initiates a dialog from one Service to another service.
BeginDialog(const TargetService: string; const TargetDatabase: string; const UseEncryption: boolean; const GroupId: TGuid; const LifeTime: integer; const Contract: string)	Initiates a dialog from one Service to another service.

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Reserved.

Initiates a dialog from one [TMSServiceBroker.Service](#) to another service.

Class

[TMSServiceBroker](#)

Syntax

```
function BeginDialog(const TargetService: string; const
TargetDatabase: string = ''; const UseEncryption: boolean = True;
RelatedConversation: TMSServiceBroker.TMSConversation = nil; const LifeTime:
integer = 0; const Contract: string = ''): TMSServiceBroker.TMSConversation;
overload;
```

Parameters

TargetService

The target service name that the conversation initiates with.

TargetDatabase

Specifies the database name that the target service hosts.

UseEncryption

Specifies whether messages within the conversation must be encrypted. When set to True (the default value), it may require applying additional server settings.

RelatedConversation

Already existing conversation to whose group a new conversation will be added. If this parameter is not set, a new group will be created.

LifeTime

Specifies the maximum time interval (in seconds) while the dialog remains open. After this interval expires, the dialog automatically closes. A zero LifeTime value represents an infinity interval. This is the default value.

Contract

Specifies the name of the contract that the conversation conforms to. If the parameter is not set, the DEFAULT contract is used.

Return Value

a new instance of the TMSConversation class.

Remarks

These overloaded methods initiate a dialog from one [TMSServiceBroker.Service](#) to another service. A dialog is a conversation that provides messaging between two services.

Use BeginDialog to create an instance of the TMSConversation class. The new instance will

be created with the [TMSConversation.IsInitiator](#) property assigned to True.

See Also

- [TMSConversation](#)
- [TMSConversation.EndConversation](#)
- [TMSConversation.IsInitiator](#)
- [TMSServiceBroker.Conversations](#)
- [MSDN: BEGIN DIALOG CONVERSATION](#)

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Initiates a dialog from one [TMSServiceBroker.Service](#) to another service.

Class

[TMSServiceBroker](#)

Syntax

```
function BeginDialog(const TargetService: string; const TargetDatabase: string; const UseEncryption: boolean; const GroupId: TGuid; const LifeTime: integer = 0; const Contract: string = ''): TMSConversation; overload;
```

Parameters

TargetService

The target service name that the conversation initiates with.

TargetDatabase

Specifies the database name that the target service hosts.

UseEncryption

Specifies whether messages within the conversation must be encrypted. When set to True (the default value), it may require applying additional server settings.

GroupId

Unique identifier of an existent group, which should join in the new conversation.

LifeTime

Specifies the maximum time interval (in seconds) while the dialog remains open. After this interval expires, the dialog automatically closes. A zero LifeTime value represents an infinity interval. This is the default value.

Contract

Specifies the name of the contract that the conversation conforms to. If the parameter is not set, the DEFAULT contract is used.

Return Value

a new instance of the TMSConversation class.

See Also

- [TMSConversation](#)
- [TMSConversation.EndConversation](#)
- [TMSConversation.IsInitiator](#)
- [TMSServiceBroker.Conversations](#)
- [MSDN: BEGIN DIALOG CONVERSATION](#)

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5.21.1.3.3.2 CreateServerObjects Method

Creates a service and a queue on the server.

Class

[TMSServiceBroker](#)

Syntax

```
procedure CreateServerObjects(const Contract: string =  
'DEFAULT');
```

Parameters

Contract

Specifies the name of the contract that the conversation conforms to. If the parameter is not set, the DEFAULT contract is used.

Remarks

If there are no such objects on the server, the service and the queue will be created on the server. These objects are created with the default settings (any messages can be transferred in any direction). The queue name are generated by concatenating [Service](#) and the '_Queue' prefix.

See Also

- [DropServerObjects](#)
- [Service](#)
- [Queue](#)

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5.21.1.3.3.3 DropServerObjects Method

Removes both the service with the name assigned to the [Service](#) property and the queue with the name [Service](#) name + '_Queue'.

Class

[TMSServiceBroker](#)

Syntax

```
procedure DropServerObjects;
```

Remarks

This method removes both the service with the name assigned to the [Service](#) property and the queue with the name [Service](#) name + '_Queue'.

See Also

- [CreateServerObjects](#)
- [Service](#)
- [Queue](#)

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5.21.1.3.3.4 GetContractNames Method

Delivers contract name from the server.

Class

[TMSServiceBroker](#)

Syntax

```
procedure GetContractNames(List: TStrings);
```

Parameters

List

Holds the list of contract names.

Remarks

Call the GetContractNames method to get contract names from the server.

See Also

- [GetServiceNames](#)
- [GetQueueNames](#)
- [GetMessageTypeNames](#)
- [TMSConversation.ContractName](#)

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5.21.1.3.3.5 GetMessageTypeName Method

Delivers the names of message types from the server.

Class

[TMSServiceBroker](#)

Syntax

```
procedure GetMessageTypeName(List: TStrings);
```

Parameters

List

Holds the names of the message types.

Remarks

Call the GetMessageTypeName method to get the names of message types from the

server.

See Also

- [GetServiceNames](#)
- [GetContractNames](#)
- [GetQueueNames](#)
- [TMSConversation.Send](#)

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5.21.1.3.3.6 GetQueueNames Method

Delivers queue names from the server.

Class

[TMSServiceBroker](#)

Syntax

```
procedure GetQueueNames(List: TStrings);
```

Parameters

List

Holds the queue names.

Remarks

Call the GetQueueNames method to get queue names from the server.

