



User Guide



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Toad for Oracle 10
Install Guide
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Introduction



New in This Release

In All Toad Editions

Unicode Support

- Toad now supports Unicode. For people already using Unicode-enabled databases, this should be a seamless transition.

Note: Some Oracle features are not Unicode-enabled, or have specific Unicode requirements to function. Please see your Oracle documentation for information about these features.

There is an [online video tutorial](#) for this feature. This video opens a new browser window and requires an internet connection.

- Toad Advisor now checks that NLS_LANG value matches client character.
- **Default Encoding** option added to Options | General to set default encoding for new Editor tabs and for saving files.
- If you are an upgrading user, you will need to make the following change to your LexLib for the Editor parser to work correctly with Unicode:
 1. From the **View** menu, select **Options**.
 2. Click the **Editor - Behavior** node.
 3. Set the language dropdown to **PL/SQL** and then click the **Edit Language** button.
 4. Click the **Parser** tab and select **Any Name**.
 5. Add **(?r)** to the beginning of the "Any name" parser rule:
 6. Click **OK** or **Apply** to save changes.

Actions

- AppDesigner has been renamed to **Automation Designer**.
- When specifying connections on the command line (toad.exe -c), these connections will now be used in the Actions specified afterward (-a), instead of the connection currently bound to the Action.

- In some actions, you can also specify connections to execute against in the Automation Designer.
- Action Parameter files
 - Actions can now accept parameter files. They are in INI format. Right click on an Action/App in Automation Designer and choose "Create Parameter file" to build an INI file based on the current Action properties. It will create property=value pairs for the things which can be overridden. This parameter file can then be used in the Automation Designer ('Run with parameter file') or on the command line by using a pipe to separate the Action/App name from the filename. For example:

```
toad.exe -a "App->Export Dataset1 | c:\data
files\exportDataset1.ini"
```
 - You will know which Actions can generate/read an INI file by whether or not the 'Create parameter file' popup menu item in Automation Designer is enabled.

Here is a sample section from an INI file which shows an Execute Script Action:

[47]

Name=Execute Script1

Type=Execute Script

ItemCount=2

Item0=c:\try1.sql

Item1=c:\try2.sql

Output=1 {1=SingleFile, 2=SeparateFile, 3=Clipboard, 4=Discard}

Output Location=C:\some folder\output.txt

ConnectionCount=2

Connection_1=mllerch@ora10gr2.world

Connection_2=scott@ora2gr2.world

[47] is an internal identifier. "Name" and "Type" are only for your use, to find your Action within a longer App INI file. Each Actions INI section will be unique to that Action, and in the case of things like enumerated types, will include explanatory notes embedded within the line itself. In this example of 'Execute Script,' two connections are specified. This will override the bound connection of the Action. If that line wasn't there, the bound connection would be used.

The order of precedence for which connections get used:

1. Those specified on command-line always override everything else

2. If 1 is not present, those specified in an INI file are considered next
3. Finally, the connection bound to the Action is used if none are in 1 or 2

Application Data Folders

- The default installation directory for new installs enables roaming profile support by default. In the View | Toad Options | General | Application Data Directory, the **Use Default** button now points to the user's main application data folder. The **Use Local Default** button points to the user's local application data folder, which does **not** support roaming profiles.
- You must restart Toad for a change in this option to become active.

Editor

- New menu item added to the main Toad Editor menu. "Split Size Horizontally" This item will auto size the Editor so that there is equal space allocated for the edit control and the bottom docking panels. The default shortcut is **CTRL+F2**. You will need to manually add the item to the toolbar or reset your toolbar to see this if upgrading.

ER Diagram

In addition to the following information, there is an [online video tutorial](#) for this feature. This video opens in a new browser window and requires an internet connection.

- The ER Diagram has been expanded in Toad 10. This functionality is based on, and works with, the Toad Data Modeler. Toad's ER Diagrammer is not meant to be a modeling tool, but it can help you visualize complicated database structures.
- You can now see the objects included referentially when you add objects using Referential Integrity:
- In addition, you can now subdivide your diagram into multiple workspaces.
- Separate objects into categories, and color code them, and add Model information to the diagram.

Grids

In addition to this information, there is also an [online video](#) for this feature. This video opens in a new browser window and requires an internet connection.

- Grids are now consistent throughout Toad. Some new features include:
 - Grids now share a single popup menu.
 - Reset Grid View restores the grid to the original configuration so you can undo any groupings, bookmarks and so on with one selection.
 - Grids can handle block selection if row select is unchecked and multi-select is checked.
 - Grids can be grouped by a column header by dragging the header into the Group

By area at the top of the grid. This feature can be toggled on the right-click menu.

- Grids that had special functionality now have an upper toolbar containing that functionality, as in the Rebuild Multiple Indexes grid.
- You can check or uncheck all boxes in a grid column by right-clicking in the column header and selecting the appropriate option.
- Navigator toolbars have been moved to the bottom of the grid area. If you do not see a navigator, right-click in the grid and select Toggle Navigator.
- Single Record View is now part of the Navigator toolbar.
- You can bookmark one location in the grid and return to it later. Put your cursor in the row you want to bookmark and click the bookmark button on Navigator toolbar.

To return to the bookmark, click the Goto Bookmark button on the same toolbar.

- Show/Hide columns with the Quick Column Customization drop down in the upper left.
- All customizations are remembered (column order and size, group header visibility, and so on).

Licensing Structure

The licensing structure has been changed to support one key for all products in a Toad Edition. If you are upgrading your version of Toad, old license keys are still supported.

Load Database Object

- Load Database Object now allows incremental searching in both the schema box and the object grid.

Profiler Analysis

- **Show anonymous blocks toggle** in right-click menu added. This defaults to the setting made in the Profiler tab in the Editor.

Project Manager

- AutoConnect mirrors auto-connect property of the login record for Toad as a 2-way mirror, rather than as an independent auto connection.

Rebuild Table

- Can rebuild tables containing LONG columns.

Script Manager

- Has been redesigned for improved support for multiple connections.

Search Functionality

- A quick search bar has been added to the main toolbar. From this toolbar you can:

- Search Toad World online
- Search Toad World and other Toad-related sites
- Search AskToad (the Toad wiki)
- Search Knowledge Xpert
- Perform keyword searches against the Toad help file.
- You can enable/disable the search bar by right-clicking on the toolbar and selecting "Online Search".
- You may need to restore the toolbar defaults to have it display initially. To do this, right-click on the main toolbar and select **Restore defaults**.

Server Side Object Wizard

- Now a part of Toad instead of a separate application (required for Unicode support).
- Data Generation scripts added.

Setting Parameters

- Setting Parameters now provides lists for parameter selection, and larger editing areas for large parameters.

Set Sequence

- Set Sequence feature replaced with an auto-increment via sequence and trigger.
 1. From the Schema Browser | Tables page, right-click and select **Add | Trigger/Sequence Pair** and then enter the required information:
 2. Double-check the SQL created, make any required changes, and then click **OK**.

Once the sequence/trigger pair is set, you can highlight columns populated by it by doing the following:

From View | Toad Options | Schema Browser - Visual, select **Highlight columns populated by sequence/trigger pair**.

TNS Names Editor

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

- Delete host nodes in Host View mode
- Delete multiple nodes (host or service)
- Retain relative position in the tree view when nodes deleted

User Data Migration on Upgrade

A new migration tab is added to the initial startup wizard to migrate your existing application data from a previous installation of Toad. Upon startup, Toad will attempt to detect the application data paths of previously installed versions. If one is found, it will select the most recent installed version and give you the option of migrating data files from that installation to

the current installation. It will also provide the option of specifying a custom location, or the option to skip the migration and perform a clean install.

Variables

- Variables can now be added within definition filenames in several of the Compare and Generate windows. For example %DATEFILE% and %TIMEFILE% can be used to stamp the date and time of creation (These are included in the default filename). Other user-defined variables may also be added.

In the Professional, Xpert, Development Suite, and DBA Suite Editions

Code Xpert

- Command line XML output now has an additional tag called comment_count to list the number of comments in the code being analyzed.

Data Generation

- Enhanced data generation ability can now create more realistic data. Generators were added to create various address, geographical, personal, and business data formats. Also included is the ability to reference a foreign field, a hard-coded value, and the ability to enter a custom SQL statement. Straight random and Unicode data are present.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

- Three generator engines are supported:

- Internal: This will create a script with "n" INSERT statements per table (depending on the individual table's settings). An option is also available to commit every "x" rows.

Caution: This will create a very large SQL script, which will take longer to execute, but does not require any packages installed on the database server.

- DBMS_RANDOM: This will use the DBMS_RANDOM package to generate data, and is similar to the behavior in Toad 9.7. DBMS_RANDOM will need to be installed on the database server for this option to be available.
 - TOAD_DATAGEN: This will use a TOAD-specific package to generate data on the server. The advantage is that this will generate a much smaller SQL script, and will perform faster.

Note: You will need to install the TOAD_DATAGEN package through Server Side Object Wizard in order to use this feature. This package can be installed locally, or in the global TOAD schema.

- Using Toad 10 you can create more meaningful random data for your tables. One way of doing this:

- In the Schema Browser, select the tables for which you want to generate data.
- Right-click and select **Generate Data**.
- Set General options, including Data Generation Engine.
- Click on a table or column node and set options specific for that node. All options must be set individually, although the actual generation can be done all at one time.
- Click **Show SQL** to check the code before running it, or click **OK** to generate data immediately.

In the DB Admin Module and DBA Suite

Database Browser

- Right-click to execute a Quick Script.

Database Health Check

- Many new health check items. The **Database** category has been integrated into new categories: (Config, Alert Log, Storage, and Performance). Settings has been moved to its own tab. New health check items include:
 - List default initialization parameters
 - List non-default deprecated initialization parameters. (10g+)
 - Verify compatible matches version major.minor
 - Verify optimizer_features_enable matches version major.minor
 - Verify optimizer_index_caching >= 50 (9i+)
 - List incompatible parameters if pga_aggregate_target (10g) or memory_target (11g) is set
 - Verify pga_aggregate_target >+10MB (10g only)
 - Verify control file count >=2
 - Verify CPU count - - (let Oracle determine the value)
 - Verify cursor_sharing='SIMILAR' (9i+)
 - Verify cursor_space_for_time='TRUE' (pre 11g)
 - Verify db_cache_size set instead of db_block_buffers (9i+)
 - Verify buffer cache >=200MB
 - Verify Large Pool >=50MB
 - Verify objects using KEEP buffer pool exist if db_keep_cache_size is set
 - Verify db_keep_cache_size>=50MB if objects exist which use RECYCLE buffer pool
 - List db_nk_cache_sizes without corresponding tablespaces (9i+)
 - List tablespaces without corresponding db_nk_cache_sizes (9i+)

- Verify db_block_size<=4K for RAC, >=4K for non-RAC
- Verify multiblock_read_count between 4 and 16
- Verify disk_asynch_io is TRUE (pre-11g)
- Verify compatibility of db_writer_processes and dbwr_slaves with disk_asynch_io setting
- Verify dml_locks=0 or >=transactions * 4
- Verify filesystemio_options='SETALL'
- Verify fast_start_mttr_target is set when log_checkpoint_timeout=0 (9i+)
- Verify max_dump_file+size <=20MB
- Verify open_cursors >=50
- Verify query_rewrite_enabled = TRUE (9i+)
- Verify recyclebin='OFF' (10g+)
- Verify remote_login_password_file='SHARED'
- Verify session_cached_cursors >=20
- Verify sga_target>=200MB and sga_max_size same value (10g+)
- Verify star_transformation_enabled=TRUE
- Verify sql_trace = FALSE (pre-11g)
- Verify timed_os_statistics = FALSE
- Verify timed_statistics = FALSE
- Verify trace_enabled = FALSE (9i+)
- Verify SYS.AUD\$ isn't in SYSTEM tablespace
- Verify AWR collection interval >=30 minutes, retention <=90 days (10g and newer)
- List connect time, version info, and a few basic ratios
- List datafile IO distribution
- List objects where number of hash partitions is not a power of two
- List segments with <1% of extents remaining and >10 maxextents
- List segments with >1000 extents

Database Monitor

- Alert options have been moved from the main Options window to the Database Monitor screen.
- You can now run any action (including scripts) when a specified threshold is hit.
- You can configure the monitor to begin collecting data whenever a connection is made. Then, when the window is opened, all data is displayed.
- Right-click the DB Monitor Tray icon to launch Spotlight for Oracle or just open the DB Monitor.
- Wait events chart has been expanded and updated for Oracle 10g and 11g.

Instance Manager Options

- Options | Instance Manager - has now been integrated into the Instance Manager window. For example, the grid now includes checkbox columns in each server row to select servers to monitor or alert when down.

Introduction to Toad

Toad is a powerful application development tool built around an advanced SQL - PL/SQL editor. Using Toad, you can build and test scripts, PL/SQL packages, procedures, triggers, and functions. You can create and edit database tables, views, indexes, constraints, and users. The Schema Browser and Project Manager provide quick access to database objects.

Toad comes in several bundles, each offering different functionality. For more information on the different bundles, please see the [Quest Software website](#) or your Quest Sales Representative.

Toad's Editor provides an easy and efficient way to write and test scripts and queries, and its powerful data grids provide an easy way to view and edit Oracle data.

Each new release of Quest Software's Toad for Oracle product is designed to optimize your abilities to develop applications for and administer to the Oracle database. If Oracle introduces a new data item, feature, or parameter, and if the Toad for Oracle user community desires that new element, you will likely find new functionality within this product to help you with it.

Warning! By default, Oracle installs and enables some features in the database which may not be covered by your existing license, such as Partitioning, RAC, Advanced Workload Repository (AWR) and Oracle Tuning Advisor to name a few. Toad for Oracle takes advantage of these features if found installed in your database, and use of these features (including use by Toad for Oracle) may increase your Oracle licensing fees. Being properly licensed by Oracle is your (organization's) responsibility.

Using Toad, you can:

- View the Oracle Dictionary
- Create, browse, or alter objects
- Graphically build, execute, and tune queries
- Edit PL/SQL and profile stored procedures
- Manage your common DB tasks from one central window
- Find and fix database problems with constraints, triggers, extents, indexes, and grants
- Create code from shortcuts and templates
- Create custom code templates
- Control code access and development (with or without a third party version control product) using Toad's cooperative source control feature.
- Create Projects to more easily manage your work

- Step through the code as it executes
- Debug PL/SQL, scripts, and Java.

DB Admin Module

The DB Admin Module adds database administration functionality to Toad. With this module you can manage space, compare schemas, monitor database performance, create new databases, maintain redo logs, perform health checks, and more. See "DB Admin Module" (page 86) for more information.

DB Admin Module

The DB Admin Module is an optional module for Toad for Oracle that adds additional database administration

Note: Some of these features are also available in the Toad Professional Edition. These features are marked with an asterisk (*), and are noted as available in both places in their descriptions.

In addition to this list, the same list with screenshots is available on the [Toadsoft website](#). (This will open a new browser window and requires an internet connection.)

[Show all](#)

ADDM/AWR Report Generator

Create performance analysis reports from Oracle's Automatic Workload Repository. Also manage snapshots and baselines.

Analyze All Objects

This window is available in the base version of Toad, but when the DB Admin module is added, statistics can be easily exported, imported, or copied to another schema or database.

ASM Manager

Use to manage the Oracle DB file system from within the Oracle database. Create, alter, view contents of, and drop, Disks and Disk Groups.

Audit Objects

Display the audit monitoring options for selected database objects. Quickly define auditing options for single or multiple objects.

Audit SQL/Sys Privs

Display the audit monitoring options for SQL Statement Objects, Reserved Words and System Privileges in the database.

AWR Browser

View Oracle AWR data in predefined or custom charts and grids. Easily observe trends between

snapshots.

Code Road Map and ER diagram

The Create Object scripts button on both of these windows is only available with the DB Admin Module. See Code Road Map and ER Diagram.

Compare Databases

Compare Database-level objects such as tablespaces, roles, users, etc. between databases or Database Definition Files.

Compare Schemas

The Compare Schemas screen is available in the base version of Toad, but the DB Admin module allows you to use the synchronization script. The DB Admin module also allows Toad to compare a Schema Defintion File to a live schema, or another Schema Definition File. A Schema Definition File is a propriety, binary file, which stores the metadata of a live schema.

Control Files

The control file contains information about the associated database that is required for the database to be accessed by an instance, both at startup and during normal operation. A control file's information can be modified only by Oracle; no database administrator or end-user can edit a database's control file. This option allows you to view them.

Database Browser

Browse databases from server level all the way down to the object level. View aggregated information about multiple databases on the same server. The Database Browser serves as an organization tool and launch point for many tuning/troubleshooting windows within Toad.

Database Health Check

The Database Health Check performs a series of checks on a selected database and displays the results. Includes a “Vulnerability Assessment” to help find places where your database could be vulnerable to hackers. Includes a differences report to see what has changed since Health Check was last run. Results can be saved to HTML and sent by email.

Database Monitor

Allows you to monitor database performance with nine charts: Logical IO, Physical IO, Event Waits, Sessions, Call Rates, Miss Rates, SGA Memory Usage, Shared Pool, and Indexed Queries %. There is a horizontal scroll bar to allow you to see all the charts.

Database Probe

This real-time monitoring window offers a large collection of alerts. You can also create your own alerts.

DataPump Import/Export Wizards*

This feature is available in either Toad Professional Editions or the DB Admin Module. The

Oracle data pump is an import/export utility added in Oracle 10g. It is significantly faster and more efficient at loading large volumes of data than the standard import/export utilities. Toad's Data Pump import/export wizards make using it even easier. In addition, Toad has a data pump job manager to help you manage import/export tasks.

DBMS_FLASHBACK

Use this window to “look back in time” in your database, using Oracle’s DBMS_FLASHBACK package on Oracle version 9i and up.

DBMS_REDEFINITION Wizard

Use this wizard to rebuild tables online using Oracle’s DBMS_REDEFINITION package on Oracle version 10 and up.

Flat File Export

The SQL*Loader tab is only available with the DB Admin Module.

Generate Database Script

Generate DDL for all (or some) non-schema objects such as tablespaces, roles, profiles, etc. Script can be dependency-sorted. Extract from a live database or Database Definition File.

Generate Schema Script

Generate DDL for all (or some) objects in a schema. Script can be dependency-sorted. Extract from a live schema or Schema Definition File.

Identify Space Deficits

This displays tables that do not have enough free disk space to allocate their next extent.

Index Monitoring

Monitor indexes to determine whether or not they are being used. You can then drop unused indexes to eliminate unnecessary overhead.

Instance Manager

The Instance Manager is designed to let you check on the status your database instances. The Instance Manager can send email alerts when the status of an instance changes. The Instance Manager can start, stop, and alter your database instances.

Log Switch Frequency Map

This screen shows when your database performs a log switch. You can use this window to judge the balance of log switches.

LogMiner

If a System Change Number (SCN) caused a corruption problem, LogMiner lets you easily analyze a database and recover to the transaction exactly before the corruption.

New Database Wizard

The Toad Database Wizard provides a rapid way for DBAs to create Oracle databases. It offers an easy wizard-style interface consisting of 5 screens prompting the user to select parameter values for the construction of the database parameter file (INIT.ORA) as well as values used in the construction of a SQL file that can then later be executed by either a batch file (Windows) or a script (UNIX) the wizard generates.

NLS (National Language Support) Parameters

View the Session, Instance, and Database parameter settings, and change the Session and/or Instance parameters.

Operating System Utilities

- Unix Monitor - You can monitor database performance with three charts and a grid: CPU Usage, Process Queues, Disk IO in Kb/Sec (for the top 10 devices), and a process list grid that breaks the information down by user. The process list displays the top 20 CPU usage processes, sorted by %CPU as a default.
- Unix Job Scheduler - You can schedule jobs to a Unix machine.
- Unix Kernel Params - You can easily set Unix Kernel parameters to make Toad and Oracle run more efficiently.
- Windows Registry Params - You can easily set Windows Registry parameters to make Toad and Oracle run more efficiently.
- Service Manager - You can start, stop, and check status of services on local or remote PCs running Windows.

Oracle Parameters

Although you can view Oracle Parameters with Base Toad, the DB Admin Module allows you to Alter Parameters.

Pinned Code

Pin code into the memory buffer so that it is always accessible and not overwritten by new data.

Redo Log Manager

Understand your redo log configuration at a glance. Redo log groups and members can be created or dropped. Clear log groups, force a log switch, or perform various "alter system archive log" commands.

Resource Plan Scheduling

Easily schedule and change schedules for resource plans.

Schema Browser and Database|Create Menu

Create, alter, compare, drop, view information about, and manage the following object types:

- Contexts
- Dimensions
- Directories

- Flashback Archives
- Libraries
- 10g Scheduler Objects
 - Chains
 - Jobs
 - Job Classes
 - Programs
 - Schedules
 - Windows
 - Window Groups
- Policies
- Policy Groups
- Profiles
- Refresh Groups
- Resource Consumer Groups
- Resource Plans
- Roles
- Rollback Segments
- System Privileges
- Tablespaces

Segment Advisor

Examine tables, indexes, and partitions to determine if and how much, space can be reclaimed in them with the SHRINK command.

Statspack Browser

View Oracle Statspack data in predefined or custom charts and grids. Easily observe trends between snapshots.

Tablespace Map

This map provides a graphical view of the contents of your tablespaces.

Top Session Finder

You can find the sessions in the database that are consuming the most resources. Oracle tracks hundreds of statistics for each session in the database, and the Top Session Finder lets you easily sort the sessions by their usage of any combination of parameters.