See Also

- [GetServiceNames](#)
- [GetContractNames](#)
- [GetMessageTypeNames](#)

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5.21.1.3.3.7 GetServiceNames Method

Delivers queue names from the server.

Class

[TMSServiceBroker](#)

Syntax

```
procedure GetServiceNames(List: TStrings);
```

Parameters

List

Holds the service names.

Remarks

Call the GetServiceNames method to get service names from the server.

See Also

- [GetQueueNames](#)
- [GetContractNames](#)
- [GetMessageTypeNames](#)
- [Service](#)
- [TMSConversation.FarService](#)

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5.21.1.3.3.8 Receive Method

Designed for receiving messages from a [queue](#) on the server from the specified [service](#).

Class

[TMSServiceBroker](#)

Syntax

```
function Receive(Conversation: TMSConversation = nil): boolean;
```


Parameters

Conversation

Holds the name of the conversation to receive messages of.

Return Value

False, if there are no more messages on the server.

Remarks

The Receive method is designed for receiving messages from a [queue](#) on the server from the specified [service](#). You can get access to the current message using the [CurrentMessage](#) property.

If the Receive method returns False, there are no more messages on the server. So, the [CurrentMessage](#) will be nil.

The synchronous mode ([AsyncNotification](#) is False)

In this mode, after calling the Receive method, up to [FetchRows](#) messages are received from the server. The [CurrentMessage](#) property will point to the first message of the received ones. The subsequent calls to Receive will not lead to the server round trips, while there are messages in cache. This mode is enabled by default.

If the Conversation parameter is assigned, only messages of this conversation will be received.

The asynchronous mode ([AsyncNotification](#) is True)

In this mode messages from the server are received in a separate thread and are put into a local queue. Calls to Receive itself do not lead to the server round trips.

The Conversation parameter can not be used in the asynchronous mode.

Example

Example for using Receive in synchronous mode:

```
while MSServiceBroker.Receive do  
    Process(MSServiceBroker.CurrentMessage);
```

See Also

- [Service](#)
- [FetchRows](#)

- [CurrentMessage](#)
- [AsyncNotification](#)
- [TSMMessage](#)
- [TMSConversation](#)
- -

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5.21.1.3.4 Events

Events of the **TMSServiceBroker** class.

For a complete list of the **TMSServiceBroker** class members, see the [TMSServiceBroker Members](#) topic.

Published

Name	Description
OnBeginConversation	Occurs when a new object of the TMSConversation class is being created.
OnEndConversation	Occurs when an existing conversation is being closed.
OnMessage	Occurs when a new message is received in the asynchronous mode.

See Also

- [TMSServiceBroker Class](#)
- [TMSServiceBroker Class Members](#)

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5.21.1.3.4.1 OnBeginConversation Event

Occurs when a new object of the [TMSConversation](#) class is being created.

Class

[TMSServiceBroker](#)

Syntax

```
property OnBeginConversation: TMSConversationBeginEvent;
```

Remarks

The OnBeginConversation event occurs when creating a new object of the [TMSConversation](#) class.

See Also

- [TMSConversation](#)

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5.21.1.3.4.2 OnEndConversation Event

Occurs when an existing conversation is being closed.

Class

[TMSServiceBroker](#)

Syntax

```
property OnEndConversation: TMSConversationEndEvent;
```

Remarks

The OnEndConversation event occurs when closing an existent conversation. The conversation can be closed due to the following reasons:

- The [TMSConversation.EndConversation](#) method is called.
- A message with the SEndDialogType or SErrorType message type is received.

See Also

- [TMSConversation](#)

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5.21.1.3.4.3 OnMessage Event

Occurs when a new message is received in the asynchronous mode.

Class

[TMSServiceBroker](#)

Syntax

```
property OnMessage: TMSMessageEvent;
```

Remarks

The OnMessage event occurs when a new message is received in the asynchronous mode ([AsyncNotification](#) is set to True).

This event is called in the context of the main thread.

Example

```
procedure TForm1.MSServiceBrokerMessage(Sender: TObject);  
  begin  
    while MSServiceBroker.Receive do  
      Process(MSServiceBroker.CurrentMessage);  
  end;
```

See Also

- [AsyncNotification](#)
- [Receive](#)

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5.21.2 Enumerations

Enumerations in the **MSServiceBroker** unit.

Enumerations

Name	Description
TSMMessageValidation	Defines the type of validation performed.

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5.21.2.1 TSMMessageValidation Enumeration

Defines the type of validation performed.

Unit

[MSServiceBroker](#)

Syntax

```
TSMMessageValidation = (mvEmpty, mvNone, mvXML);
```

Values

Value	Meaning
mvEmpty	The message should be empty.
mvNone	Validation is not performed.
mvXML	The message should be a well-formed XML document.

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5.22 MSSQLMonitor

This unit contains implementation of the TMSQLMonitor component.

Classes

Name	Description
------	-------------

TMSSQLMonitor	This component serves for monitoring dynamic SQL execution in SDAC-based applications.
-------------------------------	--

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5.22.1 Classes

Classes in the **MSSQLMonitor** unit.

Classes

Name	Description
TMSSQLMonitor	This component serves for monitoring dynamic SQL execution in SDAC-based applications.

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5.22.1.1 TMSSQLMonitor Class

This component serves for monitoring dynamic SQL execution in SDAC-based applications.

For a list of all members of this type, see [TMSSQLMonitor](#) members.

Unit

[MSSQLMonitor](#)

Syntax

```
TMSSQLMonitor = class(TCustomDASQLMonitor);
```

Remarks

Use TMSSQLMonitor to monitor dynamic SQL execution in SDAC-based applications.

TMSSQLMonitor provides two ways of displaying debug information: with dialog window,

[DBMonitor](#) or Borland SQL Monitor. Furthermore to receive debug information the

[TCustomDASQLMonitor.OnSQL](#) event can be used. Also it is possible to use all these ways

at the same time, though an application may have only one TMSSQLMonitor object. If an application has no TMSSQLMonitor instance, the Debug window is available to display SQL statements to be sent.

Inheritance Hierarchy

[TCustomDASQLMonitor](#)

TMSSQLMonitor

See Also

- [TCustomDADataSet.Debug](#)
- [TCustomDASQL.Debug](#)
- [DBMonitor](#)

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5.22.1.1.1 Members

[TMSSQLMonitor](#) class overview.

Properties

Name	Description
Active (inherited from TCustomDASQLMonitor)	Used to activate monitoring of SQL.
DBMonitorOptions (inherited from TCustomDASQLMonitor)	Used to set options for dbMonitor.
Options (inherited from TCustomDASQLMonitor)	Used to include the desired properties for TCustomDASQLMonitor.
TraceFlags (inherited from TCustomDASQLMonitor)	Used to specify which database operations the monitor should track in an application at runtime.

Events

Name	Description
------	-------------

OnSQL (inherited from TCustomDASQLMonitor)	Occurs when tracing of SQL activity on database components is needed.
---	---

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5.23 MSTransaction

This unit contains implementation of the TMSTransaction component.

Classes

Name	Description
TMSTransaction	A component for managing transactions in an application.

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5.23.1 Classes

Classes in the **MSTransaction** unit.

Classes

Name	Description
TMSTransaction	A component for managing transactions in an application.

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5.23.1.1 TMSTransaction Class

A component for managing transactions in an application.

For a list of all members of this type, see [TMSTransaction](#) members.

Unit

[MSTransaction](#)

Syntax

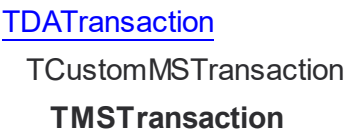
```
TMSTransaction = class(TCustomMSTransaction);
```

Remarks

The TMSTransaction component is used to provide discrete transaction control over connection. It can be used for manipulating simple local and global transactions. It is based on the [Microsoft Distributed Transaction Coordinator](#) functionality.

You can add connections in TMSTransaction both before calling the StartTransaction method, and after that. It means that a transaction can be started before a connection is added. Connections can be added and removed later, when a transaction is active. A transaction is distributed regardless of connection count in it.

Inheritance Hierarchy



See Also

- [TMSTransaction Component](#)

[TMSTransaction](#) class overview.

Properties

Name	Description
ConnectionsCount	Used to get the number of connections associated with the transaction component.
IsolationLevel	Used to specify how the transactions containing

	database modifications are handled.
--	-------------------------------------

Methods

Name	Description
AddConnection	Binds a TCustomDACConnection object with the transaction component.
RemoveConnection	Disassociates the specified connections from a transaction.

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5.23.1.1.2 Properties

Properties of the **TMSTransaction** class.

For a complete list of the **TMSTransaction** class members, see the [TMSTransaction Members](#) topic.

Public

Name	Description
ConnectionsCount	Used to get the number of connections associated with the transaction component.

Published

Name	Description
IsolationLevel	Used to specify how the transactions containing database modifications are handled.

See Also

- [TMSTransaction Class](#)

- [TMSTransaction Class Members](#)

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5.23.1.1.2.1 ConnectionsCount Property

Used to get the number of connections associated with the transaction component.

Class

[TMSTransaction](#)

Syntax

```
property ConnectionsCount: integer;
```

Remarks

Use the ConnectionsCount property for getting the number of connections associated with the transaction component.

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5.23.1.1.2.2 IsolationLevel Property

Used to specify how the transactions containing database modifications are handled.

Class

[TMSTransaction](#)

Syntax

```
property IsolationLevel: TIsolationLevel default ilReadCommitted;
```

Remarks

Use the IsolationLevel property to specify how the transactions containing database modifications are handled.

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5.23.1.1.3 Methods

Methods of the **TMSTransaction** class.

For a complete list of the **TMSTransaction** class members, see the [TMSTransaction Members](#) topic.

Public

Name	Description
AddConnection	Binds a TCustomDAConnection object with the transaction component.
RemoveConnection	Disassociates the specified connections from a transaction.

See Also

- [TMSTransaction Class](#)
- [TMSTransaction Class Members](#)

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5.23.1.1.3.1 AddConnection Method

Binds a TCustomDAConnection object with the transaction component.

Class

[TMSTransaction](#)

Syntax

```
function AddConnection(Connection: TCustomDAConnection): integer;
```

Parameters

Connection

Holds a TCustomDAConnection object to associate with the transaction component.

Return Value

the index of associated connection in the connection list.

Remarks

Use the AddConnection method to associate a TCustomDACConnection object with the transaction component.

See Also

- [RemoveConnection](#)

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5.23.1.1.3.2 RemoveConnection Method

Disassociates the specified connections from a transaction.

Class

[TMSTransaction](#)

Syntax

```
procedure RemoveConnection(Connection: TCustomDACConnection);
```

Parameters

Connection

Holds the connections to disassociate.

Remarks

Use the RemoveConnection method to disassociate the specified connections from a transaction.

See Also

- [AddConnection](#)

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5.24 OLEDBAccess

This unit contains classes for accessing SQL Server through OLE DB providers

Classes

Name	Description
EMSError	Raised when SQL Server returns error as a result.
EOLEDBError	Raised when a component receives an OLE DB error.

Variables

Name	Description
ParamsInfoOldBehavior	Preparing and the first call of a stored procedure are combined for performance optimization.