Trace File Browser

Quickly and easily view the contents of an Oracle Trace File in an interactive utility.

Undo Advisor

The Undo Advisor provides advice and helps to automate the establishment of the database undo

environment. The advisor can inform you about the health of the current undo configuration, either overall or within a given time range.

View Tablespaces

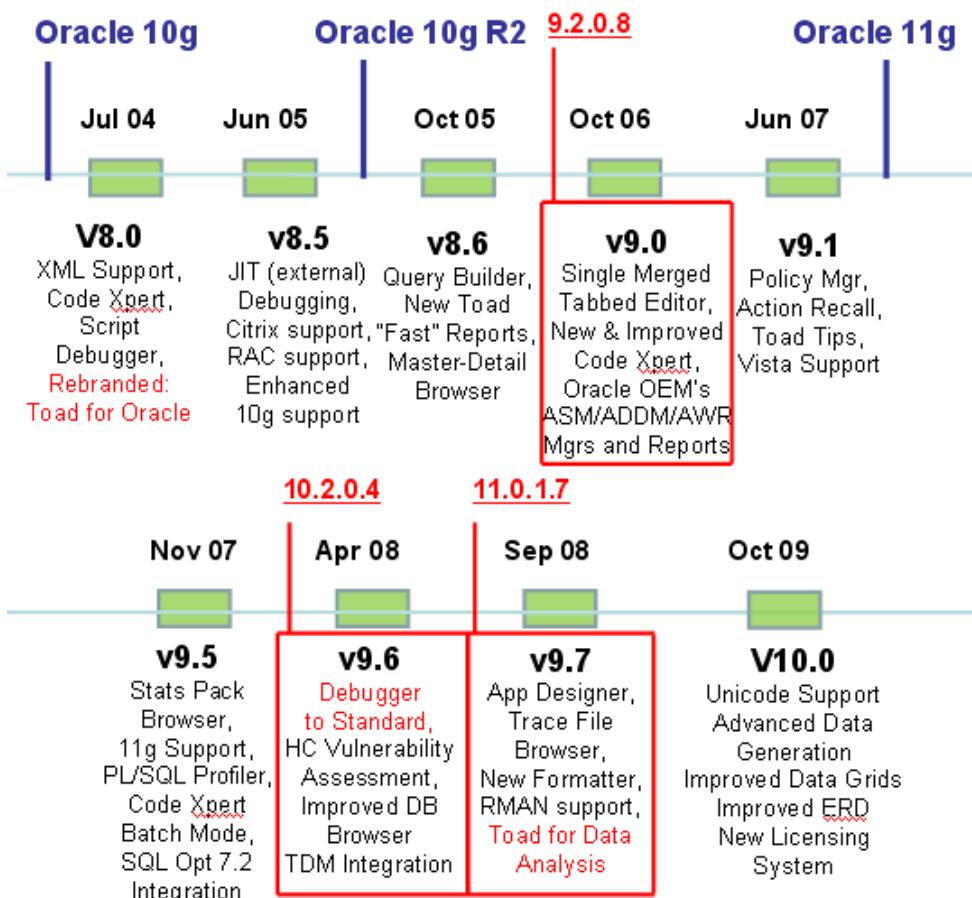
The Space, Space History, and IO History tabs are only available in the commercial version of Toad with the optional DB Admin Module.

History and Compatibility of Toad and Oracle

Toad has a rich history. Over its development cycles it has grown with Oracle. As new Oracle versions have added functionality, new Toad versions have added functionality and compatibility as well. Because of this, however, some older versions of Toad for Oracle will not work properly with newer versions of Oracle. In addition, as Oracle versions have added functionality, some older versions of the Oracle client will not work with newer versions of the Database. The following chart describe this history.

Toad History

The following timeline describes the various features that have been added to Toad for Oracle since version 8.0.



Oracle History

The following chart describes the growth of Oracle's Client/Server features:

Version	Terminal Patch	Release Date	De-support Date
7.3	7.3.4.5	FEB-1996	21-DEC-2000
8.0	8.0.6.3	JUN-1997	30-SEP-2001
8.1	8.1.7.4	FEB-1999	31-DEC-2003
9.0	9.0.1.4	JUN-2001	31-DEC-2003
9.2	9.2.0.8	MAY-2002	31-JUL-2007
10.1	10.1.0.5	JAN-2004	31-JAN-2009
10.2	10.2.0.4	SEP-2005	31-JUL-2010
11.1	11.1.0.6	AUG-2007	31-AUG-2012

Client/Server Compatibility

If the version of the Oracle client you are currently using is not compatible with the version of the Oracle server where your database resides, the incompatibilities may cause errors within Toad. For more detailed information about possible compatibility issues, see Oracle's Metalink article 207303.1 "Client / Server / Interoperability Support Between Different Oracle Versions".

Toad and Oracle Enterprise Manager

Toad for Oracle offers optional features in the DB Admin module (Toad 8.5 and higher) which access the Oracle OEM Diagnostics Pack such as :

- ADDM/AWR Report Generator – enables snapshot management and shows both AWR and ASH reports
- AWR Browser – graphical representation of data collected from AWR
- ASM Manager – enables management of ASM disk groups and clients
- Segment Advisor – determines space that can be reclaimed

Toad does offer alternate ways to determine performance bottlenecks without the use of ADDM/AWR. These include, but are not limited to: the StatsPack Browser, TK Prof interface, Database Monitor, Session Browser and the Quest SQL Optimizer's SQL Inspector. However, if you are already licensed to use the OEM Diagnostics Pack and you wish to get additional value from it, you can use the functionality we offer in Toad.

If you are using Oracle database 10g and above, you can use the Oracle Tuning Advisor feature in all Toad editions (8.6 and higher), which accesses both the Oracle OEM Tuning Pack and Diagnostics Pack.

Alternatively, if you have Toad Xpert, Development Suite or DBA Suite Editions you could use the Quest SQL Optimizer, which does not access any of the Oracle OEM Packs at all. In addition, Quest SQL Optimizer offers a unique way to rewrite your SQL code for maximum performance.

NOTE: It is your (organization's) responsibility to ensure you have the appropriate Oracle OEM license.

However, there are some steps you can take to mitigate possible risks of using functionality you are not licensed to use.

NOTE: The following techniques are mitigation methods only. Oracle licensing can change at any moment, so it is important to know exactly what your license allows and what you are not licensed to use. All of these methods within Toad are easily reversed, and, in some cases, can be ignored by any user invested in using the features regardless of license issues.

Disabling Access to OEM Functionality in Toad

You can:

- Customize your toolbar to hide buttons to Toad functionality.
- Use the Toad Options window to hide entire Toad windows.
- Use Toad Group Policy Manager to control Toad Use from a centralized location.

Customizing Your Toolbar

You can remove items from the toolbar by opening the customize window and removing the buttons that open the Toad features in question.

To remove items from the toolbar

1. Right-click over the toolbar and select Customize.
2. Drag the buttons and menu items you want to remove off of the toolbar and drop them.

Using Toad Options to Hide Windows

You can hide Toad functionality from the Options window. For more details about the Toad Options | Windows screen, see the Toad help file.

To hide Toad windows

1. From the View | Toad Options window, select **Windows** in the left hand pane.
2. In the Windows grid, clear the checkbox in the **Available?** column for the windows you want to hide.

Using Toad Group Policy Manager

You can also push these settings onto a group by using the Toad Group Policy Manager. See "Group Policy Management" (page 151) for more information about details for doing this.

To restrict usage from the Group Policy Editor

1. Install **Toad Group Policy Editor** and the **Toad Group Policy Server** as described in appropriate documentation.
2. Create groups, and then add users to groups.
3. Create restrictions to be associated with each group.
4. Publish the policy file and other associated files to the policy server.
5. Make sure your windows startup is designed to push the toad.pdl file out to users on login.

Getting Help

Online Resources

There are several online resources available to help you enhance your experience with Toad. With an internet connection, you can easily access these resources from within Toad and also from your internet browser.

Note: Links in this help topic direct you to external websites and open a new browser window.

Toad Online

The Toad Online window includes a small web browser so you can access some of these resources directly from Toad.

To access Toad Online through Toad

- » From the **Help** menu, select **Toad Online**.

Online resources available from Toad Online include:

What's New Tab

The **New in this Release** page is located on the [Toadsoft](#) website. It provides an overview of new features in the current version of Toad for Oracle and some information on how you can use them to make working with Toad easier.

Join Mailing Lists Tab

This tab lets you easily join the Toad and Toad beta mailing lists. Click one of the buttons and your email editor opens a new email with the appropriate boxes filled in. Simply send the message and you will be subscribed to the mailing lists.

Note: Accuracy of answers and solutions posted on the mailing lists are not monitored by Quest Support. These lists provide peer-to-peer support only.

Release Notes Tab

Click the release notes tab to display the release notes for Toad.

Online Resources Tab

ToadWorld.com

The Toad World site provides discussion forums, education opportunities, updates and announcements of new Toad products. Share code snippets with your fellow users, and learn valuable tips and tricks for using Toad.

[ToadWorld \(<http://toadworld.com>\)](http://toadworld.com)

[ToadWorld's Tutorial videos.](#)

Toadsoft.com

Toadsoft.com is the website to search to find information about Toad:

- Toad downloads
- [Toad How-To videos](#)
- Links to Quest resources
- And more

To access Toadsoft, go to <http://toadsoft.com>

AskToad.com

AskToad is a user-driven knowledgebase, running on Wiki technology. It is designed to provide answers, tips and hints about using Toad for Oracle.

Quest Support

Quest Support is available to customers who have a trial version of a Quest product or who have purchased a commercial version and have a valid maintenance contract. Quest Support provides around the clock coverage with SupportLink, our web self-service. Visit SupportLink at <http://support.quest.com>

From SupportLink, you can do the following:

- Quickly find thousands of solutions (Knowledgebase articles/documents).
- Download patches and upgrades.
- Seek help from a Support engineer.
- Log and update your case, and check its status.

View the Global Support Guide for a detailed explanation of support programs, online services, contact information, and policy and procedures. The guide is available at:
[http://support.quest.com/pdfs/Global Support Guide.pdf](http://support.quest.com/pdfs/Global%20Support%20Guide.pdf)

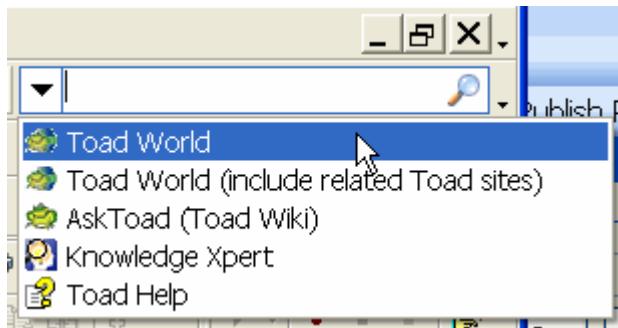
Help File

To access help

- » Do one of the following:
 - Press **F1** anywhere in Toad for context-sensitive help.
 - From the **Help** menu, select **Contents** to access the main help page.

Quick Search Bar

You can find help about Toad quickly from various locations in Quest using the Quick Search Bar on the Main Toolbar.



To search for Toad resources

1. Click the drop down arrow and select the locations you want to search:
 - ToadWorld online
 - ToadWorld and other Toad-related sites
 - AskToad (Toad wiki)
 - Knowledge Xpert
 - Toad Help Index
2. Enter a search term in the box.
3. Press **Enter** or click to search.

Check for Updates

If you have an internet connection, you can use the Check for Updates command to check for more recent versions of Toad for Oracle.

To check for updates

1. From the Help menu, select **Check for Updates**.
2. Click **OK** to close the message box.

Download Toad Tips

Toad provides the ability to update the Tips for your Toad tips window. If you have an internet connection, Toad can check for new tips and download them at any point.

To download Toad Tips

- » Select **Download Toad Tips** from the Help menu.

Frequently Asked Questions (FAQ)

If what you need to know is not in this help file, a user-driven database of FAQs is located on the web at AskToad.com.

You can also search the Toad email lists from this site.

See the [Toad Support site](#) for more information.

Show Tips

Toad provides a tips window where you can both find tips to better get the most out of Toad, and also leave notes for yourself about how you best use Toad.

The Tips window is window-specific: a new tips window is displayed when you open a new window within Toad. Because of this, you can enter notes for a specific window and have it visible only when you are using that window.

The tips window consists of a small browser window (can be resized) containing two or three tabs. If there are tips for the window, the following tabs are displayed:

- Tips - displays tips for the selected Toad window.
- Notes - displays notes you can enter for the selected Toad window.

If there are no tips for the selected window, the Tips tab does not appear, but you can still enter your own Notes and view all the tips for the window.

To show the tips window

- » Do one of the following:

- On the main menu, click .
- From the Help menu, check **Show Tips**.

Navigating the tips window

You can navigate through the tips for various windows by activating the tips list.

To navigate through tips

1. Click the **Show tips list** button beside the browse buttons.
2. Click a window name in the left hand list to display tips for it.

Notes tab

Use the notes tab to enter your own notes for the Toad window you have active. Toad saves these notes between sessions, so you can use the Notes tab as a type of scratch pad: bits of code, hints on processes you use, and so on can be stored in this box.

Hiding the tips window

To hide the tips window

- » Do one of the following:
 - On the tips window, select the **Do not Show Tips** check box and click **OK**.
 - From the Help menu, uncheck **Show Tips**.

Toad Advisor

Toad is self-diagnosing. If you are having difficulties with Toad that you can't iron out, the Toad Advisor may be able to help you. It offers Warnings, Alerts, Hints and more concerning the current state of your Toad installation. If you are in a managed environment, it will specify which features in Toad are managed, and to what extent.

To use Toad Advisor

1. From the Help menu, select **Toad Advisor**.
2. Check the tree structure for information about how to tweak Toad to work better in your situation:

Warnings	Describe things that should be fixed immediately
Alerts	Describe things that may have an impact upon Toad's functionality
Hints	Provide information about your Toad installation that may affect how Toad works
Performance suggestions	Describe settings that could be changed to improve speed of performance

About Toad

This dialog box displays some helpful contact information.

- Note the current version number of Toad. If you contact customer support, they will want to know what version you are using.
- Clicking on "www.quest.com" opens your default web browser and navigates directly to the Quest Software, Inc. site.
- Clicking on "info@quest.com" opens your default email client software to compose a new email to Quest for more information. Please note the version number of Toad in your email.

To access the Help About dialog box

- » Select **Help | About** from the menu.

Release Notes

You can easily access the release notes from the Help menu. The release notes detail the changes made to the current release of Toad for Oracle.

To read the release notes

- » From the **Help** menu, select **Release Notes**.

Support Bundle

Support Bundle Overview

If you haven't been able to find the answer to your question in the User's Manual, or the Help files, you can contact us directly. An easy way to do this is by choosing **Help | Support Bundle**.

The support bundle window provides information about several aspects of your Oracle and Toad setups. In addition, the Support Bundle lets you easily report problems to our peer-to-peer mailing lists or directly to Quest Support. See "Support Bundle Toolbar" (page 101) for more information.

The information collected can be used to greatly improve troubleshooting of any problems. This information includes:

- Application Information
- Toad Version
- Toad Registration Information
- Toad Editions Options (Debugger, DBA, Xpert, and so on.)
- Installation Type (Network or Local)

- EXE and Client Directories. Client directory only applies to network installations
- Knowledge Xpert Version and Location
- SPServer.dll Version and Location
- Team Coding Information
- If Team Coding Installed or not
- Team coding settings
- Oracle Client Information
- Client Location
- TNSNAMES.ORA Location
- Oracle Server Information
- Server Version
- Server NLS_CHARACTERSET
- Server NLS_NCHAR_CHARACTERSET
- Connected User and Connect As (Normal, SYSDBA, SYSOPER)
- System Information
- Operating System Version
- Total and Available Memory (Physical, Virtual, and Swap)
- PATH Environment Variable
- TNS_ADMIN Environment Variable
- Oracle Homes Registry Data
- All registry information for each installed home is displayed. This information is found under HKEY_LOCAL_MACHINE\Software\Oracle

Support Bundle Toolbar

From the toolbar of the [support bundle](#), you can accomplish several things.

Button	Command
	Copy support bundle to clipboard
	Save support bundle to file
	Refresh support bundle information
Toad Mailing List	This opens your email application with a pre-addressed email to the peer-to-peer Toad mailing list. See "Join Mailing Lists Tab" (page 95) for more information.

Button	Command
Quest Support	This opens your email application with a pre-addressed email to our customer support department.
Attach TOAD.INI to email	If checked this attaches the TOAD.INI to any email sent through the support bundle, whether it is to the peer-to-peer Toad list or to Quest Support
Attach SQL Tuning Support zip to emails	If checked, this attaches the SQL Tuning support zip to any email sent through the support bundle, to either the peer-to-peer Toad list or to Quest Support.
Use this information in body of email	If checked, Toad will include the support bundle information in the body of the email sent to either the peer-to-peer Toad list or to Quest Support

Troubleshooting

Unicode Troubleshooting

Toad now supports Unicode. For people already using Unicode-enabled databases, this should be a seamless transition.

Note: Some Oracle features are not Unicode-enabled, or have specific Unicode requirements to function. Please see your Oracle documentation for information about these features.

In addition, Toad Group Policy Manager is not Unicode-compliant.

Squares in Files Instead of Characters

Either the font you are using does not support Unicode, or the character set has not been installed on your computer.

Question Marks in Files Instead of Characters

Toad attempted to open a file with the wrong encoding setting. This has corrupted the data. Do not save the file. Close it and reopen using the correct Unicode encoding. See "Options - General" (page 661) for more information.

Script Output and Compare Files Fonts

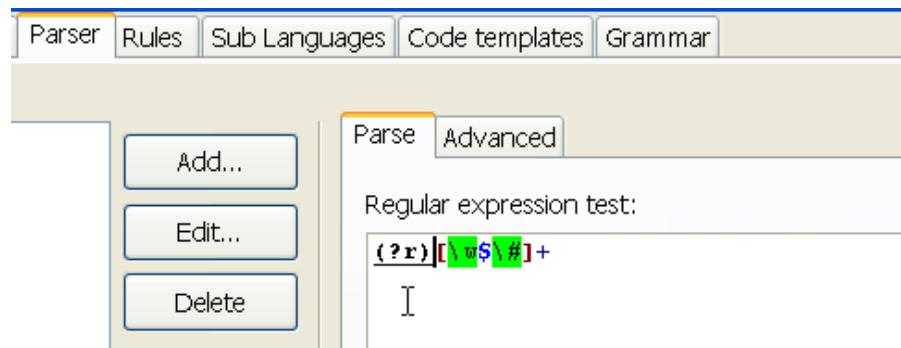
In the Editor and the Compare Files, the font now defaults to fixed-width "Courier-New" font rather than the System font. In addition, you may only select fixed-width fonts in these windows.

Editor not Working correctly

If you are an upgrading user, you may find errors when you attempt to use the Editor in Unicode. For example: object name highlighting, CTRL+Click, mouse over watch hints. This is because in order to maintain your custom settings to the Parser library, Toad did not replace the lexlib.lxl file.

To fix the parser file

1. From the **View** menu, select **Options**.
2. Click the **Editor - Behavior node**.
3. Set the language dropdown to **PL/SQL** and then click **...**.
4. Click the **Parser** tab and select **Any Name**.
5. Add **(?r)** to the beginning of the Regular expression test:



6. Click **OK** or **Apply** to save changes.

Code Xpert Not Working with Unicode Characters

This is a known issue. Code Xpert does not support Unicode.

FTP Compatability Issues

Toad's FTP feature can be used with Unicode, however, the code pages on the server, file and client must match.

Known Issues

There are some known issues with Unicode compatibility, both internally to Toad and externally from Oracle. See the release notes for more information.

Hints and Tips: Connecting To Personal Oracle

If you are having trouble connecting to Personal Oracle or creating a SQL*Net alias for PO7 or PO8, try one of the following four entries for the database name on the Toad login window:

2:

BEQ-LOCAL

LOCAL

TCP-LOOPBACK

For Schema/Passwords try one of the following pairs:

DEMO/DEMO

SCOTT/TIGER

SYS/CHANGE_ON_INSTALL

SYSTEM/MANAGER

Hints and Tips: Table Does Not Exist Errors

Toad tables are required for recalling previous Explain Plan results, Profiler, Team Coding, and Toad Security. You do not have to create these tables in order to use Toad, but you will need them for the functions listed above. To create these tables, run the [Server Side Object Install Wizard](#).

In addition, many V\$ tables are required on other screens. For a list of tables required on a screen by screen basis, see [V\\$ Tables Required](#).

Working with other Quest Products

Knowledge Xpert

You can use Quest Software's Knowledge Xpert as a comprehensive technical resource to find answers to technical questions without the need to search through manuals, books, or internet sites. Just type a keyword to access technical topics, database specific information, and guidance from experts that can help you tune, monitor, and manage your environment more efficiently and develop best practice, high performance database applications.

The information Knowledge Xpert displays gives you the background insights, information about SQL commands, working examples, and performance considerations you need to make effective decisions.

Knowledge Xpert integrates seamlessly with other Quest products such as Toad and SQL Navigator, which means you never have to shut down to look for answers.

Knowledge Xpert is a stand-alone product, and as such has its own help file.

To open Knowledge Xpert help

1. Open **Knowledge Xpert**.
2. Do one of the following:
 - Press **F1**
 - Click the **About** dropdown arrow  button and select **Help Contents**.