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5.24.1 Classes

Classes in the **OLEDBAccess** unit.

Classes

Name	Description
EMSError	Raised when SQL Server returns error as a result.
EOLEDBError	Raised when a component receives an OLE DB error.

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5.24.1.1 EMSError Class

Raised when SQL Server returns error as a result.

For a list of all members of this type, see [EMSError](#) members.

Unit

[OLEDBAccess](#)

Syntax

```
EMSError = class(EOLEDBError);
```

Remarks

EMSError is raised when SQL Server returns error as a result, for example, of an attempt to execute invalid SQL statement. Use EMSError in the exception-handling block.

Inheritance Hierarchy

[EDAEError](#)

[EOLEDBError](#)

EMSError

See Also

- [EOLEDBError](#)
- [EDAEError](#)

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5.24.1.1.1 Members

[EMSError](#) class overview.

Properties

Name	Description
Component (inherited from EDAEError)	Contains the component that caused the error.
ErrorCode (inherited from EDAEError)	Determines the error code returned by the server.
ErrorCount (inherited from EOLEDBError)	Contains the number of errors returned by the server.
Errors (inherited from EOLEDBError)	Contains an array of errors returned by the server.

LastMessage	Contains SQL Server last error message.
LineNumber	Contains the line number of a stored procedure on which the error occurred.
MessageWide (inherited from EOLEDBError)	Used to represent the Unicode equivalent of Exception.
MSSQLErrorCode	Contains the code of a SQL Server error.
OLEDBErrorCode (inherited from EOLEDBError)	Contains the code of OLE DB Error.
ProcName	Contains the name of the stored procedure that generated the error.
ServerName	Contains the name of the server that generated the error.
SeverityClass	Contains severity of a SQL Server message.
State	Contains the state of a SQL Server error message.

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5.24.1.1.2 Properties

Properties of the **EMSError** class.

For a complete list of the **EMSError** class members, see the [EMSError Members](#) topic.

Public

Name	Description
Component (inherited from EDAEError)	Contains the component that caused the error.
ErrorCode (inherited from EDAEError)	Determines the error code returned by the server.
ErrorCount (inherited from EOLEDBError)	Contains the number of errors returned by the server.
Errors (inherited from EOLEDBError)	Contains an array of errors returned by the server.

LastMessage	Contains SQL Server last error message.
LineNumber	Contains the line number of a stored procedure on which the error occurred.
MessageWide (inherited from EOLEDBError)	Used to represent the Unicode equivalent of Exception.
MSSQLErrorCode	Contains the code of a SQL Server error.
OLEDBErrorCode (inherited from EOLEDBError)	Contains the code of OLE DB Error.
ProcName	Contains the name of the stored procedure that generated the error.
ServerName	Contains the name of the server that generated the error.
SeverityClass	Contains severity of a SQL Server message.
State	Contains the state of a SQL Server error message.

See Also

- [EMSError Class](#)
- [EMSError Class Members](#)

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5.24.1.1.2.1 LastMessage Property

Contains SQL Server last error message.

Class

[EMSError](#)

Syntax

```
property LastMessage: string;
```

Remarks

LastMessage contains SQL Server last error message.

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5.24.1.1.2.2 LineNumber Property

Contains the line number of a stored procedure on which the error occurred.

Class

[EMSError](#)

Syntax

```
property LineNumber: WORD;
```

Remarks

When applicable, the LineNumber property contains the line number of a stored procedure on which the error occurred.

See Also

- [ProcName](#)

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5.24.1.1.2.3 MSSQLErrorCode Property

Contains the code of a SQL Server error.

Class

[EMSError](#)

Syntax

```
property MSSQLErrorCode: integer;
```

Remarks

Code of the SQL Server error. Refer to MSDN for detail description of errors code. Using `MSSQLErrorCode` is more preferable than using `ErrorCode`, as decoding the last one depends on the class of an error (`EOLEDBError` or `EMSError`).

See Also

- [EMSError](#)
- [EDAEError.ErrorCode](#)

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5.24.1.1.2.4 ProcName Property

Contains the name of the stored procedure that generated the error.

Class

[EMSError](#)

Syntax

```
property ProcName: string;
```

Remarks

The `ProcName` property contains the name of the stored procedure that generated the error. This property may be empty if no stored procedure was called.

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5.24.1.1.2.5 ServerName Property

Contains the name of the server that generated the error.

Class

[EMSError](#)

Syntax

```
property ServerName: string;
```

Remarks

The ServerName property contains the name of the server that generated the error.

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5.24.1.1.2.6 SeverityClass Property

Contains severity of a SQL Server message.

Class

[EMSError](#)

Syntax

```
property SeverityClass: BYTE;
```

Remarks

The SeverityClass property contains severity of a SQL Server message.

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5.24.1.1.2.7 State Property

Contains the state of a SQL Server error message.

Class

[EMSError](#)

Syntax

```
property State: BYTE;
```

Remarks

The State property contains the state of a SQL Server error message. See the SQL Server documentation for more details.

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5.24.1.2 EOleDbError Class

Raised when a component receives an OLE DB error.

For a list of all members of this type, see [EOleDbError](#) members.

Unit

[OLEDBAccess](#)

Syntax

```
EOleDbError = class(EDAEError);
```

Remarks

EOleDbError is raised when a component receives an OLE DB error. Use EOleDbError in the exception-handling block.

If several errors happen during execution of the same SQL statement, all these errors are stored into the Errors property. For example, if the following query will be executed:

```
'SELECT wrongField1, wrongField2 FROM Northwind..Orders'
```

ErrorCount equals to 2 and the Errors property contains two errors ('Invalid column name 'WrongField1'.' and 'Invalid column name 'WrongField2'.').

Keep in mind, if MSConnection.Connect was called from another thread than this event, the text of the message can be incomplete.

Inheritance Hierarchy

[EDAEError](#)

EOleDbError

See Also

- [EMSError](#)
- [EDAEError](#)

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5.24.1.2.1 Members

[EOLEDBError](#) class overview.

Properties

Name	Description
Component (inherited from EDAEError)	Contains the component that caused the error.
ErrorCode (inherited from EDAEError)	Determines the error code returned by the server.
ErrorCount	Contains the number of errors returned by the server.
Errors	Contains an array of errors returned by the server.
MessageWide	Used to represent the Unicode equivalent of Exception.
OLEDBErrorCode	Contains the code of OLE DB Error.

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5.24.1.2.2 Properties

Properties of the **EOLEDBError** class.

For a complete list of the **EOLEDBError** class members, see the [EOLEDBError Members](#) topic.

Public

Name	Description
Component (inherited from EDAEError)	Contains the component that caused the error.
ErrorCode (inherited from EDAEError)	Determines the error code returned by the server.
ErrorCount	Contains the number of errors returned by the server.
Errors	Contains an array of errors returned by the server.

MessageWide	Used to represent the Unicode equivalent of Exception.
OLEDBErrorCode	Contains the code of OLE DB Error.

See Also

- [EOLEDBError Class](#)
- [EOLEDBError Class Members](#)

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5.24.1.2.2.1 ErrorCount Property

Contains the number of errors returned by the server.

Class

[EOLEDBError](#)

Syntax

property ErrorCount: integer;

Remarks

The number of errors returned by the server.

See Also

- [EMSError](#)

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5.24.1.2.2.2 Errors Property(Indexer)

Contains an array of errors returned by the server.

Class

[EOLEDBError](#)

Syntax

```
property Errors[Index: Integer]: EOLEDBError; default;
```

Parameters

Index

Holds the number of the error to access.

Remarks

The Errors property contains the array of errors returned by the server.

See Also

- [EOLEDBError](#)
- [EMSError](#)

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5.24.1.2.2.3 MessageWide Property

Used to represent the Unicode equivalent of Exception.

Class

[EOLEDBError](#)

Syntax

```
property Messagewide: string;
```

Remarks

This property represents the Unicode equivalent of Exception.Message. Useful for the client applications working on systems that have charset incompatible with the server charset.

See Also

- [EMSError](#)

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5.24.1.2.2.4 OLEDBErrorCode Property

Contains the code of OLE DB Error.

Class

[EOLEDBError](#)

Syntax

```
property OLEDBErrorCode: integer;
```

Remarks

The OLEDBErrorCode holds the code of OLE DB Error. Refer to MSDN for the detailed description of the error code. Using OLEDBErrorCode is more preferable than using ErrorCode, as decoding the last one depends on the class of an error (EOLEDBError or EMSError).

See Also

- [EMSError](#)
- [EDAEError.ErrorCode](#)

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5.24.2 Variables

Variables in the **OLEDBAccess** unit.

Variables

Name	Description
ParamsInfoOldBehavior	Preparing and the first call of a stored procedure are combined for performance optimization.

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5.24.2.1 ParamsInfoOldBehavior Variable

Preparing and the first call of a stored procedure are combined for performance optimization.

Unit

[OLEDBAccess](#)

Syntax

```
ParamsInfoOldBehavior: boolean;
```

Remarks

Starting with SDAC 3.70.1.26 preparing and the first call of a stored procedure were combined for performance optimization. This requires the necessity of setting the parameter type and data type of all parameters before preparing. In order to revert the old behaviour with preparation and parameters, the OLEDBAccess unit should be added to the uses clause of a unit in an application, and the following line should be added to the initialization section of the unit:

```
ParamsInfoOldBehavior := True.
```

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5.25 SdacVcl

This unit contains the visual constituent of SDAC.

Classes

Name	Description
TMSConnectDialog	A class that provides a dialog box for user to supply his login information.

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5.25.1 Classes

Classes in the **SdacVcl** unit.

Classes

Name	Description
TMSConnectDialog	A class that provides a dialog box for user to supply his login information.

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5.25.1.1 TMSConnectDialog Class

A class that provides a dialog box for user to supply his login information.

For a list of all members of this type, see [TMSConnectDialog](#) members.

Unit

[sdacvcl](#)

Syntax

```
TMSConnectDialog = class(TCustomConnectDialog);
```

Remarks

The TMSConnectDialog component is a direct descendant of TCustomConnectDialog class. Use TMSConnectDialog to provide dialog box for user to supply server name, user name, and password. You may want to customize appearance of dialog box using this class's properties.

Inheritance Hierarchy

[TCustomConnectDialog](#)
TMSConnectDialog

See Also

- [TCustomDAConnection.ConnectDialog](#)

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5.25.1.1.1 Members

[TMSConnectDialog](#) class overview.