Using Knowledge Xpert in Toad

Knowledge Xpert is available from several places within Toad. You can use it to look up information from within the editor, or you can search it from the main toolbar.

To use Knowledge Xpert from the toolbar

1. Click the Knowledge Xpert  button.
2. Enter a term in the **Search** box and then click **OK**.

To use Knowledge Xpert within the Editor

1. Select a word or command within the code that you would like information about.
2. Right-click and select **Search Knowledge Xpert**.

Using SQL Optimizer with Toad

This feature is available only in Toad Editions that include the SQL Optimizer.

Starting with Toad Xpert 9.5, Quest SQL Optimizer 7.x for Oracle is installed in place of SQL Tuning. SQL Optimizer 7.x is an enhanced version of the previous SQL Tuning for Oracle 6.1.2 (or earlier) with an improved UI, workflow and much more functionality. See "Quest SQL Optimizer Overview" (page 610) for more information.

To launch Quest SQL Optimizer for Oracle from various places in Toad

- Editor - Click  on the Editor toolbar. See "Missing Toolbars " (page 138) for more information.
- Create/Alter windows for:
 - View
 - Trigger
 - Snapshot
- Query Builder - Generated Query tab toolbar. See "Query Builder Toolbar" (page 933) for more information.
- Session Browser - Current Statement Details tab. See "Current Statement Details" (page 561) for more information.
- SGA Trace/Optimization Window - SQL Tab. See "SGA Trace/Optimization" (page 567) for more information.
- Schema Browser tabs:
 - Views | Select a view | Right-click and select **Optimize View's SQL**.
 - Snapshots | Select a view | Right-click and select **Optimize Snapshot's SQL**.
 - Procedures | Details | Code tab | Highlight the SQL you want to tune | Click the **Optimize SQL** button on the tab's toolbar.
 - Triggers | Details | Code tab | Highlight the SQL you want to tune | Click the **Optimize SQL** button on the tab's toolbar.

To launch Quest SQL Optimizer for Oracle standalone

- » Select Start | All programs | Quest Software | Quest SQL Optimizer for Oracle | Quest SQL Optimizer 7.x for Oracle.

Note: SQL Tuning for Oracle 6.1.2 (or earlier) can not be launched as a standalone product.

Switching between versions of SQL Optimizer

You cannot launch both Quest SQL Optimizer (7 or above) and SQL Tuning (6.1.2 or earlier) simultaneously from Toad since there is only one function that calls the SQL optimization

program. Therefore, if you have both versions installed you can switch between them by using the SQL Optimizer Version Selector.

To set the active version

1. Close **Toad** and **SQL Optimizer**.
2. Select **Start | All Programs | Quest Software | Quest SQL Optimizer for Oracle | SQL Optimizer Version Selector**.
3. Select the version you want active.
4. Click **Set Active**.
5. Click **Close**.

If you select SQL Tuning for Oracle (6.1.2 or earlier), you can still run Quest SQL Optimizer from Start | All programs | Quest Software | Quest SQL Optimizer for Oracle | Quest SQL Optimizer 7.2 for Oracle. SQL Tuning for Oracle can only be launched from within Toad.

Benchmark Factory

Note: Benchmark Factory is a standalone product. For full information about using Benchmark Factory, please open Benchmark Factory and see its relevant documentation.

Benchmark Factory is a database performance and code scalability testing tool that simulates users and transactions on the database and replays production workload in non-production environments. This enables developers, DBAs, and QA teams to validate that their databases will scale as user load increases, application changes are made, and platform changes are implemented. Benchmark Factory is available for Oracle, SQL Server, DB2, Sybase, and MySQL.

You can connect to Benchmark Factory from Toad, set Performance Test Settings and send the test to Benchmark Factory for further analysis.

Benchmark Factory can be accessed from Toad in several locations:

- Schema Browser pages - Right-click on the object to be tested and select **Test Performance**.
 - Favorites - See "Favorites" (page 1005) for more information.
 - Functions - See "Schema Browser: Functions" (page 1008) for more information.
 - Packages - See "Schema Browser: Packages" (page 1040) for more information.
 - Procedures - See "Schema Browser: Procedures" (page 1044) for more information.
 - Triggers - See "Schema Browser: Triggers" (page 1090) for more information.
- Code Road Map - Right-click on the object to be tested and select **Test Performance**. See "Road Map Overview" (page 721) for more information.
- Project Manager - Right-click on the object to be tested and select **Test Performance**. See "Project Manager Overview" (page 472) for more information.

- Query Builder - In the Generated Query tab, click the **Benchmark Factory**  button. See "Query Builder Overview" (page 933) for more information.
- TKPROF Wizard - In the Local Options area of the Wizard, select **Send trace files to Benchmark Factory**. See "TKProf Interface Wizard" (page 276) for more information.
- Trace File Browser - With a Trace file open in the browser, click the **Benchmark Factory**  button on the toolbar. See "Trace File Browser" (page 312) for more information.

Note: Sending a trace file to Benchmark Factory will not open the parameters window described below.

Setting Benchmark Factory Properties

When you choose to send an object to Benchmark Factory, you will need to set Benchmark Factory properties in addition to the parameters required by the database object. For full descriptions of these properties, see the Benchmark Factory documentation.

Option	Description
BMF Tests to Perform	
Verify Service Level Agreement or Goal	Pass information through from Toad to Benchmark Factory to check Service Level Agreement compliance.
Test for Scalability based upon User Load	Pass information through from Toad to Benchmark Factory to run a scalability test based upon user load.
SLA	These options apply to the Verify Service Level Agreement or Goal option.
Rule to apply	Select the rule to apply to the Service Level Agreement or goal. Options include: <ul style="list-style-type: none">• Response time - run test until the response time exceeds the specified value.• Throughput - run test until the maximum transactions per second is discovered.
Maximum response time (milliseconds)	For response time testing, specify the maximum response time in milliseconds. If you have chosen Throughput, this box will be disabled.
Minimum number of virtual users	Enter the number of virtual users you want to begin the test.
Maximum number of virtual users	Enter the number of virtual users indicating when the test should stop.

Option	Description
Step value for virtual users	Step up this number of virtual users for each test iteration until you reach the maximum number.
Duration to execute SQL for each userload (seconds)	Specify how long each iteration (execution at the above-specified userload) should take to execute. Enter this number in seconds.
Scalability	These options apply to the Scalability Test based upon User Load .
Number of virtual users to execute the SQL statements	Enter the number of virtual users that will execute the SQL statements.
Execute Each statement	Select one of the following options to specify how to time the scalability test: <ul style="list-style-type: none"> • Number of Times - Enter the number of times each statement should be executed at a specific userload. • Duration (in seconds) - Enter the length of time each iteration should take to execute.
Latency Think Time	<ul style="list-style-type: none"> • Duration Model - Select the latency model you want to use. The default is Absolute. • Duration - Enter the duration of think time in milliseconds. The default is 100.

Quest Code Tester Integration

Quest Code Tester for Oracle automates the process of testing PL/SQL programs, making it possible for you to identify bugs and verify program correctness in a fraction of the time it has taken previously. Rather than write (and maintain) thousands of lines of test code, PL/SQL programmers describe the expected behavior of their programs through a graphical interface. Code Tester then generates the required test code, and runs it whenever you request (either through the interface or via command line execution).

If you have a license for the Quest Code Tester and have previously set up your tests, you can launch them from your code in the Toad Editor or from a right-click menu in the Schema Browser.

- If you are running Code Tester 1.8 or higher, and have saved your passwords, Toad will automatically log in for you and simply open the results window.
- If you are running Code Tester 1.6 or below, Toad will open the login window and you will need to login before the results are displayed.

For more information about the Quest Code Tester, please see your Code Tester documentation or press **F1** from within Code Tester.

To launch Quest Code Tester from the Editor

1. Open the code you want to test in the **Toad Editor**.
2. Click .
3. Click **Code Tester** to open the full application (**Close** returns to Toad).

To launch Quest Code Tester from the Schema Browser

1. Select the code you want to test in the Schema Browser.
2. Right click in the Source tab and select **Code Tester** .
3. Click **Code Tester** to open the full application (**Close** returns to Toad).

Toad Basics

Toad Tips

ToadTips contains easy to follow tips for various windows within Toad. These tips are dynamic, and Toad can check automatically to see if there are new tips. See "Download Toad Tips" (page 98) for more information.

To show tips for all windows

- » From the Help menu, select **Show Tips**.

To hide all tips but the current tip

- » In the tip window, select both **Hide All** and **Except this** check boxes.

To display the entire tip file

- » Click the **All** tab in a tip window.

Errors

Toad Error

If a command fails, the Toad Error dialog box appears.

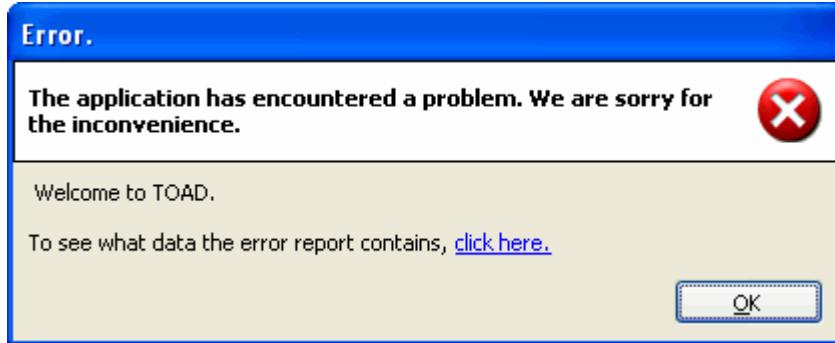


- Use the **Clipboard** button to copy the error. You can then **Paste** it into an email for customer support. See "Support Bundle Overview" (page 100) for more information.
- If the error dialog box contains an **ORA-number**, as the example above does, click **Help**. Toad calls the Oracle Helpfile and displays the error message topic in a new window. From this window you can print the topic or move to the index or table of contents for Oracle help.

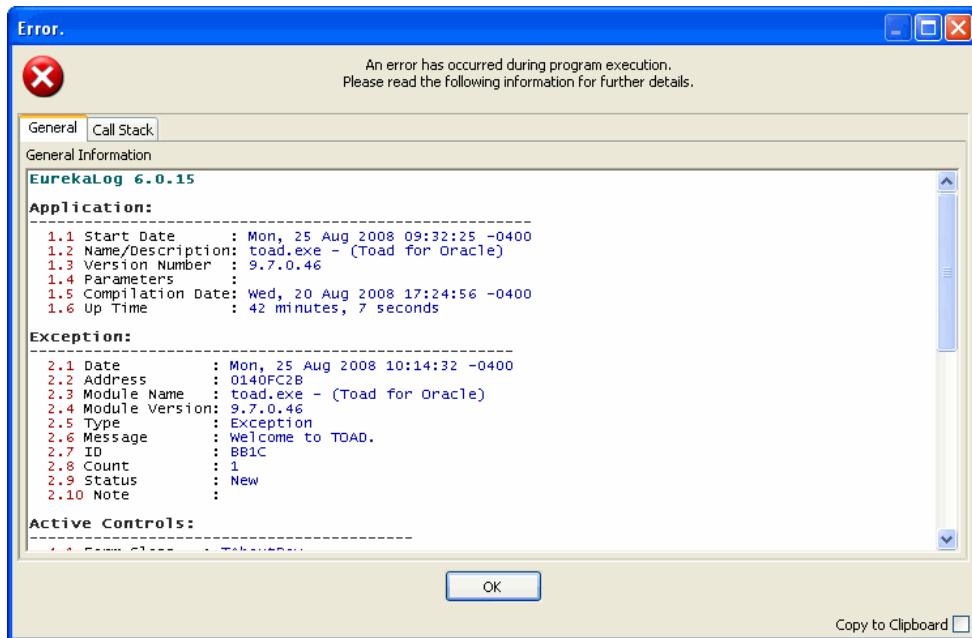
- If you have the Knowledge Xpert installed, click **Details** for more technical information about the error.
- Click **OK** to close the Toad Error dialog box.

Application Error

If Toad itself fails, the Error dialog box appears.



This type of an error creates a log, saved as toad.elf. This Eureka LogFile (.elf) contains both the application information and the callstack of the error created, and can be very helpful to Quest Support in solving issues you are having with Toad. The elf is displayed when you click as directed. You can copy this file to the clipboard and send it to support. Alternately, it is automatically saved in the Support Bundle, which you can use in various ways to get help. See "Support Bundle Overview" (page 100) for more information.



You can copy this file to the clipboard and send it to support. Alternately, it is automatically saved in the Support Bundle

RAC Support

Toad supports Oracle's support for RAC systems. If you have multiple database server boxes, Oracle RAC lets you start an Oracle instance on each server, and have all those instances open the same shared database (or shared set of data files). In this way, you can scale the size of your database server by adding more computers as you add users. Multiple computers, one database.

Additional Information for RAC Connections

When you log in to a RAC connection, Toad notes this fact and makes additional information available in some of its windows to help you manage that connection.

Caption

If a RAC connection is in effect, the caption of the Toad Main window will reflect this by showing: TOAD: RAC[n], where n is the session id.

Connection bar

In the connection bar, RAC connections are listed as SCHEMA@RAC[n], where n is the instance number of the connection.

Database Monitor

Within the database monitor, all information is provided as per a single connection. However, it is summarized or aggregated for all the instances that compose the RAC cluster. For example, looking at SGA memory - if each RAC instance is 150 MB, and you have two RAC instances, this column will display 300MB. See "Toad Database Monitor" (page 535) for more information.

Oracle Parameters Screen

RAC database single grid view - The Single Grid checkbox above the grid and to the right of the toolbar toggles whether Toad displays a single grid or a multi-grid. Toad sorts first by default on the option and then by the instance name for easier readability.

RAC database multi-grid view - If you choose the multi-grid view, Toad displays a separate tab for each RAC instance.

See "Oracle Parameters" (page 357) for more information.

Drag-and-Drop

You can Drag-and-Drop objects between many Toad windows, and between Toad and some external applications.

These possible Drag-and-Drop combinations include:

From	To	Action	Applicable Objects
Project Manager	Query Builder	Objects added to table model area	Tables/Views/Synonyms
	ER Diagram	Objects added to table model area and LHS list	Tables/Views/Synonyms
	Editor	Object name added to editor	All Objects
	Editor	File loaded in editor, or just file contents loaded in editor	Files
	Editor	Object name added to editor	All Objects besides PL/SQL Objects and Types
	Editor	Objects loaded into Editor	PL/SQL Objects and Types
	Editor	File loaded in Editor	Files
	Text Editor	Object name added to editor	All Objects
	Text Editor	File loaded in text editor	Files
	Schema Browser - Favorites Tab	Objects added to Folder in Favorites tab	All Objects supported in Schema Browser besides Synonyms and Types
	Script Manager	File Reference added to Script Manager	Files
Object Search	Query Builder	Objects added to table model area	Tables/Views/Synonym
	ER Diagram	Objects added to table model area and LHS list	Tables/Views/Synonym
	Editor	Object name added to editor	All Objects

From	To	Action	Applicable Objects
	Editor	Object name added to editor	All Objects besides PL/SQL Objects and Types
	Editor	Objects loaded into Editor	PL/SQL Objects and Types
	Text Editor	Object name added to editor	All Objects
	Project Manager	Objects added to Project Manager Project	All Objects supported in Object Search
	Schema Browser - Favorites Tab	Objects added to Folder in Favorites tab	All Objects supported in Schema Browser besides Synonyms and Types
Object Palette	Query Builder	Objects added to table model area	Tables/Views/Synonyms
	ER Diagram	Objects added to table model area and LHS list	Tables/Views/Synonyms
	Editor	Object name added to editor	Tables/Views/Synonyms/Columns
	Editor	Object name added to editor	Tables/Views/Synonyms/Columns
	Text Editor	Object name added to editor	Tables/Views/Synonyms/Columns
	Project Manager	Objects added to Project Manager Project	Tables/Views/Synonyms
	Schema Browser - Favorites Tab	Objects added to Folder in Favorites tab	Tables/Views
Schema Browser	Query Builder	Objects added to table model area	Tables/Views/Synonyms
	ER Diagram	Objects added to table model area and LHS list	Tables/Views/Synonyms

From	To	Action	Applicable Objects
	Editor	Object name added to editor	All Objects
	Editor	Object name added to editor	All Objects besides PL/SQL Objects and Types
	Editor	Objects loaded into Editor	PL/SQL Objects and Types
	Text Editor	Object name added to editor	All Objects
	Project Manager	Objects added to Project Manager Project	All Objects supported in Project Manager
	Schema Browser - Favorites Tab	Objects added to Folder in Favorites tab	All Objects supported in Schema Browser besides Synonyms and Types
Output Window/Find In Files	Project Manager - Project node	File reference added to Project Manager	Project Files
	Project Manager - Folder node	Reference added	Files
	Project Manager - FTP node	File upload to FTP server	Files
	Editor	Files loaded in Editor. File name appears in new tab	Files
	Editor	Files loaded in Editor. File name appears in new tab	Files
	Text Editor	Files loaded in Text Editor. File name appears in new tab	Files

From	To	Action	Applicable Objects
	Script Manager	File Reference added to Script Manager	Files
Windows Explorer	Project Manager	File reference added to Project Manager	Files
	Editor	File loaded in Editor	Files
	Editor	File loaded in Editor	Files
	Text Editor	File loaded in Text Editor	Files
Code Snippets	Editor	Snippet added to Editor	Code Snippet from list
	Editor	Snippet added to Editor	Code Snippet from list
	Text Editor	Snippet added to Text Editor	Code Snippet from list
Archive Window	Project Manager - Folder node	File unzipped and added to folder. Prompts to add to PM	Files inside zip archive
	Project Manager - FTP node	File unzipped and uploaded. Prompts to add to PM	Files inside zip archive
Toad Task Scheduler Interface	Project Manager	Windows task node added to Project Manager	Scheduled Tasks

Task Bar & Status Bar

Task Bar

This feature is activated or deactivated using **View | Toad Options | Toolbars/Menus | Show Connect Strings**. See "Show connect strings on Window Bar" (page 685) for more information.

At the bottom of the main Toad window, Toad displays the various connections currently open.



- Click one of these connections to activate the last window you used in that connection.
- Hover over them to display the following information:
 - user
 - connection type (sysDBA, sysOPER)
 - sysdate on server
 - database version
 - your session ID

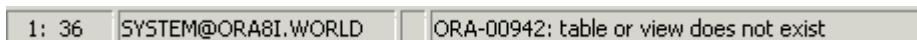
Note: The SID will only display if you have access to V\$session and are **not** logged in as sysDBA or sysOPER.

- If your SQL windows are maximized, right-click one of these connections and Toad displays a menu of options.



Status Bar

At the bottom of each individual window within Toad is a status bar. This bar provides information about the active window.



- The first frame in the status bar is the row and column your cursor is located in the results grid. If you have not opened a results grid, or your cursor is not in the grid, this frame will be blank.
- The second frame is the connection used by the active window.
- The last frame is the last displayed error.

You can hover over the information in this bar to see additional information. This includes the session ID (SID), sysdate, and Oracle version you are using. The SID is displayed only if you have access to V\$Session and are not logged in as SysDBA or SysOper.

Execution time

When you execute a script or a command in the Editor, the first frame changes to a time. The timing is the amount of time from the point that Toad sends the query to Oracle and the first result set returns. It does not describe how long it took to fetch the data.