Properties

Name	Description
CancelButton (inherited from TCustomConnectDialog)	Used to specify the label for the Cancel button.
Caption (inherited from TCustomConnectDialog)	Used to set the caption of dialog box.
ConnectButton (inherited from TCustomConnectDialog)	Used to specify the label for the Connect button.
Connection	Contains the TCustomMSConnection that is used by TMSConnectDialog object.
DialogClass (inherited from TCustomConnectDialog)	Used to specify the class of the form that will be displayed to enter login information.
LabelSet (inherited from TCustomConnectDialog)	Used to set the language of buttons and labels captions.
PasswordLabel (inherited from TCustomConnectDialog)	Used to specify a prompt for password edit.
Retries (inherited from TCustomConnectDialog)	Used to indicate the number of retries of failed connections.
SavePassword (inherited from TCustomConnectDialog)	Used for the password to be displayed in ConnectDialog in asterisks.
ServerLabel (inherited from TCustomConnectDialog)	Used to specify a prompt for the server name edit.
StoreLogInfo (inherited from TCustomConnectDialog)	Used to specify whether the login information should be kept in system registry after a connection was established.
UsernameLabel (inherited from TCustomConnectDialog)	Used to specify a prompt for

TCustomConnectDialog)	username edit.
--	----------------

Methods

Name	Description
Execute (inherited from TCustomConnectDialog)	Displays the connect dialog and calls the connection's Connect method when user clicks the Connect button.
GetServerList	Retrieves the list of available database servers.

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5.25.1.1.2 Properties

Properties of the **TMSConnectDialog** class.

For a complete list of the **TMSConnectDialog** class members, see the [TMSConnectDialog Members](#) topic.

Public

Name	Description
CancelButton (inherited from TCustomConnectDialog)	Used to specify the label for the Cancel button.
Caption (inherited from TCustomConnectDialog)	Used to set the caption of dialog box.
ConnectButton (inherited from TCustomConnectDialog)	Used to specify the label for the Connect button.
Connection	Contains the TCustomMSConnection that is used by TMSConnectDialog object.
DialogClass (inherited from TCustomConnectDialog)	Used to specify the class of the form that will be displayed to enter login information.
LabelSet (inherited from TCustomConnectDialog)	Used to set the language of buttons and labels captions.

PasswordLabel (inherited from TCustomConnectDialog)	Used to specify a prompt for password edit.
Retries (inherited from TCustomConnectDialog)	Used to indicate the number of retries of failed connections.
SavePassword (inherited from TCustomConnectDialog)	Used for the password to be displayed in ConnectDialog in asterisks.
ServerLabel (inherited from TCustomConnectDialog)	Used to specify a prompt for the server name edit.
StoreLogInfo (inherited from TCustomConnectDialog)	Used to specify whether the login information should be kept in system registry after a connection was established.
UsernameLabel (inherited from TCustomConnectDialog)	Used to specify a prompt for username edit.

See Also

- [TMSConnectDialog Class](#)
- [TMSConnectDialog Class Members](#)

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5.25.1.1.2.1 Connection Property

Contains the TCustomMSConnection that is used by TMSConnectDialog object.

Class

[TMSConnectDialog](#)

Syntax

```
property Connection: TCustomMSConnection;
```

Remarks

Read Connection property to find out what TCustomMSConnection uses the

TMSConnectDialog object. This property is read-only.

See Also

- [TCustomDAConnection.ConnectDialog](#)

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5.25.1.1.3 Methods

Methods of the **TMSConnectDialog** class.

For a complete list of the **TMSConnectDialog** class members, see the [TMSConnectDialog Members](#) topic.

Public

Name	Description
Execute (inherited from TCustomConnectDialog)	Displays the connect dialog and calls the connection's Connect method when user clicks the Connect button.
GetServerList	Retrieves the list of available database servers.

See Also

- [TMSConnectDialog Class](#)
- [TMSConnectDialog Class Members](#)

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5.25.1.1.3.1 GetServerList Method

Retrieves the list of available database servers.

Class

[TMSConnectDialog](#)

Syntax

```
procedure GetServerList(List: TStrings); override;
```

Parameters

List

A TStrings descendant that will be filled with database servers names.

Remarks

Call GetServerList method to retrieve the list of available database servers. It is useful for writing custom login forms.

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5.26 VirtualDataSet

This unit contains implementation of the TVirtualDataSet component.

Classes

Name	Description
TCustomVirtualDataSet	A base class for representation of arbitrary data in tabular form.
TVirtualDataSet	Dataset that processes arbitrary non-tabular data.

Types

Name	Description
TOnDeleteRecordEvent	This type is used for the E:Devart.Dac.TVirtualDataSet.OnDeleteRecord event.
TOnGetFieldValueEvent	This type is used for the E:Devart.Dac.TVirtualDataSet.OnGetFieldValue event.
TOnGetRecordCountEvent	This type is used for the E:Devart.Dac.TVirtualDataSet.OnGetRecordCount event.
TOnModifyRecordEvent	This type is used for E:Devart.Dac.TVirtualDataSet.OnInsertRecord and

	E:Devart.Dac.TVirtualDataSet.OnModifyRecord events.
--	---

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5.26.1 Classes

Classes in the **VirtualDataSet** unit.

Classes

Name	Description
TCustomVirtualDataSet	A base class for representation of arbitrary data in tabular form.
TVirtualDataSet	Dataset that processes arbitrary non-tabular data.

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5.26.1.1 TCustomVirtualDataSet Class

A base class for representation of arbitrary data in tabular form.

For a list of all members of this type, see [TCustomVirtualDataSet](#) members.

Unit

[virtualDataSet](#)

Syntax

```
TCustomVirtualDataSet = class(TMemDataSet);
```

Inheritance Hierarchy

[TMemDataSet](#)

TCustomVirtualDataSet

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5.26.1.1.1 Members

[TCustomVirtualDataSet](#) class overview.

Properties

Name	Description
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Methods

Name	Description
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.

CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from TMemDataSet)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML

	format compatible with ADO format.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

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5.26.1.2 TVirtualDataSet Class

Dataset that processes arbitrary non-tabular data.

For a list of all members of this type, see [TVirtualDataSet](#) members.