ASCII Chart

<u>Dec</u>	<u>Hex</u>	<u>Oct</u>	<u>UTS</u>	<u>ASCII</u>	<u>CharName</u>
0	\$00	0000		NUL	NUL
1	\$01	0001		SOH	SOH
2	\$02	0002		STX	STX
3	\$03	0003		ETX	ETX
4	\$04	0004		EOT	EOT
5	\$05	0005		ENQ	ENQ
6	\$06	0006		ACK	ACK
7	\$07	0007		BEL	BEL
8	\$08	0010		BS	BS
9	\$09	0011		HT	HT
10	\$0A	0012		LF	LF
11	\$0B	0013		VT	VT
12	\$0C	0014		FF	FF
13	\$0D	0015		CR	CR
14	\$0E	0016		SO	SO
15	\$0F	0017		SI	SI
16	\$10	0020		ACK	ACK
17	\$11	0021		DC1	DC1
18	\$12	0022		DC2	DC2
19	\$13	0023		DC3	DC3
20	\$14	0024		DC4	DC4
21	\$15	0025		NAK	NAK
22	\$16	0026		SYN	SYN
23	\$17	0027		ETB	ETB
24	\$18	0030		CAN	CAN
25	\$19	0031		EM	EM
26	\$1A	0032		SUB	SUB
27	\$1B	0033		ESC	ESC
28	\$1C	0034		FS	FS
29	\$1D	0035		GS	GS

30	\$1E	0036		RS	RS
31	\$1F	0037		US	US
32	\$20	0040	1		Space
33	\$21	0041	2	!	Exclamation Mark
34	\$22	0042	3	"	Double Quote
35	\$23	0043	4	#	Number Sign
36	\$24	0044	5	\$	Dollar Sign
37	\$25	0045	6	%	Percent Sign
38	\$26	0046	7	&	Ampersand
39	\$27	0047	8	'	Single Quote
40	\$28	0050	9	(Left Parenthesis
41	\$29	0051	10)	Right Parenthesis
42	\$2A	0052	11	*	Asterisk
43	\$2B	0053	12	+	Plus Sign
44	\$2C	0054	13	,	Comma
45	\$2D	0055	14	-	Minus Sign
46	\$2E	0056	15	.	Period
47	\$2F	0057	16	/	Slash, Virgule
48	\$30	0060	17	0	0
49	\$31	0061	18	1	1
50	\$32	0062	19	2	2
51	\$33	0063	20	3	3
52	\$34	0064	21	4	4
53	\$35	0065	22	5	5
54	\$36	0066	23	6	6
55	\$37	0067	24	7	7
56	\$38	0070	25	8	8
57	\$39	0071	26	9	9
58	\$3A	0072	27	:	Colon
59	\$3B	0073	28	;	Semicolon
60	\$3C	0074	29	<	Less Than Sign
61	\$3D	0075	30	=	Equals Sign
62	\$3E	0076	31	>	Greater Than Sign
63	\$3F	0077	32	?	Question Mark
64	\$40	0100	33	@	At Sign
65	\$41	0101	34	A	A
66	\$42	0102	35	B	B
67	\$43	0103	36	C	C
68	\$44	0104	37	D	D
69	\$45	0105	38	E	E

70	\$46	0106	39	F	F
71	\$47	0107	40	G	G
72	\$48	0110	41	H	H
73	\$49	0111	42	I	I
74	\$4A	0112	43	J	J
75	\$4B	0113	44	K	K
76	\$4C	0114	45	L	L
77	\$4D	0115	46	M	M
78	\$4E	0116	47	N	N
79	\$4F	0117	48	O	O
80	\$50	0120	49	P	P
81	\$51	0121	50	Q	Q
82	\$52	0122	51	R	R
83	\$53	0123	52	S	S
84	\$54	0124	53	T	T
85	\$55	0125	54	U	U
86	\$56	0126	55	V	V
87	\$57	0127	56	W	W
88	\$58	0130	57	X	X
89	\$59	0131	58	Y	Y
90	\$5A	0132	59	Z	Z
91	\$5B	0133	60	[Left Bracket
92	\$5C	0134	61	\	Back Slash
93	\$5D	0135	62]	Right Bracket
94	\$5E	0136	63	^	Circumflex
95	\$5F	0137	64	_	Underline
96	\$60	0140	65	`	Accent
97	\$61	0141	66	a	a
98	\$62	0142	67	b	b
99	\$63	0143	68	c	c
100	\$64	0144	69	d	d
101	\$65	0145	70	e	e
102	\$66	0146	71	f	f
103	\$67	0147	72	g	g
104	\$68	0150	73	h	h
105	\$69	0151	74	i	i
106	\$6A	0152	75	j	j
107	\$6B	0153	76	k	k
108	\$6C	0154	77	l	l
109	\$6D	0155	78	m	m

110	\$6E	0156	79	n	n
111	\$6F	0157	80	o	o
112	\$70	0160	81	p	p
113	\$71	0161	82	q	q
114	\$72	0162	83	r	r
115	\$73	0163	84	s	s
116	\$74	0164	85	t	t
117	\$75	0165	86	u	u
118	\$76	0166	87	v	v
119	\$77	0167	88	w	w
120	\$78	0170	89	x	x
121	\$79	0171	90	y	y
122	\$7A	0172	91	z	z
123	\$7B	0173	92	{	Left Brace
124	\$7C	0174	93		Vertical Bar
125	\$7D	0175	94	}	Right Brace
126	\$7E	0176	95	~	Tilde
127	\$7F	0177	96	DEL	DEL

Toolbars, Menus and Shortcut Keys

Configurable Toolbars and Menus - Overview

The main Toad toolbar and menu bar is configurable, as are the Editor toolbar and keyboard shortcuts. This lets you arrange Toad to best reflect how you want to work.

If you are using a custom configuration, new commands will not be added to your custom toolbars when you upgrade Toad. However, you can see both new commands and commands that have been completely removed from the toolbars and menus.

Note: Commands that have been removed from the toolbar and not the menu bar (or the other way around) will not appear in the Unused area. Because of this, it may not be obvious that you have removed a command from one location and not the other.

To view and add new/removed commands

1. Right-click over the toolbar and select **Customize**.
2. Click the **Commands** tab.
3. Select **[New]** or **[Unused]**.
4. Drag a command to the toolbar/menu of your choosing.
5. Click **Close**.

Restoring Toolbar Defaults

To restore toolbar defaults

- » Right-click over the toolbar and select **Restore defaults**.

Usage Configuration

In addition, Toad menu bars can configure themselves to how you work with Toad. As you work, Toad collects usage data on the commands you use most often. Menus personalize themselves to your work habits, moving the most used commands closer to the top of the list, and hiding commands that you use rarely. See "Personalized Menus and Toolbars" (page 130) for more information.

You can:

- Alter toolbars, including the menu bar. See "Altering Toolbars" (page 131) for more information.
- Display and hide toolbars. You cannot hide the menu bar. See "Show/hide toolbar" (page 134) for more information.
- Create a new, custom toolbar. See "Creating Toolbars" (page 131) for more information.
- Restore the default toolbar. See "Restoring Lost Toolbars" (page 134) for more information.
- Change and add shortcuts for menu commands. See "Menu hotkeys" (page 129) for more information.
- Adjust how toolbars display and dock. See "Toolbars/Menus" (page 685) for more information.

Shortcut Keys

General Shortcut Keys

The following is a list of general Toad Shortcut Keys. In addition, there are specific shortcut keys for the Debugger, and Editor.

You can also edit your shortcut keys. See "Menu hotkeys" (page 129) for more information.

Note: If you have configured your shortcuts, shortcuts added in Toad upgrades will need to be added. You can also revert your customizations to the default to gain access to all shortcuts and new features. See "Toolbars/Menus" (page 685) for more information.

Shortcut Key	Function
F1	Windows Help File
F2	Toggle Full screen Editor

Shortcut Key	Function
SHIFT+F2	Toggle Full screen grid
F3	Find Next Occurrence
SHIFT+F3	Find Previous Occurrence
F4	Describe Table, View, Procedure, Function, or Package in popup window
F5	Editor: Sets or Deletes a Breakpoint in the Editor for PL/SQL debugging Editor: Execute as script
F6	Toggle between Editor and Results panel
F7	Clear All Text, Trace Into in the Editor
F8	Recall previous SQL statement in the Editor, Step Over in the Editor for PL/SQL debugging
F9	Execute statement in the SQL editor, Compile in the Editor
CTRL+F9	Verify statement without execution (parse) in the Editor, Set Parameters in the Editor for PL/SQL debugging
SHIFT+F9	Execute current statement at cursor in the Editor, Execute Current Source in the Editor without PL/SQL debugging
F10	Popup Menu
F11	Run (continue execution) in the Procedure Editor for PL/SQL debugging
F12	Run to cursor in the Editor for PL/SQL debugging.
CTRL+F12	Pass the SQL or Editor contents to the specified External Editor (Specified in Options > Editors).
CTRL+A	Select All Text
CTRL+ALT+B	Display the PL/SQL Debugger Breakpoints window
CTRL+C	Copy
CTRL+D	Display procedure parameters
CTRL+ALT+D	Display the PL/SQL Debugger DBMS Output window

Shortcut Key	Function
CTRL+E	Execute Explain Plan on the Current Statement
CTRL+ALT+E	Display the PL/SQL Debugger Evaluate/Modify window
CTRL+F	Find Text
CTRL+G	Goto Line
CTRL+L	Convert Text to Lowercase
CTRL+M	Make Code Statement. See "Strip Code Statement and Make Code Statement Functions" (page 893) for more information.
CTRL+N	Recall Named SQL Statement
CTRL+O	Opens a Text File
CTRL+P	Strip Code Statement. See "Strip Code Statement and Make Code Statement Functions" (page 893) for more information.
CTRL+R	Find and Replace
SHIFT+CTRL+R	Uses the ALIASES.TXT file to substitute the alias with the associated table name
CTRL+S	Saves File
SHIFT+CTRL+S	Save File As
CTRL+ALT+S	Display the PL/SQL Debugger Call Stack window
CTRL+ T	Columns Dropdown
CTRL+U	Converts Text to Uppercase
CTRL+V	Paste
CTRL+ALT+W	Display the PL/SQL Debugger Watches window
CTRL+X	Cut
CTRL+Z	Undo Last Change
SHIFT+CTRL+Z	Redo Last Undo
ALT+UP	Display Previous Statement
ALT+DOWN	Display Next Statement (after ALT+UP)

Shortcut Key	Function
CTRL+HOME	In the data grids, goes to the top of the recordset
CTRL+END	In the data grids, goes to the end of the recordset
CTRL+TAB	Cycles through the collection of MDI Child windows
CTRL+ENTER	Execute current SQL (same as SHIFT+F9)
CTRL+. (period)	Autocompletes tablenames

Editor Shortcut Keys

Below is a list of Shortcut keys used in the Editor. See "Shortcut Keys" (page 123) for more information about shortcut keys in other areas.

Note: If you have configured your shortcuts, shortcuts added in Toad upgrades will need to be added. You can also revert your customizations to the default to gain access to all shortcuts and new features. See "Toolbars/Menus - Shortcuts" (page 686) for more information.

Shortcut Key	Function
F1	Windows Help File
F2	Toggle Full screen Editor
F3	Find Next Occurrence
SHIFT+F3	Find Previous Occurrence
F4	Describe Object at cursor. Describe Table, View, Procedure, Function, or Package in popup window
F5	Execute as Script
F6	Toggle between Editor and Results tabs
F7	Clear All Text
F8	Toggle Recall SQL statement panel
F9	Execute statement
CTRL+ F9	Describes statement at cursor
SHIFT+ F9	Execute snippet at cursor
F10	Popup (right-click) Menu

Shortcut Key	Function
F11	Execute code without using the Debugger
CTRL+ A	Select All Text
CTRL+ C	Copy
CTRL+E	Execute Explain Plan on the Current Statement
CTRL+F	Find Text
CTRL+G	Goto Line
CTRL+H	Highlight snippet
CTRL+I	Init caps for highlighted code.
CTRL+L	Converts Text to Lowercase
CTRL+M	Make Code Statement
CTRL+N	Recall Named SQL Statement
CTRL+O	Opens File
CTRL+P	Strip Code Statement
CTRL+R	Find and Replace
CTRL+S	Save File
SHIFT+CTRL+S	Save File As
CTRL+T	Columns Dropdown
CTRL+U	Converts Text to Uppercase
CTRL+V	Paste
CTRL+X	Cut
CTRL+Z	Undo Last Change
CTRL+. (period)	Display popup list of matching tablenames
SHIFT+CTRL+Z	Redo Last Undo
ALT+UP+	Display Previous Statement
ALT+DOWN	Display Next Statement (after ALT+UP)

Shortcut Key	Function
ALT+PageUP	Navigate to the previous tab in the editor
ALT+PageDOWN	Navigate to the next tab in the editor
CTRL+ALT+PAGEUP	Navigate to the previous results panel tab
CTRL+ALT+PAGEDOWN	Navigate to the next results panel tab
CTRL+HOME	In the data grids, goes to the top of the recordset
CTRL+END	In the data grids, goes to the end of the recordset
CTRL+SPACE	Display the code template pick list
CTRL+TAB	Cycles through the collection of MDI Child windows

Debugger Shortcut Keys

This is a list of keyboard shortcuts used in the Debugger. See "Shortcut Keys" (page 123) for more information about shortcut keys in other areas.

Note: If you have configured your shortcuts, shortcuts added in Toad upgrades will need to be added. You can also revert your customizations to the default to gain access to all shortcuts and new features. See "Toolbars/Menus" (page 685) for more information.

Shortcut Key	Function
SHIFT+F5	Set or Delete a Breakpoint on the current line.
CTRL+F5	Add watch at cursor.
SHIFT+F7	Trace Into.
SHIFT+F8	Step Over.
SHIFT+F10	Trace Out.
SHIFT+CTRL+F9	Set Parameters.
F10	Display Right-Click Menu.
F11	Run statement using the method appropriate for the debugger selection: <ul style="list-style-type: none">• Script debugger - execute as script.• DBMS or JDWP debugger - execute as PL/SQL.
F12	Run to Cursor.

Shortcut Key	Function
CTRL+ALT+B	Display Breakpoints.
CTRL+ALT+D	Display DBMS_Output.
CTRL+ALT+E	Evaluate/Modify.
CTRL+ALT+S	Display Call Stack.
CTRL+ALT+W	Display Watches.
CTRL+PAGE UP	Move up in the Navigator Tree.
CTRL+PAGE DOWN	Move down in the Navigator Tree.
CTRL+MouseClick	Load source into Editor for object at cursor.

Configure Menu Shortcuts

You can also configure both types of menu shortcuts: menu hotkeys and shortcut keys. See [Configure Menu Shortcuts](#) for more information. See "Shortcut Keys" (page 123) for more information about default shortcut keys in other areas.

Note: If you have configured your shortcuts, shortcuts added in Toad upgrades will need to be added. You can also revert your customizations to the default to gain access to all shortcuts and new features. See "Restoring Toolbar Defaults" (page 123) for more information about restoring defaults.

Menu hotkeys

Menu hotkeys are the keys that you access by pressing the **ALT** key and then the character in the menu item that is underlined to open that menu or command.

You can configure the underlined character.

To change the hotkey

1. Right-click over the toolbar and select **Customize**.
2. Right-click the menu item you want to change. In the name box, notice that the character underlined has an ampersand (&) before it.
3. You can change the underlined character by changing the location of the ampersand. For example, **&Tools**, underlines the **T**, while **T&ools** underlines the **o**.

Shortcut keys

Shortcut keys are the keys you type to access a command directly, without going through the menu. For example, you can use **CTRL+S** to save a file.

Toad lets you configure these keys so that you can access commands more easily.

To configure shortcut keys

1. From the toolbar area, right-click and select **Menu Shortcuts**.
2. Click the command you want to set a shortcut key for. Type the keystrokes you want to use. This option only allows you to use one keystroke after a control key (such as CTRL or ALT).
3. The shortcut key is changed as you type. If there is a conflict with another shortcut key, an asterisk (*) appears in the Conflict column. You can then find the conflict and remove it.

Toolbars

Customize Toolbar Options

You can customize your display from the Options tab of the Customize dialog box. Toolbars can also be altered. See "Altering Toolbars" (page 131) for more information.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

To customize the toolbar options

1. Right click over the toolbar and select **Customize**.
2. Click the **Options** tab.

Personalized Menus and Toolbars

Toad menu bars can configure themselves to how you work with Toad. As you work, Toad collects usage data on the commands you use most often. Menus personalize themselves to your work habits, moving the most used commands closer to the top of the list, and hiding commands that you use rarely.

- From the Options tab, select **Menus show recently used commands first**.
- To turn this option off, clear **Menus show recently used commands first**.

Alternatively, hidden commands can be displayed when you select a menu and wait a few seconds, the remainder of the menu appears. This option can be selected or deselected. If it is deselected, you can display the remainder of the menu by clicking the arrow that is the last option on the menu:



Other

Other customizations you can make to your toolbars are:

- Large icons
- Show/Hide tooltips on toolbars

- Show/hide shortcut keys in tooltips
- Menu animation, including unfolding menus, sliding menus, random animation, or none

Creating Toolbars

If you want your Main toolbar to look much different from the Toad default toolbar, it may be easier to create your own custom toolbar than to customize the default toolbar.

To create a custom toolbar

1. Right-click over the toolbar and select **Customize**.
2. Click **New**.
3. Name your new toolbar, and click **OK**.
4. Click the **Commands** tab.
5. Click a **category**.

Note: Commands are separated into Categories. Each Category listed in the left panel corresponds to a menu item in the menu bar, with the exception of Menus, which lets you put an entire menu into your new toolbar.

6. Click and drag the command into the new toolbar.

By default, if there is an icon for that command, the icon will display in the toolbar.

To display the text instead of the icon, or vice versa, right-click the icon in your toolbar and select the appropriate option. (See [Alter Toolbar](#) for more information.)

7. Continue adding and moving commands until the menu is organized as you want it.
 - Move the commands around in different orders on the toolbar by clicking and dragging the icon or text.
 - Add a separator between groups of commands, just click one of the commands and drag it slightly to the right. Depending on how your toolbar is organized, the separator will be placed either above the moved command or to the left.
 - Resize the toolbar by clicking and dragging a side of it.
8. Toolbars can be docked at any side of the screen, or left as floating palettes. Floating palettes remain on top of all Toad windows.

Altering Toolbars

To change toolbars

1. Right-click the toolbar, and then select **Customize**.
2. Change commands as desired.

To change the order of commands

- » Click and drag the item on the toolbar to where you want it. An I-bar pointer marks where the command will be dropped.

Note: You can do this within the menus and submenus as well. See "Rearrange Commands" (page 143) for more information.

To add commands

- » Drag a command from the right panel of the Customize dialog box to the toolbar. An I-bar pointer marks where the command will be dropped.

To change icons to text or text to icons

1. Right-click the command you want to change.
2. Select the appropriate option:

Default	This is the default choice. In toolbars, if there is an icon, the icon will be displayed. If there is no icon attached to the command, the text will be displayed. In menu bars, both the icon and the text will be displayed.
Text only (always)	This changes the option to display only the text of the command. Icons are hidden.
Text only (in menus)	This displays only the text of the command if the toolbar is a menu bar. If the command is listed in a toolbar, the default still applies.
Image and text	This option displays both the icon and the text, whether the command is located in a toolbar or as part of a menu.

To change the text on the toolbar

Note: This is not the same as the tooltip hints that pop up when you hover your mouse above an icon or command.

1. Right-click the icon or text you want to change.
2. Rename the command in the Name box. If you want a hotkey defined, include an ampersand (&) before the letter you want to define.

Note: These are not the same as Toad shortcut keys, but rather the underlined letter for keyboard navigation. See "Menu hotkeys" (page 129) for more information.

To remove a command from the toolbar

- » Click on a command and drag it off of the toolbar.

To see what has been removed

- » Select [Removed] in the commands list.

To restore commands

- » Do one of the following:

- From the [Removed] list, drag the command back to the toolbar or menu.
- From the **Toolbars** tab, select the toolbar you want to restore and click **Restore**.

Locking Toolbars

Once you have customized your toolbars in the manner you want, you can lock the toolbars so that it is more difficult to inadvertently change your customizations. You can also lock them to the default.

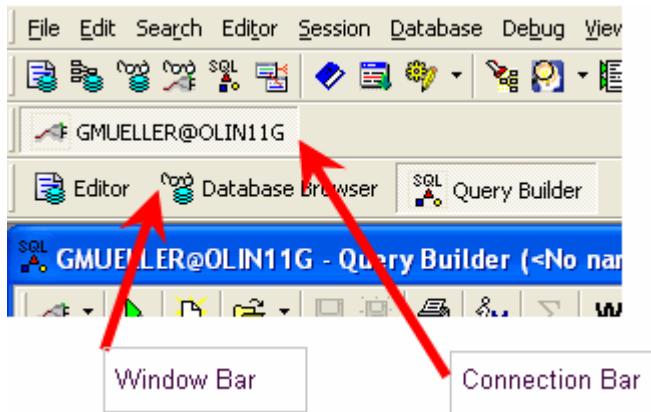
To lock toolbars

- » Right-click over the toolbars and select **Lock Toolbars**.

Window Bar

The window bar in the main window displays the windows currently open in Toad. The window bar is, by default, located just below the connection bar. Tooltips on the window bar display the full window caption.

Options for the window bar appear under Toad Options | Toolbars/Menus. See "Toolbars/Menus" (page 685) for more information.



To turn off the window bar

- » Right-click over it and clear the **Window Bar** check box.

Note: If you are using a read only toolbar configuration and you want the window

bar to remain turned off, check **Options | Toolbars/Menus| Allow docking/hiding of read only toolbars.**

To turn on the window bar

- » Right-click over the **main toolbar** and check **Window Bar**.

To change windows

- » In the **window bar**, click the **window name** you want to activate.

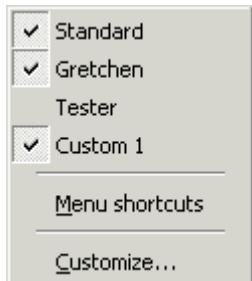
Show/hide toolbar

Once you have created several custom toolbars, you may find that you want to hide or display a specific toolbar.

Note: You cannot hide the menu.

To change the toolbars you display

1. Right-click in the toolbar area.



2. Check the toolbars you want to display, and uncheck the toolbars you want to hide. You must do this one toolbar at a time.

Note: If you want to show or hide many toolbars, you can right-click in the toolbar area, select **Customize**, and then check and uncheck toolbars from the Customize dialog box.

Reset Default Toolbars

To restore default toolbars

1. Right-click the menu bar and select **Customize**.
2. Click **Reset Defaults**.
3. Click **OK**.

Restoring Lost Toolbars

It is possible to remove all the toolbars from the Editor. If this happens, you can restore the toolbars to your windows without resetting all the default settings.

To restore lost toolbars from the Editor only

1. Right-click in the **Desktop panels** tab area.
2. Select **Desktop Panels | Customize Toolbar**.
3. Click on the **Toolbars** tab and select the Editor toolbars you want to display.

Merging Toolbars

With Toad 9.6, the merged toolbar feature has been deprecated. Merged toolbars were designed to display the most commonly-used commands while leaving you room to work in the active Toad window, and to disable customization so that buttons could not be removed or moved accidentally.

If you liked the merged toolbar feature, you can set your toolbar to mimic this behavior.

Note: Locking the toolbars as described in this procedure will lock ALL toolbars, not just the editor toolbar.

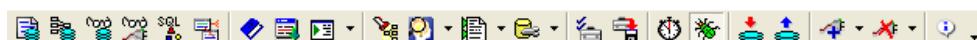
To mimic merged toolbars

1. Right-click over the **Editor** toolbar and select **Restore Defaults**.
2. Right-click over the **Editor** toolbar and hide the **Macro** toolbar by clicking on it so it is no longer checked.
3. Right-click over the **Editor** toolbar and select **Lock Toolbars**.

Standard Toolbars

Default Toolbar

The default toolbar on the main Toad window is configurable. If your toolbar appears different from that below, it may have been personalized. See "Configurable Toolbars and Menus - Overview" (page 122) for more information on configuring the toolbar and restoring default settings.



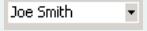
Button	Command
	Open a new Editor window with the current active connection. See "Toad Editor" (page 854) for more information.
	Open a new Schema Browser window with the current active connection. See "Schema Browser Window Overview" (page 978) for more information.
	Open a new Database Browser window. See "Database Browser" (page 532) for more information.
	Open a new Session Browser window. See "Session Browser Overview" (page 551) for more information.
	Open a new Query Builder window with the current active connection. See "Query Builder Overview" (page 933) for more information.

	Open a new Master/Detail browser window. See "Master/Detail Browser" (page 728) for more information.
	Open a new Project Manager window. See "Project Manager Overview" (page 472) for more information.
	Open an Output window for the current active connection. See "Various Tabs" (page 879) for more information.
	Open the Toad Automation Designer. See "Managing Projects" (page 433) for more information.
	Open a new Object Search window with the current active connection. See "Object Search" (page 967) for more information.
	Open integrated Knowledge Xpert. See "Knowledge Xpert" (page 105) for more information.
	Open a new Script Manager window with the current connection. See "Script Manager Overview" (page 503) for more information.
	Configure or execute an external tool. See "Configure Toad Tools" (page 747) for more information.
	This icon changes if tools have been recently executed. See "Execute Toad Tools" (page 750) for more information.
	Open the Toad Optionswindow. See "Toad Options" (page 623) for more information.
	Save all options normally saved when exiting Toad.
	Toggle PL/SQL Profiling. See "Using DBMS_PROFILER" (page 602) for more information.
	Toggle Compiling with Debug.
	Commit any changes to this schema.
	Rollback any changes to this schema.
	Open a new Oracle Connection to the database. <ul style="list-style-type: none">• Main button - open Server Login window.• >Arrow - select a previously used connection. See "Server Login Window" (page 177) for more information.
	End a current active Oracle connection. <ul style="list-style-type: none">• Main button - open Select Session dialog.• Arrow - select an active connection. See "Select Session" (page 268) for more information.
	Toggle the tip windows. See "Show Tips" (page 98) for more information.

Desktop Toolbar

The desktop toolbar is available from the Editor and the main Toad toolbar.



Button	Command
 Joe Smith	Select desktop dropdown
	Save current desktop
	Delete current desktop

Saving the desktop

When you click the Save current desktop button, the Save Desktop dialog appears. If you find you no longer need the saved desktop, you can delete it.

To save the desktop

1. Click .
2. Enter a name for your new desktop and click **OK**.

To delete the current desktop

1. Click .
2. Click **OK** to confirm the deletion.

Editor Toolbars

The toolbars in the Toad editor can be arranged and configured in a way that works for you.

The standard toolbars for the editor contain minimal commands. There are many other commands available, however, and you can add them to any of the toolbars . See "Altering Toolbars" (page 131) for more information.

The standard toolbars found on the editor include:

- Standard Editor Toolbar (page 138)
- Saving the desktop (page 137)
- Current Schema Toolbar (page 139)
- Execute Toolbar (page 140)
- Edit Toolbar (page 139)
- Source Control Toolbar (page 782)
- Macro Toolbar (page 141)

Missing Toolbars

See "Restoring Lost Toolbars" (page 134) for more information.

Standard Editor Toolbar

Button	Command
	Change active session. In the drop down list, the active session is denoted by a check mark.
	Open new editor tab. Click the button to use the default tab type, click the drop down list to select a tab type.
	Close the current active editor tab.
	Load from file.
	Load from database.
	Save.
	Save current file as.
	Save all files.
	Reload file from disk.
	Reload from database.
	Print tab contents.
	Tune code using the SQL Tuning Optimization module.
	Profile the selected code.
	Send tab contents to Quest Code Tester .
	Make code .

Button	Command
	Strip code.
	Navigate back.
	Navigate forward.
	Recall previously saved SQL.
	Create new PL/SQL Object.

Current Schema Toolbar

The Current Schema toolbar lets you work with a schema other than the one where you are connected. This can be useful if, for example you have tested a SQL statement in your test schema and now want to execute it on several other schemas without disconnecting and reconnecting. To use this feature, you must have the ALTER SESSION privilege.

By default, the current schema is set to your current connection. When you use this command Toad follows this procedure:

- Issues an ALTER SESSION SET current_schema command
- You can now execute the sql statement against that schema
- Toad issues the ALTER SESSION SET current_schema command again to return to the connection schema.

Note: This feature does not work with script execution or debugging commands.

Button	Command
	Use the dropdown to set the schema.

Edit Toolbar



Button	Command
	Cut and store on clipboard.
	Copy to clipboard.

Button	Command
	Paste from clipboard.
	Select all text.
	Clear all.
	Find text.
	Find next string.
	Replace text.
	Undo last modification.
	Redo last undo.
	Convert to upper case.
	Convert to lower case.
	Convert to initial caps.
	Indent right.
	Indent left.
	Format the selected code.

Execute Toolbar



Icon	Command
	Compile.
	Halt execution.

Icon	Command
	Execute as script. Dropdown allows selection of Execute in QSR or Execute in SQL*Plus.
	Run Explain Plan for current statement. See "Explain Plan Overview" (page 716) for more information.
	Compile Dependent objects.
	Execute procedure using existing arguments.
	Set Parameters. See "Setting Parameters" (page 909) for more information.
	Step over the current line of code.
	Trace into.
	Trace out.
	Run to cursor.
	Set breakpoint at cursor. See "Setting a Breakpoint" (page 918) for more information.
	Set watch at cursor. See "Adding a Watch" (page 926) for more information.
	Debug External Session. See "External Debugging" (page 929) for more information.

Macro Toolbar



Button	Command
	Select and play macro
	Record macro
	Stop recording macro
	Cancel recording macro
	Edit macros

Menus

Add a Menu

To add a Toad menu

1. Right-click the **menu bar** and select **Customize**.
2. Click the **Commands** tab.
3. Select the **Menus** category on the left pane.
4. Click the menu you want to add (for example, Team Coding) in the right pane and drag it to the menu bar where you want it located. The pointer changes to a vertical I-bar at the menu bar.

To add a customized menu

1. Right-click the **menu bar** and select **Customize**.
2. Click the **Commands** tab.
3. Select the **New Menu** category on the left side of the window.
4. Click **New Menu** in the right pane and drag it to the menu bar where you want it located. The pointer changes to a vertical I-bar at the menu bar.
5. Rename your menu. See "Rename a Menu" (page 143) for more information.
6. Add commands. See "Adding sub-menus" (page 143) for more information.

Delete a Command

To delete command from a menu

1. Right-click the **menu bar** and select **Customize**.
2. Click the **menu** containing the command.
3. Click and drag the **command** off the menu.

Add a Command

To add a command

1. Right-click the **menu bar** and select **Customize**.
2. Click the **Commands** tab.
3. Select from any of the categories listed. A list of available commands appears in the right pane.
4. Click a command in the right pane and drag it to the menu where you want it located. The pointer changes to a vertical I-bar at the menu, and to a horizontal I-bar when the menu opens. You can place it anywhere in the menu.

Adding sub-menus

To add an additional menu

1. Right-click the **menu bar** and select **Customize** from the menu.
2. Click the **Commands** tab.
3. Select the **New Menu** category.
4. In the **Commands** pane, select **New Menu** and drag it into the menu where you want it located. The pointer changes to a vertical I-bar at the menu bar, and to a horizontal I-bar when the menu opens. You can place it anywhere in the menu you want.
5. Add commands to the flyout in the same way you would add them to the menu itself.

Rearrange Commands

You can rearrange the commands on your toolbars and menus.

To rearrange commands

1. Open the **Customize** window: right-click in the **menu** or **toolbar** and select **Customize**.
2. Click and drag the item where you want it in any of the menus. An I-bar pointer marks where the command will be dropped.

Rename a Menu

If you are using customizable toolbars/menus, you can rename menus to suit your needs.

To rename a menu

1. In the toolbar area, right-click and select **Customize**. Alternately, from the **Tools** menu, select **Customize**. The Customize dialog box appears.
2. Right-click the menu or menu item you want to change. Enter a new name for the Menu or Menu item. Note that the menu hotkey can be changed or removed at the same time. See "Menu hotkeys" (page 129) for more information.

Delete a Menu

To delete a menu

1. Right-click in the **menu bar** and select **Customize** to display the customize window.
2. Right-click the **menu** you want to remove. Select **Delete** from the menu. The menu is removed.

Installation and Administration of Toad

Window Privileges and Toad

At a minimum, in order to install and run Toad, make a connection, and do basic operations, you must be a Power User and have read/write privileges on the Oracle homes directories that you use for your connections. If you are a Power User, you will additionally require read access to the Oracle client folder.

If you are running Windows Vista, and your account is under UAC (user account control) with Data Redirection enabled, Toad should be run with administrative privileges.

Toad for Oracle, Read-Only

Toad can be made read only using the two license files: READONLY.LIC and FULLToad.LIC.

What is Toad Read Only?

Toad Read Only is a way to allow users to view data and SQL through Toad without making changes to the database.

Why use Toad Read Only?

Toad Read Only allows administrators to give their users a powerful tool without worrying about a user committing a change to a sensitive production instance.

While Toad honors privileges granted to the Oracle user, Toad Read Only will not allow the user to do anything which changes the content of the database.

Where to get Toad Read Only?

You can make any Toad installation read-only, you can use Toad Security to make selected users or roles read-only, or you can get a special read-only installation that has extra exclusions to prevent users from making changes.

How to make any Toad installation Read-Only Using License files

Toad can be made read-only using the two license files: READONLY.LIC and FULLToad.LIC found in the installation directory where Toad is installed.

Toad.EXE only reads Toad.LIC to determine if it is full Toad or read-only. The license file contains a setting for read only database access. The network administrator can copy

READONLY.LIC over the Toad.LIC on an individual workstation to make Toad read-only at that workstation. Remember, the Toad.LIC file must be in the Toad folder.

This is the least secure method of limiting Toad.

To use read only license files

- » Copy READONLY.LIC over the TOAD.LIC on an individual workstation.

Toad Security

Using Toad Security you can make Toad read-only to a selected user or role. This is useful if you have someone who needs to view database objects but does not have the authority to change them.

Note: This Toad Security option does not apply to the DB Admin Module. To restrict Toad entirely, you will also need to restrict the DB Admin Module from the appropriate users.

To make Toad read-only using Toad Security

- » Move the Read-only Override function from the Features Non-menu list to the Restricted features list in the Toad Security window. This makes Toad read-only to the selected user.

Toad Read Only Installation

Quest Software, Inc. can provide a read only copy of Toad. The Toad Standard Edition - READ ONLY install is a read only executable designed to prevent its users from changing the database. For this reason, it does not include Quest ScriptRunner (which lets a user write a script that can update database objects), SQLMonitor (which logs SQL calls using the OCI layer), and Server Side Install (which lets users make changes to Toad schemas).

To download the Toad Standard Edition - READ ONLY install

- » The Toad Standard Edition - READ ONLY install is available for download from the [Quest Software Support Download Site](#).

Registering Toad

Use the Licensing window to store the Quest Software registration ID. This indicates to Toad that you are an authorized user.

To register Toad

1. Select **Help | Licensing**.
2. Click **Modify**.
3. Enter your license key in the **Keyfield**

Note: Toad automatically adds the hyphens in the appropriate location.

4. Enter the Site Message in the **Site Message Field**.
5. Click **Apply**.

To update a license.

1. Select **Help | Licensing**.
2. Click **Modify**.
3. Make changes to the **Key** or **Site Message** as necessary.
4. Click **Apply**.

To delete a license.

1. Select **Help | Licensing**.
2. Click **Delete License**.
3. Confirm that you want to remove the license.
4. Click **Apply**.

Silent Installation

Toad for Oracle features the ability to configure a silent install in the same manner you would any MSI command line installation. Extract the installers as described in Extracting the MSI Installer below.

Extracting the MSI Installer

In order to perform a silent install for Toad for Oracle, you must first extract the MSI file from the Quest Installer. This MSI is then used with the installation variable (ADDLOCAL parameter in the examples below) to define the type of install you want to perform.

The Quest Installer must be launched in “extraction mode” from the command line. At this point you can extract the various MSI installers for use with a silent installation.

To extract the MSI

1. Run your Toad bundle from the command prompt, including the correct path to the directory where it resides, and the /extract parameter. as the .exe will contain spaces, remember to include the quotation marks. Example:

```
c:>"\Toad DBA Suite for Oracle 9.7 Commercial.exe"/extract
```

2. Your bundle .exe will be one of the following:
 - Toad DBA Suite for Oracle 9.7 Commercial.exe
 - Toad Development Suite for Oracle 9.7 Commercial.exe
 - Toad for Oracle 9.7 Suite Commercial.exe
 - Toad for Oracle 9.7 Commercial.exe

- Toad for Oracle 9.7 Read Only.exe

Note: The Quest installer launches in extract mode, and all references to installing will be replaced with extracting.

3. Change the path for the extracted files if desired. The default path is the current user's Temp directory:

```
C:\Documents and Settings\<current user>\Local Settings\Temp\bundle name.
```

4. Click **Next**.
5. Select the products you want to extract. By default, all available products are selected. Click **Next**.
6. Review your selections on the Summary and Confirmation screen. If you want to change a selection, click the Back button and make your changes. Then click **Extract**.
7. Select one of the two hyperlinks to continue:
 - Specified Location - opens the directory where your files have been extracted.
 - Readme.txt - opens the extraction log in Notepad.

Note: The extraction log contains verification of the files that have been extracted, along with the command line parameters needed to perform default installations of the products.

Full Installation

The Windows internal command msieexec.exe launches the MSI and passes command line parameters set by the user. A typical command line might look like this:

```
msieexec /i "<path to msi file, including file name>" INSTALLDIR="<installation folder, including final \>" ADDLOCAL=Client,Server/q /l*v <path to install log, including file name>
```

Note: INSTALLDIR must include the final \ in order for a silent installation to be performed.

For example:

```
msieexec /i "C:\Documents and Settings\johndoe\Desktop\ToadforOracle97.exe" INSTALLDIR="C:\Programs\Quest Software\Toad for Oracle" ADDLOCAL=Client,Server/q /l*v "C:\install.log"
```

Network Installation

For a silent network install, you would first extract the MSI from the Quest Installer then install the server side with a command similar to:

```
msieexec /i "<path to msi file, including file name>" INSTALLDIR="<installation folder, including final \>" ADDLOCAL=Server /q /l*v <path to install log, including file name>
```

For example:

```
msiexec /i "C:\Documents and
Settings\johndoe\Desktop\ToadforOracle97.exe" INSTALLDIR="Z:\Programs\Quest
Software\Toad for Oracle" ADDLOCAL=Server/q /l*v "C:\install.log"
```

Then install the client side by running a command line that looks like the following:

```
msiexec /i "<path to msi file, including file
name>" INSTALLDIR="<installation folder, including final \>" ADDLOCAL=Client
SERVERDIR="<path to server folder, including final \>" /q /l*v <path to
install log, including file name>
```

Where SERVERDIR is the same as INSTALLDIR from the previous command that silently installed the server side.

For example:

```
msiexec /i "C:\Documents and
Settings\johndoe\Desktop\ToadforOracle97.exe" INSTALLDIR="C:\Programs\Quest
Software\Toad for Oracle" ADDLOCAL=Client SERVERDIR="Z:\Programs\Quest
Software\Toad for Oracle" /q /l*v "C:\install.log"
```

Note: Both INSTALLDIR and SERVERDIR must include the final \ in order for a silent installation to be performed.

Citrix Installation

For a silent Citrix installation, use the Full Installation instructions.

Silent Uninstall

Uninstalling the MSI is similar. Use an "x" in place of the "i" and do not include the INSTALLDIR property, i.e.:

```
msiexec /x "C:\Documents and
Settings\johndoe\Desktop\ToadforOracle91SetupFull.msi" /q
```

Options, Parameters and Meanings

Option	Parameter	Meaning
ADDLOCAL	Client, Server	Determines the type of install. Parameters denote: <ul style="list-style-type: none"> • Client - client install only • Server - server install only • client, server - full install
/i	Package ProductCode	Installs or configures a product.
/f	[p o e d c a u m s v] Package ProductCode	Repairs a product. This option ignores any property values entered on the command line. The default argument list for this option is 'omus.'. <p>p - Reinstalls only if file is missing.</p> <p>o - Reinstalls if file is missing or an older version is installed.</p> <p>e - Reinstalls if file is missing or an equal or older version is installed.</p> <p>d - Reinstalls if file is missing or a different version is installed.</p> <p>c - Reinstalls if file is missing or the stored checksum does not match the calculated value. Only repairs files that have msidbFileAttributesChecksum in the Attributes column of the File table.</p> <p>a - Forces all files to be reinstalled.</p> <p>u - Rewrites all required user-specific registry entries.</p> <p>m - Rewrites all required computer-specific registry entries.</p> <p>s - Overwrites all existing shortcuts.</p> <p>v - Runs from source and re-caches the local package. Do not use the v reinstall option for the first installation of an application or feature.</p>
/a	Package	Administrative installation option. Installs a product on the network.
/x	Package/ProductCode	Uninstalls a product.

Option	Parameter	Meaning
/l	[i w e a r u c m o p v x + ! *] LogFile	<p>Writes logging information into a logfile at the specified existing path. The path to the logfile location must already exist. The installer does not create the directory structure for the logfile. Flags indicate which information to log. If no flags are specified, the default is 'iwearmo.'</p> <p>i - Status messages. w - Nonfatal warnings. e - All error messages. a - Start up of actions. r - Action-specific records. u - User requests. c - Initial UI parameters. m - Out-of-memory or fatal exit information. o - Out-of-disk-space messages. p - Terminal properties. v - Verbose output. x - Extra debugging information. Only available on Windows Server 2003. + - Append to existing file. ! - Flush each line to the log. "**" - Wildcard, log all information except for the v and x options. To include the v and x options, specify "/l*vx".</p>
/q	n b r f	<p>Sets user interface level.</p> <p>q , qn - No UI qb - Basic UI. Use qb! to hide the Cancel button. qr - Reduced UI with no modal dialog box displayed at the end of the installation. qf - Full UI and any authored FatalError, UserExit, or Exit modal dialog boxes at the end. qn+ - No UI except for a modal dialog box displayed at the end. qb+ - Basic UI with a modal dialog box displayed at the end. The modal box is not displayed if the user cancels the installation. Use qb! or qb!+ to hide the Cancel button. qb- - Basic UI with no modal dialog boxes. Please note that /qb+- is not a supported UI level. Use qb! or qb!- to hide the Cancel button.</p>

Option	Parameter	Meaning
		Note that the ! option is available with Windows Installer 2.0 and works only with basic UI. It is not valid with full UI.

Group Policy Management

The Toad Group Policy Manager is a free utility which is currently available with a licensed copy of Toad for Oracle. Quest Software reserves the right to remove, change or alter this utility at any time. The Toad Group Policy Manager provides a facility by which multiple copies of Toad within an organization can share the same set of options. It consists of a Windows Service which runs on a common server and publishes subsets of option data to defined groups of Toad users via TCP/IP, and an Editor which is used to define option sets and user groups. Users can be restricted from changing published Toad options or permitted to alter them.

Note: Toad Group Policy Management is not Unicode-compliant.

Using the Toad Group Policy Editor, policies and standards can be distributed throughout a group environment.

The Group Policy functionality consists of three parts:

- Group Policy Server
- Group Policy Editor
- Toad Policy files

Additional information is provided in the *Toad Policy Editor help file*, also available as the `GrpPlcyEdtr.pdf` file.

Toad

All installations of Toad will have a `toad.pdl` file in the installation directory. This file is encrypted, and required to be present and uncorrupt for Toad to function (whether or not Group Policy Management is enabled).

If you find Toad functionality limited, check the Toad Advisor. Functionality that has been limited will be noted with a notation of Restricted or Published. See "Toad Advisor" (page 99) for more information.

Citrix Support

Toad supports installation on Citrix servers.

Installing Toad on a Citrix server

Toad must be installed on the Citrix server by the Citrix administrator. Users then connect to this instance through their Citrix logon.

Citrix support is enabled with the full installation of Toad. Toad requires write access to the server registry during installation and read access during run-time to achieve Citrix support.

Full procedures for installing Toad on a Citrix server are located in the Getting Started Guide.

Connecting to Toad through Citrix

To connect through a client

- » Log into the **Citrix Program Neighborhood** and execute **Toad**.

Note: The first time you execute Toad you will be asked to enter a license key.
Your Citrix administrator will provide you with the license key.

User Configuration Files in Citrix

Toad is installed on the Citrix server, and individual user settings are maintained for each client machine.