Unit

[virtualDataSet](#)

Syntax

```
TVirtualDataSet = class(TCustomVirtualDataSet);
```

Inheritance Hierarchy

[TMemDataSet](#)

[TCustomVirtualDataSet](#)

TVirtualDataSet

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5.26.1.2.1 Members

[TVirtualDataSet](#) class overview.

Properties

Name	Description
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.

LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Methods

Name	Description
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is

	known.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from TMemDataSet)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while

	cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

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5.26.2 Types

Types in the **VirtualDataSet** unit.

Types

Name	Description
TOnDeleteRecordEvent	This type is used for the E:Devart.Dac.TVirtualDataSet.OnDeleteRecord event.
TOnGetFieldValueEvent	This type is used for the E:Devart.Dac.TVirtualDataSet.OnGetFieldValue event.
TOnGetRecordCountEvent	This type is used for the E:Devart.Dac.TVirtualDataSet.OnGetRecordCount event.
TOnModifyRecordEvent	This type is used for E:Devart.Dac.TVirtualDataSet.OnInsertRecord and E:Devart.Dac.TVirtualDataSet.OnModifyRecord events.

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5.26.2.1 TOnDeleteRecordEvent Procedure Reference

This type is used for the E:Devart.Dac.TVirtualDataSet.OnDeleteRecord event.

Unit

[virtualDataSet](#)

Syntax

```
TOnDeleteRecordEvent = procedure (Sender: TObject; RecNo:  
Integer) of object;
```

Parameters

Sender

An object that raised the event.

RecNo

Number of the record being deleted.

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5.26.2.2 TOnGetFieldValueEvent Procedure Reference

This type is used for the E:Devart.Dac.TVirtualDataSet.OnGetFieldValue event.

Unit

[virtualDataSet](#)

Syntax

```
TOnGetFieldValueEvent = procedure (Sender: TObject; Field: TField;  
RecNo: Integer; out value: Variant) of object;
```

Parameters

Sender

An object that raised the event.

Field

The field, which data has to be returned.

RecNo

The number of the record, which data has to be returned.

Value

Requested field value.

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5.26.2.3 TOnGetRecordCountEvent Procedure Reference

This type is used for the E:Devart.Dac.TVirtualDataSet.OnGetRecordCount event.

Unit

[virtualDataSet](#)

Syntax

```
TOnGetRecordCountEvent = procedure (Sender: TObject; out Count: Integer) of object;
```

Parameters

Sender

An object that raised the event.

Count

The number of records that the virtual dataset will contain.

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5.26.2.4 TOnModifyRecordEvent Procedure Reference

This type is used for E:Devart.Dac.TVirtualDataSet.OnInsertRecord and E:Devart.Dac.TVirtualDataSet.OnModifyRecord events.

Unit

[virtualDataSet](#)

Syntax

```
TOnModifyRecordEvent = procedure (Sender: TObject; var RecNo: Integer) of object;
```

Parameters

Sender
An object that raised the event.

RecNo
Number of the record being inserted or modified.

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5.27 VirtualTable

This unit contains implementation of the TVirtualTable component.

Classes

Name	Description
TVirtualTable	Dataset that stores data in memory. This component is placed on the Data Access page of the Component palette.

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5.27.1 Classes

Classes in the **VirtualTable** unit.

Classes

Name	Description
TVirtualTable	Dataset that stores data in memory. This component is placed on the Data Access page of the Component palette.

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5.27.1.1 TVirtualTable Class

Dataset that stores data in memory. This component is placed on the Data Access page of the Component palette.

For a list of all members of this type, see [TVirtualTable](#) members.

Unit

[virtualTable](#)

Syntax

```
TVirtualTable = class(TMemDataSet);
```

Inheritance Hierarchy

[TMemDataSet](#)

TVirtualTable

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5.27.1.1.1 Members

[TVirtualTable](#) class overview.

Properties

Name	Description
CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
DefaultSortType	Used to determine the default type of local sorting for string fields.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a

	TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Methods

Name	Description
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
Assign	Copies fields and data from another TDataSet component.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.

EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
LoadFromFile	Loads data from a file into a TVirtualTable component.
LoadFromStream	Copies data from a stream into a TVirtualTable component.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from TMemDataSet)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO format.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.

SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

Events

Name	Description
OnUpdateError (inherited from TMemDataSet)	Occurs when an exception is generated while cached updates are applied to a database.
OnUpdateRecord (inherited from TMemDataSet)	Occurs when a single update component can not handle the updates.

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5.27.1.1.2 Properties

Properties of the **TVirtualTable** class.

For a complete list of the **TVirtualTable** class members, see the [TVirtualTable Members](#) topic.

Public

Name	Description
------	-------------

CachedUpdates (inherited from TMemDataSet)	Used to enable or disable the use of cached updates for a dataset.
IndexFieldNames (inherited from TMemDataSet)	Used to get or set the list of fields on which the recordset is sorted.
KeyExclusive (inherited from TMemDataSet)	Specifies the upper and lower boundaries for a range.
LocalConstraints (inherited from TMemDataSet)	Used to avoid setting the Required property of a TField component for NOT NULL fields at the time of opening TMemDataSet.
LocalUpdate (inherited from TMemDataSet)	Used to prevent implicit update of rows on database server.
Prepared (inherited from TMemDataSet)	Determines whether a query is prepared for execution or not.
Ranged (inherited from TMemDataSet)	Indicates whether a range is applied to a dataset.
UpdateRecordTypes (inherited from TMemDataSet)	Used to indicate the update status for the current record when cached updates are enabled.
UpdatesPending (inherited from TMemDataSet)	Used to check the status of the cached updates buffer.

Published

Name	Description
DefaultSortType	Used to determine the default type of local sorting for string fields.