Individual user settings and properties files are maintained in the user's settings file:

`C:\Documents and Settings\user_name\Application Data\Quest Software\Toad`

Script Manager and Citrix

Toad installs packaged SQL Scripts with the Script Manager. When Toad is run in a Citrix environment, the default paths to these script manager files will be wrong.

To use these, you may need to manually change these paths once.

To change the Script Manager paths for use with Citrix

1. Open **Utilities | Script Manager** and select the **DBA category** from the dropdown box.
2. Click the move button and enter your new path: `C:\Documents and Settings\User Name\Application Data\Quest Software\TOAD\ScriptMgr\DBA`.
3. Repeat for the Schema Objects category and move to `C:\Documents and Settings\User Name\Application Data\Quest Software\TOAD\ScriptMgr\Schema Objects`.

SQL*Net Versions

Toad does not require any other support libraries beyond the 32 bit Net client itself.

Oracle Version	Name of Client Software	Name of DLL
Oracle 8 and 8i	Net8	Oraclient8.dll
Oracle 9i	Oracle Net9	Oraclient9.dll
Oracle 10g Standard Client	Oracle Net10	oraclient10.dll
Oracle 10g Instant Client (Universal Installer Version)	Oracle Net10	oraociei10.dll
Oracle 11g Client	Oracle Net11	oraclient11.dll

If you have the client above installed and can connect to Oracle using any of Oracle's tools (with the exception of SQL*Plus), Toad should work properly.

Note: The most frequent cause of problems is the resetting of the PATH environment variable. To set your default Oracle home, you can use the Oracle Home Selector (provided with Oracle) to set it accurately. (See your Oracle documentation for more information.)

Configuration Files

V\$ Tables Required

Note: This list is always expanding. If you receive a "Table does not Exist" error, you can find what table is missing by spooling SQL to screen to see the code Toad is using. See "Spool SQL" (page 744) for more information.

Access to V\$ synonyms required on some common Toad windows are:

AutoTrace (Editor/Query Builder)

v\$_sesstat
v\$statname
v\$session

Optimization & Session Info screens

The following public synonyms must be present.

v\$rowcache
v\$sysstat
v\$system_event

```
v$librarycache  
v$STATNAME  
v$SESSTAT  
v$sess_io  
v$session  
v$process  
v$latch
```

Database Browser

The following public synonyms must be present.

```
V$DATABASE  
v$datafile  
v$filestat  
V$INSTANCE  
v$latch  
v$librarycache  
V$OPTION  
V$PARAMETER  
v$rollname  
v$rollstat  
v$sess_io  
v$session  
v$sesstat  
v$sgastat  
v$sqlarea  
v$statname  
v$sysstat  
v$system_event  
v$tablespace
```

Database Probe

The following public synonyms must be present.

```
V$ARCHIVE_PROCESSES
V$BH
v$buffer_pool
V$buffer_pool_statistics
v$database
v$dispatcher
V$INSTANCE
v$librarycache
v$library_cache_memory
V$LOG
V$LOG_history
V$PARAMETER
v$pq_slave
v$process
V$ROWCACHE
v$session
V$SESSTAT
v$sga
v$sgastat
V$STATNAME
v$sysstat
v$version
```

Database | Monitor | Database Monitor

The following public synonyms must be present.

```
v$sysstat
v$system_event
v$session
v$librarycache
x$ksllt
v$sgastat
```

Database | Diagnose | Database Health Check

The following public synonyms must be present.

```
v$version  
v$instance  
v$sysstat  
v$librarycache  
v$rowcache  
v$sgastat  
v$parameter  
v$database  
v$log_history  
v$filestat  
v$datafile  
v$tablespace
```

Database | Monitor | Index Monitor

To see indexes other than your own you must have access to the following:

```
sys.obj$  
sys.ind$  
sys.user$  
sys.object_usage
```

You must also have the ALTER ANY INDEX privilege.

Database | Administer | Oracle Parameters

The following public synonym must be present:

```
v$parameter
```

Database | Diagnose | LogMiner

The following public synonyms must be present.

```
v$logmnr_contents  
v$logmnr_logs
```

You must also have:

- Execute privileges on DBMS_logmnr
- Execute privileges on DBMS_logmnr_d
- the Parameter UTL_FILE_DIR set in init.ora (Oracle 8i only)

Database | Monitor | SGA Trace

The following public synonyms must be present.

```
v$sqlarea  
v$sqltext_with_newlines
```

You must also have:

```
access to the V$ Oracle Dictionary views
```

Debugging

No special public synonyms required. However:

```
DBMS_DEBUG must be valid
```

On 10g databases:

```
Debug Connect Session privileges must be granted
```

Instance Manager | Shutdown

The following public synonym must be present.

```
v$parameter  
V$INSTANCE
```

Toad Server Statistics | Analysis

The following public synonyms must be present.

```
V$SESS_IO  
V$SESSION  
V$PROCESS  
V$STATNAME  
V$ROWCACHE  
V$SYSSTAT  
V$SYSTEM_EVENT  
V$LIBRARYCACHE  
V$SESSION_PRIVS
```

Toad Server Statistics | Waits

The following public synonym must be present.

V\$SYSTEM_EVENT

Toad Server Statistics | Latches

The following public synonym must be present.

V\$LATCH

Toad Server Statistics | Sessions

The following public synonyms must be present.

V\$SESS_IO

V\$SESSION

V\$PROCESS

V\$STATNAME

Toad Server Statistics | Instance Summary

The following public synonym must be present.

V\$SYSSTAT

Toad Session Browser

The following public synonyms must be present:

V\$SESSION

V\$PROCESS

V\$SESS_IO

V\$SESSION_WAIT

V\$SESSION_EVENT

V\$ACCESS

V\$SESSSTAT

V\$STATNAME

V\$OPEN_CURSOR

V\$SQL

V\$LOCK

```
V$SESSION_LONGOPS  
V$SQLTEXT_WITH_NEWLINES
```

In addition, you must have access to the following:

```
SYS.V_$TRANSACTION  
SYS.V_$ROLLNAME
```

Space Manager Setup

The following public synonym must be present.

```
V$SYSSTAT
```

The Toad schema must have the privileges to create and alter jobs, create and drop its own tables and procedures, and must have SELECT access on the following:

```
DBA_DATA_FILES  
DBA_FREE_SPACE  
DBA_JOBS  
DBA_TABLESPACES  
V_$FILESTAT
```

The Toad INI file

There are only a few settings that require a manual edit of the TOAD.INI file. For all other settings, use the appropriate GUI.

SQL Results panel splitter

```
[SETTINGS]  
SLIDER_TOP=200
```

If you cannot see the SQL Results panel because of resizing the MDI child window too small, you can quit Toad, edit this value to a low number, like 150 or 200, and restart Toad. There is no default value.

Keep users from dropping or truncating tables

```
[SETTINGS]  
ALLOW_DROP_TBL=0
```

By default, Toad permits the user to drop tables and truncate tables. If you do not want to give a Toad user this power, put in ALLOW_DROP_TBL=0 into their TOAD.INI file. The default is 1.

Put lines of comments between identifier and name of procedure

The default to this is not included automatically in the TOAD.INI file. You can add it:

```
[SETTINGS]
PELineOffsetOverride=1
```

On is 1, set it to 0 to turn it off without deleting it.

You should only set this if you want to put lines of comments between the identifier and the name of the procedure, as in:

```
create or replace procedure
-- xx
-- yy
aaa
as
begin
raise no_data_found ;
end ;
/
```

For Toad to use the correct line number in the above example, this setting must be on (PELineOffsetOverride=1).

However, if this is on (PELineOffsetOverride=1), you will then get the wrong line # for cases where you do this:

```
create or replace procedure aaa
-- xx
-- yy
as
begin
raise no_data_found ;
end ;
/
```

How to create your ToadStats.ini file

On the Toad Server Statistics window, Analysis tab, if you do not have the Documents and Settings\username\Toad for Oracle\ToadStats.ini threshold file, these are the default threshold values used. See "Toad Server Statistics" (page 517) for more information.

INI Entry	Min Value	Warn Value	Max Value	Description	Warning Message
dg_row	-9999	-9999	-9999	dictionary gets	n/a
dm_row	98	-9999	-9999	dictionary misses	n/a
dcr_row	-9999	-9999	-9999	dictionary cache hit rate	high dictionary cache miss
bcr_row	90	-9999	-9999	buffer cache hit ratio	may need to increase

					db_block_buffers
dsr_row	-9999	-9999	10	disk sort ratio	increase SORT_AREA_SIZE or tune the SQL
bbw_row	-9999	-9999	1	buffer busy wait ratio	tables with insufficient free lists or too few rollback segments or extents
fbw_row	-9999	-9999	1	free buffer wait ratio	too many disk sorts?
lchr_row	85	-9999	-9999	library cache get hit ratio	dynamic or unsharable SQL?
lcpr_row	-9999	-9999	1	redo space wait ratio	n/a
lcpr_row	90	-9999	-9999	library cache pin hit ratio	Shared Pool area too small
rswr_row	-9999	-9999	1	redo space wait ratio	n/a
cfr_row	-9999	-9999	0.01	chained fetch ratio	PCTFREE too low for a table
per_row	-9999	-9999	20	parse/execute ratio	high parse to execute ratio
cpo_row	-9999	-9999	15	cpu parse overhead	high parse cpu overhead
tsr_row	-9999	-9999	-9999	ratio of rows from idx/total rows	low ratios indicate too many full
dbwra_row	-9999	-9999	255	DBWR avg scan depth	# DB_FILES too high?
dbwrs_row	-9999	-9999	-9999	DBWR avg buffers	n/a



-9999 = No value

To set your own custom thresholds, create an ini file, called ToadStats.ini. Place this file into your Toad for Oracle\User Files folder.

For each "INI Entry" above, you can set Minimum values, Warning values, and Maximum values. Also, you can specify a custom Title and Set the warning message when the warning value is exceeded.

When the warning value is exceeded, the circle is pink. When the maximum value is exceeded, the circle is red.

As in standard Windows .ini format, place the "INI Entry" string within left and right brackets. This becomes the section. Then, you can place Min, Warn, Max, Title, and ErrorMsg items into each section.

For example:

[dm_row]

Min=98

[bcr_row]

Min=90

[dsr_row]

Max=10

[bbw_row]

Max=1

[fbw_row]

Max=1

[lchr_row]

Min=85

Warn=90

ErrorMsg=Dynamic or Unshareable SQL?

[lcpr_row]

Max=190

```
Warn=80
Title=library cache pin hit ratio

[rswr_row]
Max=1

[cfr_row]
Max=0.01

[per_row]
Warn=17
Max=20

Title=Parse to Execute Ratio
ErrorMsg=High parse to execute ratio

[cpo_row]
Max=15

[dbwra_row]
Max=255
```

Properties Files

Options settings for Toad are stored in several different locations. We maintain them this way so that it is easier to reset or share only a small set of options.

Location	Options file	Function
Toad for Oracle directory/docs	3rdptylic.txt	Contains copies of our 3rd party license agreements
	Toad.chm, Toad.pdf, ReleaseNotes.htm, Tips Folder	Help files, User Guides, Release Notes, Tips folder.
Toad for Oracle directory		
	beef.dat	Export File Browser
	chc.rev	CodeXpert

Location	Options file	Function
	CMDLineCEGrid.xslt	CodeXpert Command Line - Grid
	CMDLineCEScripts.xslt	CodeXpert Command Line - Script
	CMDLineCETrees.xslt	CodeXpert Command Line - Trees
	cvs.ini	Holds options and logins for CVS integration.
	DatabaseProbe.txt	Stores the settings and alerts for the Probe.
	FmtPlus.opt, FmtOptions.ini	Contain options for code formatting
	install.txt	Contains start and end times for Toad installation.
	install.log	Detailed log file for Toad installation
	qexplainplan2full.msi	Explain plan install file
	QSR.ini	Stores settings for Quest ScriptRunner (qsr.exe).
	releasenotes.html	Toad Release notes
	rolelog.txt	Stores previously created Team Collaboration roles.
	RNetPin.ini	This stores the full path to the file locations. This is setup by the installer and only needs modification if you copy your Toad directory to another location.
	RuleUniverse.xml	Stores CodeXpert rules.
	SBQueries.dat	Stores Custom Queries for the Schema Browser.
	SettingsLocations.ini	Stores the path of the /User Files folder.
	SilentInstallNotes90	Stores the instructions for Silent Installation.
	TNSLoad.xslt	TNSNames Editor
	TNSSave.xslt	TNSNames Editor

Location	Options file	Function
	TNSValidate.xslt	TNSNames Editor
	unidbmon.cfg	Stores settings for Quest SQL Monitor (SQLMonitor.exe).
Documents and Settings\username\\User Files	aliases.txt	Stores your previously used table aliases.
	AWRCharts.ini	Stores your configurations for displaying charts in the AWR browser. See "ADDM/AWR (OEM)" (page 520) for more information.
	codemap.ini	Stores colors for objects in the Code Map. See "Road Map Overview" (page 521) for more information.
	CodeXpert.ini	Stores locations and names of all runbooks used by CodeXpert. It also stores window sizing and position for a modal window that CodeXpert uses.
	coloring.txt	Script Engine (QSE.exe) syntax highlighting.
	coloring1.txt	Script Engine (QSE.exe) syntax highlighting.
	Connectionpwd.ini	Stores your server information, and connection passwords that you choose to have saved. These are tied to a single machine. Passwords are not observed if you move Toad settings from one machine to another.
	connections.ini	Stores connect info for the server login window. See "Server Login Window" (page 177) for more information.
	DatabaseBrowser.tdb	Stores the treeview for the left hand pane of the Database Browser.
	DatabaseProbe.ini	Stores customization and alerts for the Database Probe. See "Database Probe Overview" (page 538) for more information.

Location	Options file	Function
	DataModeler.ini	Stores configuration for the Query Data Modeler.
	<dbname>\DefSchema.txt	Holds the name of the default schema for that database.
	<dbname>\<username>_tablefilters.xml	Stores filters for the schema browser and side grids for the specified connection.
	<dbname>\<username>\DefSchema.txt	Holds the name of the default schema for that user\database combination.
	DBWizSettings.ini	Stores saved settings for the Database Creation wizard.
	desktops.xml	Holds Toad desktop configurations.
	Editor_toolbars.ini	Stores custom toolbar configurations for the Editor.
	Editor_toolbars_Default.ini	Stores the default toolbar configurations for the Editor.
	EditorFooter.txt	
	EditorHeader.txt	
	EditorLayout_hex.lay	
	EditorLayout_PLSQL.lay	
	EditorLayout_Text.lay	
	EditorLayout_XML.lay	
	EditorMacros.bin	
	Explainplanolumndefs.xml	Stores Default column settings for Explain Plan.
	ExplainPlanGlobalPrefs.xml	Stores explain plan text colors and font sizes.
	ExplainPlanUserPrefs.XML	Stores explain plan column visibility information, widths, and order.
	ExportWizSettings.ini	Stores saved settings for the Export wizard.

Location	Options file	Function
	Filters.txt	Stores previous filters for the Filter window. See "Filter Condition" (page 28) for more information.
	Filecompare.ini	Holds options for the Differences View. See "Viewing File Differences" (page 28) for more information.
	Files with a .FLT extension	Store filters for the schema browser side.
	Files with an SDF extension	Store your Categories for the Script Editor.
	Files with a .TMD extension	Store configuration info for the Managed Browser.
	FindDirs.txt	Stores find dialog directory saves.
	ftp.ini	Stores user FTP information.
	Healthcheck.htm	DB Health Check File. See "DB Health Check" (page 287) for more information.
	htmlsub.txt	Stores html editor autocorrect settings.
	ImportWizSettings.ini	Stores saved settings for the Import wizard.
	jobdates.txt	Not editable through Toad, but use it to alter it to change the drop down menu in the Create/Alter job window. See "Create and Alter Jobs" (page 1022) for more information.
	LexLib.lxl	The lexicon library for the Editor component.
	LoginGrd.ini	Stores the configuration of the grid in the Server Login window. See "Server Login Window" (page 177) for more information.
	MainFormLayout_default.lay	
	MenuShortcuts.ini	Custom shortcut keys for the main menu.
	NewEditorBarItems.ini	

Location	Options file	Function
	NewMainFormBarItems.ini	
	NewCompoundTrig.sql, Newfunc.sql, Newproc.sql, Newpackage.sql, NewPackageBody.sql, NewPkgFunc.sql, NewPkgProc.sql, Newtrig.sql, Newtype.sql, Newtypebody.sql, NewTypefunc.sql, NewTypeproc.sql	Your default templates for creating objects in the Editor.
	Oracle Data Dictionary.sdf	Pre-created Script Manager datafile containing Oracle 8i data dictionary. See "Script Manager Overview" (page 1) for more information.
	OriginalEditorLayout_Hex.lay	
	Original EditorLayout.PLSQL.lay	
	Original EditorLayout.SQL.lay	
	Original EditorLayout.Text.lay	
	Original EditorLayout.XML.lay	
	OriginalMainFormLayout_default.lay	
	Params.txt	Parameters for single line queries in editor.
	Project.tpr	Holds information for the Project Manager window.
	Project_bak.tpr	Holds information for the Project Manager window as a backup.
	ProjectConfig.txt	Holds information for the Project Manager Window.
	REVWORDS.TXT	
	SavedSQL.dat	Stores your Named SQL, Personal SQL history.
	SBFilterList.xml	Schema Browser filter list.
	SBProjManFilterList.xml	Stores Schema Browser filter list for Project Manager.

Location	Options file	Function
	SchemaCompSummary	Stores summary information for the Compare feature. See "Compare Schema" (page 260) for more information.
	SchemaObjects.sdf	Script manager datafile containing created Schema objects.
	Services.ini	Stores the list of services for the Service Manager window. See "Service Manager" (page 746) for more information.
	SGATrace.ini	Saves the layout of your SGA Trace window's grid. See "SGA Trace/Optimization" (page 567) for more information.
	SQLFILES.TXT	
	SQLLoaderSettings.ini	Stores saved settings for the SQL*Loader wizard. See "Troubleshooting" (page 746) for more information.
	StatsPackCharts.ini	Stores configuration information for the Chart area of the Statspack Browser. See "StatsPack Browser Overview" (page 567) for more information.
	Sysviews.txt	Preserves system view names.
	templates.xml	Stores MakeCode and CodeSnippet templates.
	temptxt.txt	Stores temporary text for Schema Comparison.
	Terr.sql	Contains export grants. If you lose connection while attempting to save a session, this file is created.
	TOAD.INI	Stores many of the basic Toad options, including most items from View Tools Options.
	Toad_GUI.ini	Stores Toad Session Browser GUI settings.

Location	Options file	Function
	Toad_GUI2.ini	Stores GUI settings for other Toad
	Toad_SessBrowFilters.ini	Stores the filters for the Session Brow
	ToadActions.dat	Contains saved ToadActions
	ToadActions.log	Contains the logfile for used ToadA and their results.
	ToadMAIL.ini	Stores settings from View Toad O Email Settings
	ToadMONITORS.ini	Stores settings from View Toad O Monitors and View Toad Options Manager.
	ToadParams.ini	Stores the parameters you have pre entered for the Debugger.
	ToadRun.txt	Toad command-line run file.
	Toad_SessBrowFilters.ini	Stores the filters for the Session Brow
	toadstats.ini	Not editable through Toad, but use change it to affect the DBA Server Statistics window.
	ToadTips.dat	Contains any information you have into the note field of the ToadTips
	toolbars.ini	Toolbar and menu configuration fo Toad window.
	Toolbars_Default.ini	Default toolbar and menu configura the main Toad window.
	TopSess.ini	Holds your list of profiles for the T Session Finder.
	views.txt	Preserves user views.
	\<servicename>\<username>Syns.txt	Holds the lists of synonyms for syn highlighting.

Location	Options file	Function
	\<servicename>\<username>Views.txt	Holds the lists of synonyms and views and syntax highlighting.
	\<servicename>\ projects.lst	Holds the configurations of the Favorites on the Schema Browser.
Documents and Settings\username\ATResults	ressume.res	
Documents and Settings\username\RMAN Templates	.rcv files	<p>RMAN Template files: Default provided with Toad:</p> <ul style="list-style-type: none"> • RMANDBHotBackup.rcv • RMANDBHotBackupIncr0.rcv • RMANDBHotBackupIncr1.rcv • RMANSetup.rcv • RMANTSHotBackup.rcv <p>See "RMAN Scripts in Toad" (page 326) for more information.</p>
Documents and Settings\username\RuleSets		Contains RuleSets for CodeXpert. These should not be modified except through the RuleSets dialog box in Toad. See "Configuring RuleSets" (page 327) for more information.
Documents and Settings\username\ScriptMgr	DBA folder	
	Schema Objects folder	
Documents and Settings\username\Unixjobs	Files with a .JDF extension	Store information for the Unix Scheduler.

Transferring Configuration files

If you are installing Toad on a new computer, you may want to move your settings, personal SQL, SQL History and Named SQL Statements to the new machine. This will save you the trouble of recreating all of these settings.

To transfer all personalized settings

1. Install **Toad** on the new machine.
2. Copy the **Documents & Settings\username\User Files** folder from your old machine to the new machine, making sure the file structure remains the same.

Server Side Objects Installation

Installing Server Side objects

Several Toad features require objects installed on the server side of the Oracle instance. These objects can be installed into the Toad schema, an individual schema, or a third, publicly accessible schema. They may not be installed into more than one of these choices, or problems can occur.

Features with server side objects	Schemas where the features can be installed		
	Toad	Individual	Publicly Accessible
CodeXpert	X		X
Data Generation	X	X	X
Explain Plan [†]	X	X	X
Profiler	X	X	X
Team Coding	X		X
Space Manager [*]	X		
Security	X		

[†]The Explain Plan Server Side Objects can be installed and edited from within Toad itself. They are not included in the Server Side Objects wizard.

* The Space Manager wizard helps you set up the privileges for Toad, but the View Tablespaces window will install and administer the objects. See "View Tablespaces" (page 359) for more information.

Note: These server side objects apply only to their corresponding features, and Toad's other features will run successfully without the server side objects.

Caution: Explain Plan tables and Toad Profiler objects should be installed into EITHER the Toad schema or an individual user schema, not both.

The Server Side Objects Install wizard makes installing and administering these objects easier. It runs when you install Toad, and you can access it from within Toad to create or administer additional objects after installation.

Note: The order of steps in the Server Side Objects Install wizard depends upon your choices in each step. Because of this, the descriptions are not numbered as steps in the help file. It is recommended that you use the F1 key to open the appropriate help topic for the step of the wizard where you are located.

When the install wizard opens, it looks for an existing TOAD.INI file. If found, the wizard will use the connection options from the Server Login window (Toad Home, Force SQLNet, etc).

Using the Server Side Install Wizard

In order to install server side objects, you will need to have access to either the account for the Toad user, the account for the schema where you are installing them, or an account with the DBA role.

To install server side objects

1. From the Database | Administer menu, select **Server Side Objects Wizard**. The wizard appears.

2. Select what you want to do:

Install, upgrade or remove objects for all users to share	Use this to create and administer a special schema called TOAD. This schema gives you a central location from which to maintain the tables needed to run the above-mentioned portions of Toad. You could create some of these objects (Explain Plan and Profiler) in every schema in which you intend to use them (in other words, every schema would have these same tables, see below) but if you have a large number of users, using the Toad schema is more efficient. In addition, Toad Security, ObjectName, and Team Coding must reside in the Toad schema.
Install, upgrade or remove objects for an individual schema to use	If you do not want to create the Toad user, you can create and administer certain objects in the schemas where you intend to use them. This may be more efficient if you have a small number of users for these special features and you do not want all of your users to have access.
Create setup scripts without a database connection	You can create the scripts to set up the Toad schema, and so on without access to the database connection you need. Then you can log in later and run the scripts.

3. Refer to the following for more information:

Administer TOAD schema	
Logon information	Whether you are using a TNS file or an LDAP server, servers

	will be listed in the database list.
Dropping the TOAD schema	The Toad user and associated public synonyms will be dropped. If you previously set up Team Coding, you will also be prompted to drop any roles created for Team Coding.
Administer Private Schema	If you choose to administer server side objects on an individual basis, remember that each user will need to have setup done individually.
Server Side Objects	
Code Xpert	Allows reports to be saved and retrieved in the database.
Toad Security	<p>Set up Security administrator who can restrict user access to features of Toad.</p> <p>Caution: Users who have not been granted direct rights to Security Administration may still be able to administer Toad Security if they have been granted the appropriate rights through a role or through system privileges. This can be avoided by maintaining strict control over rights and privileges granted to users.</p>
Toad Profiler	<p>Caution: Toad Profiler objects should be installed into either the TOAD schema or an individual user schema, but not both.</p>
Space Manager	<p>From the wizard, you can:</p> <ul style="list-style-type: none"> • Drop the Space

	<p>Manager job and objects, removing the ability to use Toad Space Manager.</p> <ul style="list-style-type: none">• Grant Toad the necessary privileges to configure Space Manager. <p>Note: Space Manager must be set up while connected to the Toad Schema.</p>
Team Coding Roles	<p>This feature must be installed in either the Toad schema, or another publicly accessible schema, such as SQLNAV. See "Using Team Coding in SQL Navigator Environments" (page 785) for more information.</p> <p>Roles must be set for the Team Coding environment. The standard roles are:</p> <ul style="list-style-type: none">• Administrator: TC_Administrator• Project Manager: TC_ProjectManager• Team Leader: TC_TeamLeader
Creating Scripts without a Database Connection	When completed, you can load the script into the Toad Editor and create the necessary objects.

4. Complete the wizard.

Connecting to Oracle

Server Login Window

To access the Server Login window

- » From the Session menu, select **New Connection**.

Troubleshoot the Server Login Window

Problem	Possible Solution
There's an X beside TNSNames Editor or SQLNet Editor.	Toad can't find the TNSNames.ora file or the appropriate SQLNet file. Make sure they are in the appropriate directory, and that your path points to them.
Toad is connecting with the wrong Oracle Home	The default home that Toad uses matches the one you have chosen in the Oracle Home Selector, unless you have previously selected the check box: Make this the Toad default home .
All of my past connections are not visible in the grid.	Check that the Show favorites only box is not selected.
Toad is/is not saving the password for a connection.	Make sure the Save Password column is selected or cleared as appropriate in the row for that connection. If Toad is saving all passwords and you do not want them saved, make sure the Save passwords check box beneath the grid is cleared.

Using the Connection Grid

The connection grid contains connections you have used in the past: User (Schema), Oracle Home, Server (database alias), and Last Connect (date and time). You can define connection options in the grid as well, for example:

- auto connect
- save the password
- connect mode

If you have added connections to your favorites list, you can view only those connections by clicking the Favorites checkbox at the bottom of the screen.

- Sort any one of the first three columns in Ascending or Descending order by clicking the column header.
- Column widths are automatically adjusted to display entire contents.
- Toad saves the grid sort column; order; and the size and placement of the Server Login window between Toad sessions.

To connect to a previous connection

- » Double-click on the connection in the grid.

Showing only selected columns in the connection grid

If you have a small screen area, you can hide some of the columns that display in the connection grid.

To hide or show columns

1. Click  in the left hand side of the grid headers.
2. Select the columns you want visible, or clear the check box for columns you want to hide.



Showing only connections using the selected Oracle home

If you have many connections using different Oracle homes, you may want to display only those using a particular home in the grid.

To limit connections to one Oracle home

1. On the right of the login window, select the Oracle home you want to display.
2. Click the **Show selected home only** check box at the bottom of the window.

Refreshing Oracle information

At the bottom of the window is a **Refresh** button. Clicking this will:

- rebuild your Oracle alias list
- refresh your client information with the information stored in the registry and on disk

Create New Connection

Create a new connection in one of several methods. See "Server Login Window" (page 177) for more information login options.

TNSNAMES file

Toad can connect using the listings in your Oracle TNSNames file. Toad will populate the database box with the entries from the TNSNames file and let you select the connection you want to use.

To create a new connection using the TNS Names file

1. From the Server Login Window, enter the *username* in the **User/Schema** box.
2. Enter the *password* in the password box.

Note: For added security, characters will not appear as you type; asterisks will appear instead.

3. Click the **TNS** tab if it is not active, and select the name of the database from the **Database** list.

Note: If you do not enter a database name in the database box, then Toad will use the ORACLE_SID for the selected home. If there is no ORACLE_SID value, and you do not specify a database, then no connection can take place.

4. Use the **Connect As** list to connect as either SYSDBA or SYSOPER if you have the appropriate permissions. The default for this box is Normal.
5. If you want to color-code this connection, select a color from the **Color** box drop down. See "Selecting Connection Color" (page 181) for more information.
6. Click **OK**.

Easy Connect Strings

To connect using an easy connect string

- » Simply enter the string in the database box. (Easy connect strings are formatted: host:port\service_name)

Connecting directly to the database

To create a new connection directly to the database

1. Enter the name of the **user** in the box labeled **User/Schema**.
2. Enter the **password** for this user in the box labeled **Password**

3. Click the **Direct** tab.
4. Enter the **Host, Port** and either the **Service Name** or **SID** of the database to which you want to connect.
5. The **Connect As** dropdown allows you to connect as either SYSDBA or SYSOPER if you have the appropriate permissions. The default for this box is Normal.
6. If you want to color-code this connection, select a color from the **Color** box drop down. See "Selecting Connection Color" (page 181) for more information.
7. Click **OK**.

LDAP

Toad officially supports Oracle names directory services. This support includes both Oracle OID and Microsoft Active Directory servers.

Oracle Instant Client LDAP support

- Instant Client LDAP support is dependant on specific LDAP DLL which Oracle does not install by default. The ORALDAPCLNT10.DLL must be located in the same location as oci.dll file.
- TNSNAMES.ora, LDAP.ora, SQLNET.ora must exist in the same location specified by the TNS_ADMIN system variable.
- The LDAP dropdown list in the Logon Dialog will not be populated, but connection can be carried out by manually enter the DB name into the 'Database field' on the logon screen.

To create a new connection using LDAP

1. Enter the name of the **user** in the box labeled **User/Schema**.
2. Enter the **password** for this user in the box labeled **Password**.
3. Click the **LDAP** tab.
4. Select the **LDAP Descriptor** of the database you to which you want to connect.
5. The **Connect As** dropdown allows you to connect as either SYSDBA or SYSOPER if you have the appropriate permissions. The default for this box is Normal.
6. If you want to color-code this connection, select a color from the **Color** box drop down. See "Selecting Connection Color" (page 181) for more information.
7. Click **OK**.

Troubleshooting

OCI/DLL Not Found

If you get this or a similar error when attempting to connect to Oracle, make sure that the Oracle BIN directory is in your system path. This directory will be ORAWIN\BIN or ORANT\BIN or

something similar.

To check your path

- » Open a command line window, type PATH and then press **ENTER**.

Cannot connect to Oracle Hints

You must have a full install of a 32 bit version of SQL*Net. Connecting by SQL*Plus is NOT verification that SQL*Net is installed. If you cannot connect to Oracle using Toad, your Oracle client software is not installed correctly. Re-install the SQL*Net client from the Oracle setup disks or CD ROMs. Or, if you have installed OEM, NetAssist, Oracle Lite, or any other Oracle software recently, remove that software and see if you can connect using Toad.

Also make sure that SQL*Net is attempting to use the correct TNSNames files by confirming that the registry setting:

HKEY_LOCAL_MACHINE\Software\Oracle\TNS_ADMIN

specifies the correct folder where your TNSNAMES.ORA file lives.

Selecting Connection Color

When working with Toad you may have multiple connections open at once. Trying to keep track of which open window is related to which connection can be difficult. Color coding the connections can help.

When a color is assigned to a particular connection, any open window related to that connection, the window bar buttons and the status bars are outlined with that color. This makes it easy to see at a glance if your SQL editor, for example, is connected to your Test database or your Production database.

To select a connection color for a new connection

- » When creating a connection from the server login window, select the color you want to associate with that connection in the **Color** box.

To change a connection color

1. In the Server Login window connection grid, click in the **Color** column of the connection you want to color.
2. Select the color you want to use from the list.

SET ROLE

You can configure Toad to issue a SET ROLE command immediately upon connection, before it checks any privileges. This can be done either by making a manual entry in the `toad.ini` file,

To manually edit the toad.ini file

1. Using **Notepad**, or another text editor, open **toad.ini**.
2. Add the following line:

```
[SET ROLE]
```

3. Enter as many specific SET ROLE entries under this line as needed. The syntax for these parameters is:

```
Entry#=<DB>db_name</DB><USER>User_name</USER><ROLE>role_name</ROLE><ONFAIL>Fail_action</ONFAIL>
```

Where:

Variable	Meaning
#	An identification number that keeps the entries unique. You can have as many entries as you want.
db_name	Corresponds to the database alias in your tnsnames.ora file (or LDAP entry). An asterisk (*) can be used to specify "any database."
User_name	Logon user name. An asterisk (*) can be used to specify "any user."
Role_name	Any valid argument to the SET ROLE command. See your Oracle documentation.
Fail_action	One of the following: Abort, Message, or ignore. Abort - don't allow the connection Message - display an error message and then allow the connection Ignore -silently ignore the error message

Auto Connect

Toad can connect to a connection of your choice whenever you start Toad.

To create an automatic connection

1. From the Session menu, select **New Connection**.
2. In the connection grid, select the checkbox in the **Auto Connect?** column.

Note: You can cancel after Toad has begun to auto connect, if you have multiple connections. Toad will finish the current one and abort all that have not yet occurred.

To remove an automatic connection

1. From the Server Login window, find the connection in the list of previous connections.
2. Clear the check box in the "**Auto Connect?**" column.

Save Passwords for Connections

Passwords are saved in an encrypted file called connectionpwd.ini. The encryption is tied to the currently logged in user profile and supports roaming profiles, and Citrix installations.

Passwords can be saved as a group or individually, using the Save Pwd column in the connection grid of the Server Login window. See "Server Login Window" (page 177) for more information.

Save Pwd? Column

A column called **Save Pwd?** appears in the previously used connections grid.

Use this to save the password for the connection in that row.

Note: This column is only visible if the option "Save passwords for all Oracle connections" is unchecked. This option can be changed using the check box at the bottom of the window.

Save Passwords Check Box

The Save Passwords check box at the bottom of the Server Login window directly relates to the Save passwords for all Oracle connections option. If you check it here, that option will be checked. If you uncheck it, the option will be unchecked. See "Passwords" (page 664) for more information.

Password Options

Two password options are available from the **Toad Options | Oracle-General** page. All saved passwords are automatically encrypted.

See "Passwords" (page 664) for more information.

Select and View Favorite Connections

If you have a long list of connections you use, but have a relative few that you use consistently, you can select them as favorites and Toad displays only these connections for you, but you can still view the complete list. These can be managed from the Server Login window.

To select favorite connections

- » In the connection grid, select the **Favorite** check box of the connection you want to make a favorite.

To view favorites in the grid

- » Below the connection grid, select the **Show Favorites Only** check box.

To view all connections in the grid

- » Below the connection grid, clear the **Show Favorites Only** check box.

Organize your login display

You can organize how you view visible login information. In addition to limiting it to Favorite connections, you can choose to display the visible connections in grid, dropdown, or tab format, and you can choose to group connections by a single column. You can also add columns to the connection information that you can then use to group connections.

To select a view for your connections

1. Click  in the **Server Login** window.
2. Select the type of display you want to use:

Grid	All connections are listed in the data grid
Drop-down	Databases or users are provided in a drop-down list: select one to view the connection options in the data grid. Switch between Users or Database by clicking the Options button
Tabs	Databases are separated into tabs: select one to view the connection options in the data grid. Switch between Users or Database by clicking the Options button

To group connections in the data grid

1. In the **Server Login** window, drag a column header into the grey area above the grid.
2. Repeat this to create a tree structure in the order you want.

To add or edit a custom column name

1. In the **Server Login** window, right-click and select **Custom**.
2. Click **Add or Edit**.
3. Enter or change the name for your custom field and then click **OK**.
4. Add data to the column by clicking in the appropriate cell in the data grid.

Use Existing Connection

Select an existing connection from the Server Login window to make it active. See "Server Login Window" (page 177) for more information.

To use a previous connection

1. Do one of the following:
 - Select a **User/Database** combination from the dropdown combo box
 - Double-click the previous connection from the list in the left panel.
2. If the **PASSWORD** is not the same as the **USER**, type the **PASSWORD**. (schemas are often created with the password = schema, for example, DEMO/DEMO. Toad is making a guess at the password, but you can type over it.) If a password has expired and returns a Password Expired error, Toad prompts for a new password and attempts to change it.
3. Click **OK**.

Toad saves the **USER/DATABASE** combinations between Toad sessions but does NOT save the password by default.

Caution: The option **View | Options | General | Save passwords for Oracle connections** saves passwords on your machine. **DO NOT ENABLE THIS OPTION UNLESS YOU HAVE A SECURE ENVIRONMENT.**

SQLNET Editor

From the SQLNET editor you can easily edit your SQLNET.ORA parameters. These are standard Oracle parameters. If you need further information, please see the Oracle documentation for SQLNET.ORA Profile Parameters.

To edit your SQLNET connection file

1. From the Server Login window, click **SQLNET Editor**.
2. Make any necessary changes to your parameters and then click **OK**.

Note: If you are using a multi-threaded server and plan to use the PL/SQL Debugger, make sure you check the **USE_DEDICATED_SERVER** check box. This allows the PL/SQL Debugger to work.

To view the SQLNET.ORA file

1. From the Server Login window, click **SQLNET Editor**.
2. Click **View File as modified**

Backing up your SQLNET File

It is recommended that you create a backup file of your SQLNET.ORA file before you make any changes to it. This assures that if something goes wrong you can restore the original settings.

To create a backup copy of the SQLNET.ORA file

1. From the Server Login window, click **SQLNET Editor**.
2. Click the **Create Backup File** button.

3. Note where the backup file was created and click **OK**.

To restore a backup copy of the SQLNET.ORA file

1. From the Server Login window, in the Installed Clients area, click **SQLNET Editor**. The editor opens in a new window.
2. Click the **Restore Backup File** button.
3. Select the backup file you want to restore from the Open file dialog that appears.
4. Click **Open**.
5. Click **OK** to confirm.

LDAP Editor

You can use the LDAP editor to edit your LDAP parameters. Toad supports both Oracle LDAP and Windows LDAP servers.

To access the LDAP Editor

- » From the Server Login window, click **LDAP Editor**. See "Server Login Window" (page 177) for more information.

Backing up your LDAP File

It is recommended that you create a backup file of your LDAP file before you make any changes to it. This assures that if something goes wrong you can restore the original settings.

To create a backup file

- » Open the editor and click **Create Backup File**.

To restore from backup

- » Open the editor and click **Restore Backup File**.

Using the LDAP Editor

The top of the editor contains the path for the file you are editing. Below this is an editable list of directory servers, and the default administration context.

To add a directory server

1. In the Directory Servers area, click **Add**.
2. Enter the **Host**, **Port** and **SSL Port** information.
3. Click **OK**.

To set default administration contexts

Note: The default administration contexts apply to all servers listed in the Directory Servers area.

- » In the **Default Admin Context** area, enter the contexts you want to use.

For more information about Admin contexts and Default admin contexts, please see your Oracle documentation.

To set server type

Note: The directory server types apply to all servers listed in the Directory Servers area.

- » In the Directory Server Type box, click the dropdown and select the server type you want to use (either Microsoft Active Directory or Oracle Internet Directory).

Oracle Homes

Selecting the Oracle Home

You can change your Oracle Home from the Server Login window. Only one Oracle home can be in use at one time. This means that once a connection is made, all future connections will automatically be made using the same Oracle home, regardless of default home.

Oracle homes can be assigned for each connection, or for Toad overall. See "Selecting a Default Oracle Home" (page 189) for more information on default Oracle Homes.

Selecting the Oracle Home

With no connections made previously, select an Oracle Home by using the dropdown list of Oracle Homes.

To see more information about the home you have selected or change the SID, NLS_LANG, or SQLPATH, click the drilldown  button to open the Oracle Home Editor. See "Oracle Home Editor" (page 190) for more information.

Note: You must restart Toad to have changes made here take effect.

How Toad Finds the Oracle Client DLL

1. Toad first looks in the Toad command line for OCIDLL.
2. If this is not found, Toad looks for the path for the Oracle home as follows:
 3. If the command line argument "ORACLEHOME" was passed in, then Toad will use that home.
 4. If there is no Toad home defined then Toad will display the home that is set as the default home using Oracle's Home Selector application as the default in the dropdown. Toad will use the home that is active in the dropdown.
5. To populate the dropdown, Toad searches the registry as follows:

- First, Toad reads the list of Oracle home names from the keys under HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE\ALL_HOMES
 - If no Oracle homes are found there, then the Oracle home is set to HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE
 - Otherwise, Toad finds the ORACLE_HOME value for each Oracle home, if it exists. Then Toad checks the system environment variable called PATH to see whether it contains the "bin" folder under ORACLE_HOME. Toad selects the Oracle home whose path appears first in PATH.
 - If Toad still hasn't found an Oracle home, it uses HKEY_LOCAL_MACHINE\SOFTWARE\ORACLE.
6. Toad looks for the client DLL in the "Bin" folder under the path found for the Oracle home
- If that fails, Toad looks for the ORACLE_HOME key under HKEY_LOCAL_MACHINE\ORACLE\SOFTWARE, and look for the client dll in the "Bin" folder under that.
 - If that also fails, Toad looks for the client dll in every \bin directory in PATH.

Selecting a Default Oracle Home

You can select the default Oracle home in much the same way as you would select the connection color. Default homes can be assigned for a connection, or for Toad.

When a default Oracle home is assigned to a particular connection, any time you make that connection from the connection grid, Toad will automatically use that Oracle home. When a default Oracle home is assigned to Toad, Toad will automatically use that Oracle home any time you create a connection to a new database.

Note: Only one Oracle Home can be in use at one time. All default Oracle homes revert to the home used in the currently active connection.

To select an Oracle home for a new connection

- » In the Server Login window, when no connections have been made, select the Oracle home you want to use with the current connection from the Connect Using dropdown. See "Server Login Window" (page 177) for more information.

Note: This Oracle home will now be associated with the selected connection and listed in the home column of the connection grid.