See Also

- [TVirtualTable Class](#)
- [TVirtualTable Class Members](#)

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5.27.1.1.2.1 DefaultSortType Property

Used to determine the default type of local sorting for string fields.

Class

[TVirtualTable](#)

Syntax

```
property DefaultSortType: TSortType default stCaseSensitive;
```

Remarks

The DefaultSortType property is used when a sort type is not specified explicitly after the field name in the [TMemDataSet.IndexFieldNames](#) property of a dataset.

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5.27.1.1.3 Methods

Methods of the **TVirtualTable** class.

For a complete list of the **TVirtualTable** class members, see the [TVirtualTable Members](#) topic.

Public

Name	Description
ApplyRange (inherited from TMemDataSet)	Applies a range to the dataset.
ApplyUpdates (inherited from TMemDataSet)	Overloaded. Writes dataset's pending cached updates to a database.
Assign	Copies fields and data from another TDataSet component.
CancelRange (inherited from TMemDataSet)	Removes any ranges currently in effect for a dataset.
CancelUpdates (inherited from TMemDataSet)	Clears all pending cached updates from cache and restores dataset in its prior

	state.
CommitUpdates (inherited from TMemDataSet)	Clears the cached updates buffer.
DeferredPost (inherited from TMemDataSet)	Makes permanent changes to the database server.
EditRangeEnd (inherited from TMemDataSet)	Enables changing the ending value for an existing range.
EditRangeStart (inherited from TMemDataSet)	Enables changing the starting value for an existing range.
GetBlob (inherited from TMemDataSet)	Overloaded. Retrieves TBlob object for a field or current record when only its name or the field itself is known.
LoadFromFile	Loads data from a file into a TVirtualTable component.
LoadFromStream	Copies data from a stream into a TVirtualTable component.
Locate (inherited from TMemDataSet)	Overloaded. Searches a dataset for a specific record and positions the cursor on it.
LocateEx (inherited from TMemDataSet)	Overloaded. Excludes features that don't need to be included to the TMemDataSet.Locate method of TDataSet.
Prepare (inherited from TMemDataSet)	Allocates resources and creates field components for a dataset.
RestoreUpdates (inherited from TMemDataSet)	Marks all records in the cache of updates as unapplied.
RevertRecord (inherited from TMemDataSet)	Cancels changes made to the current record when cached updates are enabled.
SaveToXML (inherited from TMemDataSet)	Overloaded. Saves the current dataset data to a file or a stream in the XML format compatible with ADO

	format.
SetRange (inherited from TMemDataSet)	Sets the starting and ending values of a range, and applies it.
SetRangeEnd (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the end of the range of rows to include in the dataset.
SetRangeStart (inherited from TMemDataSet)	Indicates that subsequent assignments to field values specify the start of the range of rows to include in the dataset.
UnPrepare (inherited from TMemDataSet)	Frees the resources allocated for a previously prepared query on the server and client sides.
UpdateResult (inherited from TMemDataSet)	Reads the status of the latest call to the ApplyUpdates method while cached updates are enabled.
UpdateStatus (inherited from TMemDataSet)	Indicates the current update status for the dataset when cached updates are enabled.

See Also

- [TVirtualTable Class](#)
- [TVirtualTable Class Members](#)

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5.27.1.1.3.1 Assign Method

Copies fields and data from another TDataSet component.

Class

[TVirtualTable](#)

Syntax

```
procedure Assign(Source: TPersistent); override;
```

Parameters

Source

Holds the TDataSet component to copy fields and data from.

Remarks

Call the Assign method to copy fields and data from another TDataSet component.

Note: Unsupported field types are skipped (i.e. destination dataset will contain less fields than the source one). This may happen when Source is not a TVirtualTable component but some server-oriented dataset.

Example

```
Query1.SQL.Text := 'SELECT * FROM DEPT';  
Query1.Active := True;  
VirtualTable1.Assign(Query1);  
VirtualTable1.Active := True;
```

```
MSQuery1.SQL.Text := 'SELECT * FROM Orders';  
MSQuery1.Active := True;  
VirtualTable1.Assign(MSQuery1);  
VirtualTable1.Active := True;
```

See Also

- [TVirtualTable](#)

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5.27.1.1.3.2 LoadFromFile Method

Loads data from a file into a TVirtualTable component.

Class

[TVirtualTable](#)

Syntax

```
procedure LoadFromFile(const FileName: string; LoadFields:  
boolean = True; DecodeHTMLEntities: boolean = True);
```

Parameters

FileName

Holds the name of the file to load data from.

LoadFields

Indicates whether to load fields from the file.

DecodeHTMLEntities

Indicates whether to decode HTML entities from the file.

Remarks

Call the LoadFromFile method to load data from a file into a TVirtualTable component. Specify the name of the file to load into the field as the value of the FileName parameter. This file may be an XML document in ADO-compatible format or in virtual table data format. The file format is detected automatically.

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5.27.1.1.3.3 LoadFromStream Method

Copies data from a stream into a TVirtualTable component.

Class

[TVirtualTable](#)

Syntax

```
procedure LoadFromStream(Stream: TStream; LoadFields: boolean = True; DecodeHTMLEntities: boolean = True);
```

Parameters

Stream

Holds the stream from which the field's value is copied.

LoadFields

Indicates whether to load fields from the stream.

DecodeHTMLEntities

Indicates whether to decode HTML entities from the stream.

Remarks

Call the LoadFromStream method to copy data from a stream into a TVirtualTable

component. Specify the stream from which the field's value is copied as the value of the Stream parameter. Data in the stream may be in ADO-compatible format or in virtual table data format. The data format is detected automatically.

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