To select the Toad default Oracle home

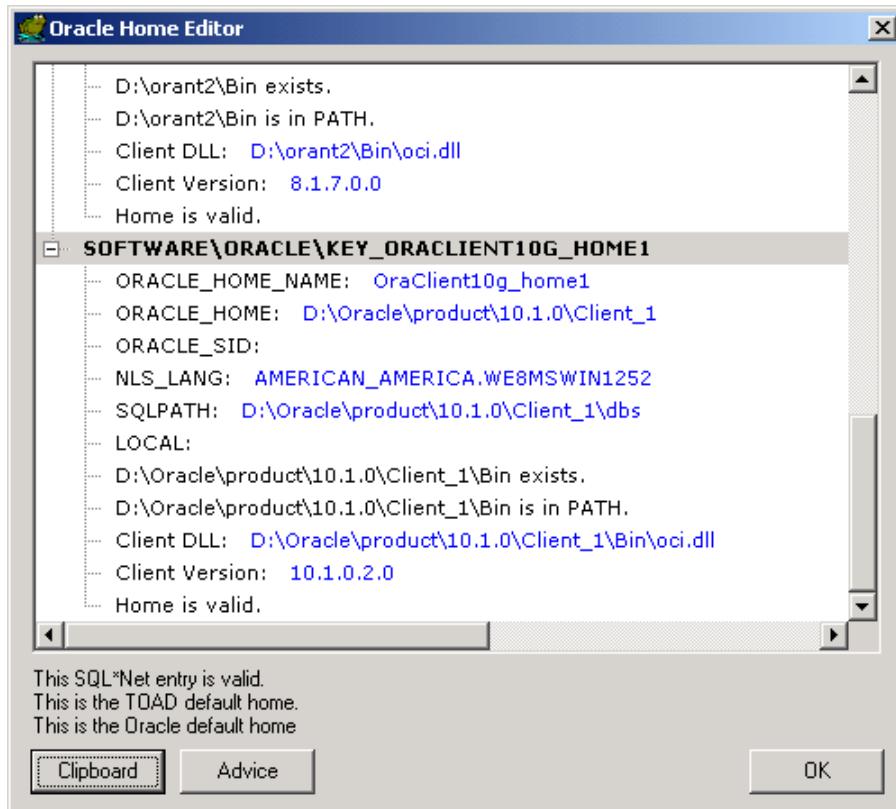
1. In the Server Login window connection grid, with no active connections, select the Oracle home from the Connect Using dropdown.
2. Select the **Make this the Toad Default Home** checkbox.

Note: When you change databases, this connection will be entered in the Oracle home dropdown.

Oracle Home Editor

To use the Oracle Home Editor

1. Click  beside the **Connect Using** box on the Server Login window. See "Server Login Window" (page 177) for more information.



2. Select an Oracle Home by clicking on its node. You can then:

- Click **Clipboard**. This will copy the selected information to the clipboard so you can past it into an email, or another document.
- Click **Advice**. This will tell you if you have a proper SQL*Net installation for this home, or suggest changes to your installation.
- Right-click and choose to edit one of the following:
 - SID for the selected Home
 - NLS_LANG for the selected Home
 - SQLPATH for the selected Home

TNSNames Editor

TNSNames Editor Overview

From the TNSNames Editor, you can easily edit your TNSNames files. You can add a new service, edit a service, delete a service, or work with two files and transfer services back and forth between the two.

There is an [online video tutorial](#) for this feature. This opens a new browser window and requires an internet connection.

From this window you can:

- Load and View TNSNAMES Files (page 192)
- Add Service and Details (page 194)
- Edit Service (page 196)
- Delete Service or Details (page 196)
- Testing a Connection (page 197)
- Working with Two Files (page 197)

NOTE: You can add a UR tag to a CONNECT_DATA tag of a TNS entry. This is available ONLY through the text edit area of the editor, not the Edit Service window. This tag is supported as a patch to Oracle 10g and is no longer necessary in Oracle 11+.

To access the TNSNames Editor

» Access this window from the **Utilities menu | TNSNames Editor**.

Limitations of the TNSNames Editor

The TNSNames Editor supports much of the standard Oracle syntax. See "TNSNames Editor Overview" (page 191) for more information.

There are, however, certain old or advanced features that it does not support.

Features Toad TNSNames Editor does not support include:

- Multiple Description Lists

Note: Multiple Description *entries* are supported, and a DESCRIPTION_LIST will be created automatically to encompass them.

- Multiple Address Lists
- No ADDRESS_LIST keyword (The editor parses it correctly, but it adds the ADDRESS_LIST parameter back in to the entry, which produces a completely equivalent

configuration. Existing entries with multiple ADDRESS_LIST tags are preserved, even if edited in the Editor window.)

In all of these cases, the TNSNames Editor will not change the entry unless the user chooses to edit that particular entry. If you do not try to change a non-supported entry, the file will remain useable.

If you do try to edit a service name with one of these unsupported features, the editor does its best to parse the entry into the Edit Service dialog box. It will write the entry into a structure it does support, if you click **OK** in the Edit Service dialog box and then save the file.

Whenever the TNSNames Editor overwrites a file, it first makes a backup of that file in the same directory. So if you do accidentally cause problems to your file, you can revert to the backup.

Load and View TNSNAMES Files

To load the active TNSNames file

1. Open the **TNSNames Editor**. See "TNSNames Editor Overview" (page 191) for more information.
2. Click .

To load a saved file

You can load and view your TNSNames files and specific services within those files.

1. Open the **TNSNames Editor**. See "TNSNames Editor Overview" (page 191) for more information.
2. Click .
3. Browse to the directory where your TNSNames file is located, and select it.

To view a file

- » Do one of the following:
 - a particular service entry - click on the **entry** in the tree view.
 - the text of the entire TNSNames file - click the **Text Editor** tab.

Switching Views

The tree view of the TNSNames Editor can be organized either by Service Name or by Host Name. In either view, selecting the Host node displays the entry for that host in the Text tab. When viewing by Service Name, selecting the Service node displays all host entries for that Service in the Text tab.

To switch tree views

- » Do one of the following:

- Click .
- Click the drop-down arrow next to  and select either the **View By Host** or **View By Service** option.

Pasting Entries into the TNSNames File

You can paste entries directly into either side of the TNSNames Editor from either the Project Manager or from a text file. This lets you receive new entries by email, or update from a current project.

Copying and Pasting from the Project Manager

You can copy connection information from the Project Manager.

To copy connections from the Project Manager to the Names Editor

1. Open the **Project Manager**.
2. In the navigation panel, click on the **Sessions** tab.
3. Select the connections you want to copy.
4. Right-click and select **TNSNames information to clipboard**.
5. Open the **TNSnames Editor**.
6. Click  in the pane containing the tnsnames.ora where you want the information.

Note: You can past into either tab: Tree View or Text Editor.

To copy connections from a text file or email

1. From the text file or email, copy the text of the connection information.
2. Open the **TNSnames Editor**.
3. Click the **Paste** button on the side of the window where you want to paste the information. You can past into either tab: Tree View or Text Editor.

Checking Syntax

At any time you can check the syntax of your TNSNames file from the editor. If there are errors, Toad will list them and suggest ways to fix them. If there are no errors, the message "TNS file is valid" displays in the Message tab.

To check syntax

- » Click  on the TNSNames Editor toolbar.

Note: Messages about the state of the syntax for the TNS names file are displayed

in the **Messages** tab at the bottom of the window.

Add Service and Details

The TNSNames Editor makes it easy to add a new service entry, or to add details to an entry you have already created. See "TNSNames Editor Overview" (page 191) for more information.

This topic only covers unfamiliar information. It does not include all step and field descriptions.

To add a service

1. Load your **tnsnames.ora** file into one side of the editor, and click .
2. Enter the **Service Name** you want to use for the service.
3. Enter the appropriate information for Address configuration. See "Address Configuration" (page 194) for more information.
4. Enter the appropriate information for Service information. See "Service Information" (page 195) for more information.

Address Configuration

You can enter the information manually in the box, or click Clone to copy information from the active entry to a new entry in your file.

Add additional addresses for this service name by clicking **Add**.

Configuration Notes

Field	Note
Address Information	
Protocol	Changing this value will change the information required for the rest of the host address configuration.
Port (TCP/IP, TCP/IP with SSL, and SDP)	Valid port numbers have values between 1 and 65535.
Advanced Options	Apply to additional addresses.
Enable Failover	Instructs Oracle Net to fail over to a different address if the first protocol address fails.
Enable Load Balance	Instructs Oracle Net to progress through the list of addresses in <i>random sequence</i> to balance the load between the various listener or Oracle connection Manager protocol addresses.
Enable Source Route	Instructs Oracle Net to use each address <i>in order</i> until the destination is reached.
Use options compatible with Net8 8.0 clients	If this is checked you can only select options compatible with Net8 clients. If unchecked, all options are available.

Service Information

Enter the Service Name and Connection type in the appropriate boxes. In addition, you can check the box to use Oracle 8 and previous identification (SID) rather than a more current format.

Cloning a Service

To clone a service

1. In the TNSNames Editor, select the service you want to clone on your service list.
2. Right-click and select **Clone Service** from the context menu.

Note: When you clone a service, the new service entry will have a blank Net Service Name and will be located at the top of the service list.

3. Select the **new service** and click  to make necessary modifications.

Delete Service or Details

In the TNSNames Editor, you can easily drop a service or details from your TNSNames file. See "TNSNames Editor Overview" (page 191) for more information.

Note: When you select a node to delete, all nodes beneath it will also be deleted.

To delete a service

1. Select the **service** you want to delete on your service list.
2. Click  on the toolbar (DELETE).

Deleting details

You can delete details such as entire entries under descriptions, additional addresses, and so on.

To delete details

1. In the service list, select the node containing the details.
2. Click  (F2).
3. Click the **Description tab** for the detail you want to delete.
4. Do one of the following:

To delete the description and everything below it	Click Delete at the bottom of the window.
To delete a specific address within the service	Click the Address tab of the address you want to delete and then click Delete within the Address Configuration area.

Edit Service

You can change service information for an existing service in your TNSNames file from the TNSNames Editor. See "TNSNames Editor Overview" (page 191) for more information.

To edit a service

1. Select the **service node** you want to edit and then click  (F2).

Note: If you select an address node, the edit window will open with that address selected.

2. Make changes to the Service. See "Add Service and Details" (page 194) for more information about address configurations and service information.
3. Click **OK** to save changes.

Caution: This only saves changes to the temporary file. To be sure your changes are saved to your TNSNames file, see [Saving Changes to TNSnames Files](#).

Saving Changes to TNSNames Files

The **OK** button at the bottom of the screen saves the file and closes the TNSNames Editor. See "TNSNames Editor Overview" (page 191) for more information.

Whenever the TNSnames editor overwrites a file, it first makes a backup of that file in the same directory. So if you do accidentally cause problems to your file, you can revert to the backup.

To save your file without closing the editor

» Do one of the following:

- Click  on the toolbar to save the file with the current file name
- Click the **Save as**  button, to change the file name

To cancel without saving

» Click **Cancel** to cancel any edits you have made to the file since it was last saved and close the editor.

Testing a Connection

From the TNSNames Editor you can test a new connection or changes you have made, using the TNSPing facility.

To test a connection

1. Save the file to the location where your TNSPing executable reads files.
2. Select one **connection** in the connection list to test.
3. Click  on the toolbar.

Working with Two Files

You may have two TNSNames files that you want to compare and copy services between. The TNSNames Editor lets you do this easily. These files can be the same file or different ones. Loading the same file into both sides of the editor will allow you to easily duplicate service names before you edit them.

To work with two TNSNames files

1. Load one of the **TNSNames files** in the left hand side of the Editor.
2. Load the other into the **right hand** side.

3. You can now select services from either side and **copy** them to the other using the buttons in the center.

Note: The TNSNames Editor does not prevent duplicate entries in the tnsnames.ora file. This allows you to copy a service and then edit it.

Icon	Action
>	Move selected service from left side file to right side file.
<	Move selected service from right side to left side.
>>	Move all services from left side to right side.
<<	Move all services from right side to left side.

Tutorials

CodeXpert

Using the CodeXpert Tutorial

Use the CodeXpert to compare your code to specific rules and standards. CodeXpert analyzes the PL/SQL against a set of rules for best practices. These rules are stored in a ruleset. You can define your own rulesets if desired. (See [CodeXpert Tutorials | Creating a Ruleset](#) for more information.)

In this tutorial, we will take a simple procedure and try out some of the features of the CodeXpert. There are many options and settings you can use to customize how CodeXpert analyzes your code. For more information on these, see the [CodeXpert section](#) of the help.

Note: If you do not have the **Xpert Edition** of Toad, just ignore the SQL Scanning portions of this tutorial.

1. If is not already open, open **Toad** and then open an Editor window.
2. Past the following code into the Editor:

```
CREATE OR REPLACE PROCEDURE loopproc (inval NUMBER)

IS

    tmpvar NUMBER;
    tmpvar2 NUMBER;
    total NUMBER;

BEGIN

    tmpvar := 0;
    tmpvar2 := 0;
    total := 0;

    FOR lcv IN 1 .. inval
        LOOP
            total := 2 * total + 1 - tmpvar2;
            tmpvar2 := tmpvar;
            tmpvar := total;
```

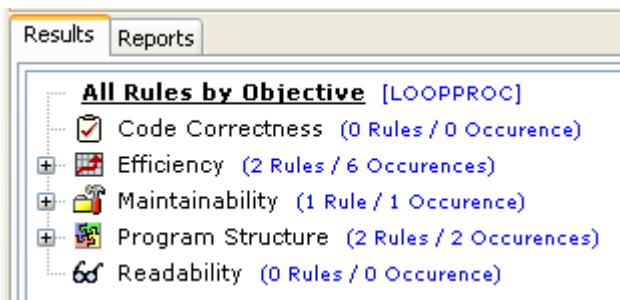
```
END LOOP;

DBMS_OUTPUT.put_line ('TOTAL IS: ' || total);

END loopproc;

/
```

3. In the area below the editor, click the CodeXpert tab. If this is not visible, right-click and choose Desktop Panels | CodeXpert to make it visible.
4. In the CodeXpert tab, make sure the Scan toggle is unselected and then either click the Perform Review button or press F9. Toad analyzed the contents of the editor in its entirety. If part of the code is selected, Toad will review only the selected code.
5. Look at the results. They should appear as follows:



6. Expand the **Efficiency Node**. Notice that there are three occurrences of the DATA TYPE - 2829 rule. If you expand this node as well, you will see each instance where the rule was violated. The numbers before them correspond to the row and column number of the violation.
7. Click on one of the occurrences. The editor scrolls to that instance, highlighting the line of code in question.
8. Double-click the occurrence and the rule description displays.
9. Click the **Reports** tab. At the bottom of the panel are tabs for **Rules Summary**, **Crud Matrix**, or **Code Metrics** for this analysis. Click the Rules Summary tab.
10. Notice that the **Print** icon in the CodeXpert toolbar is now active. You can print these reports with the click of a button, or click the Save button and save them to an html file.

Creating a Ruleset Tutorial

If the provided rulesets do not meet your needs, you can create your own rulesets.

We will create a ruleset from scratch. You can also select an existing ruleset to use as a template.

1. Open the CodeXpert window. Click **Database | Diagnose | CodeXpert**.
2. Click the **Configure Ruleset**  button. The configuration window opens with a ruleset selected.
3. Click the **Rule Sets** node to activate it.
4. Click the **New Rule Set**  button.
5. Enter **Sample Tutorial Ruleset** in the Rule Set Title box. This is the title that will display in the rule set navigator.
6. Toad creates a filename for you based on your title and stores it in the Rulesets folder. You can change this if desired.
7. The author is automatically filled in from your computer information. If this is not correct, change it now.
8. Enter any comments about your ruleset. For this test, enter the following:

This is a sample ruleset to learn functionality.
9. Click **Next**.
10. We will leave the sort order at the default: Severity, then Objective. If you want to view violations of your ruleset in a different way, this dropdown list is where to do it.
11. Select the rules you want to enforce. In this case, open the **WARNING** node and select the following rules:
 - VARIABLE - 6411
 - VARIABLE - 6413
 - GOTO - 4002
12. Click **Finished**. The ruleset is now listed at the bottom of the navigation panel, with the User-created  icon identifying it.

PL/SQL Debugger

Debugging a Procedure or Function

Debugging a Procedure or Function Tutorial

Debugging a procedure or function is the most straightforward debugging procedure. Yet there are several ways to go about it. This tutorial will walk you through some of the most common commands and methods. It is not designed to teach you to code in PL/SQL, but it will show you the basic features of the Toad Debugger.

Enter the code in the Editor

1. Open a new Editor tab for PL/SQL:

Right-click in the Editor and select **New Tab | PL/SQL**.

2. In the Desktops toolbar, your desktop should be set to PL/SQL. This will enable the tabs at the bottom of the Editor that are debugger-specific.

Enter the following code into the Editor:

```
CREATE OR REPLACE PROCEDURE loopproc (inval NUMBER)

IS

tmpvar NUMBER;

tmpvar2 NUMBER;

total NUMBER;

BEGIN

tmpvar := 0;

tmpvar2 := 0;

total := 0;

FOR lcv IN 1 .. inval

LOOP

total := 2 * total + 1 - tmpvar2;

tmpvar2 := tmpvar;

tmpvar := total;

END LOOP;

DBMS_OUTPUT.put_line ('TOTAL IS: ' || total);

END loopproc;

/
```

3. From the File menu, select **Save As** to save this procedure. The tab at the top now displays "Loopproc.prc".

Click the **Compile with Debug**  button into the depressed position to turn on the debug information.

Note: If the compile buttons or the debug menu options are disabled check one of the following:

- Double check that you are connected to a database that allows debugging - you must have access to the DBMS_DEBUG Oracle package.
 - Make sure that the editor window is associated with the appropriate database connection: click the **Change Active Connection**  button and select the correct database if it is not.
4. Click the **Compile** button . The code compiles and is now ready to run. The code must be compiled before you can set parameters.

Working with Watches

Add Watches - Debugging Tutorial

There are several ways to add a Watch. In the following steps you will add three watches, each one by a different method. Later, you can choose the method that works best for you.

1. You can only watch variables. Click in the second line of code, in the word **TMPVAR**  and click the **Add Watch icon**  on the Debug toolbar above the Editor window (**not** the watches tab toolbar). The Watches window becomes active at the bottom of the screen, and a watch is added.
 2. Add a watch to **TMPVAR2**. This time, press **<CTRL><F5>** to add the watch at the cursor.
- Note:** To watch all variables automatically, select the Smart Watches box on the Watch window. This may not be a good option if your procedure has a large number of variables. However, you can drag watches from the Smart Watches panel to the Watch panel and then close Smart Watches. See "Configuring the Smart Watch window" (page 923) for more information.
3. And finally, add a watch to the **TOTAL** variable. Click in the TOTAL variable, and then from the **Debug** menu, select **Add Watch at Cursor**.

Go back to Enter the code in the Editor (page 202)

Continue to Set Parameters- Debugging Tutorial (page 203)

Set Parameters- Debugging Tutorial

Some PL/SQL has variable parameters that need to be set before you can run the code. If values for these variables are not set, running the code will result in an Oracle error. In the Loopproc procedure, the INVAL variable needs to be set.

1. Click  button.

Note: If you have parameters that need to be set, when you choose to RUN the code, the Set Parameters window will display automatically. There are many more parameters

2. Set parameters appears because there is a user-defined parameter set in the code. In this case, INVAL defines the number of times to run the code. Click in the **Value Field** for the INVAL variable. **NULL** is highlighted.
3. Set the value at ten. Enter **10** in the value field.
4. Click **OK**. The value is set and the Set Parameters window closes.

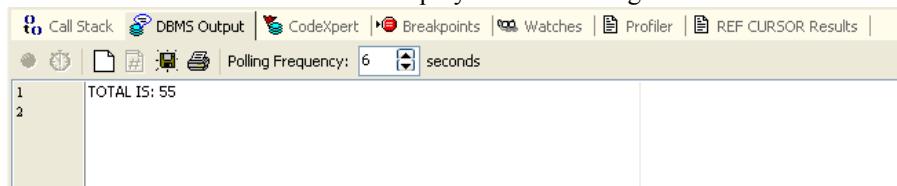
Continue on to Run Code and Display Output - Debugging Tutorial (page 205)

Go back to Add Watches - Debugging Tutorial (page 203)

Run Code and Display Output - Debugging Tutorial

1. Click the **Execute PLSQL with debugger**  button. A confirmation dialog box appears asking if you want to compile the referenced objects with Debug information. Click **Yes**. If the Set Parameters dialog appears again, click **Execute**. The code compiles and then runs, but too quickly to see the watches.
2. Click **OK** in the termination dialog.

To confirm that the code has run, click the **DBMS Output tab** in the Desktop tabs area. The window should display the following:



Change Watch Properties - Debugging Tutorial

1. Change the watch properties for Tmpvar2 to scientific format. Click the **Watches** tab. In the Watches window, double-click **Tmpvar2**. The Watch Properties window appears.
2. In the **Format** area, click **Scientific**. Click **OK** to save your changes and close the window.

Go back to Run Code and Display Output - Debugging Tutorial (page 205)

Continue on to Disable a Watch - Debugging Tutorial (page 205)

Disable a Watch - Debugging Tutorial

You can disable a watch you do not want to follow. Disable the watch on **Tmpvar**.

1. In the Watches window, double-click **tmpvar**. The Watch Properties dialog box appears.
2. Click the **Enabled check box**. The checkmark disappears.

Click **OK**. The Watch Properties dialog box closes. Tmpvar is now disabled in the Watch window.

Note: You can also disable a watch by:

- Selecting the watch and clicking the disable button.
- Right-clicking on the watch and selecting Disable Watch.

To enable a watch you have disabled, simply reverse one of the above methods.

Step Through the Code - Debugging Tutorial

1. To actually see the watches you have set, you will need to step through the code line by line. Press **SHIFT+F7** several times to step through the code. Notice how the values for the watches change each time you press **SHIFT+F7**.
2. The values for the variables you have marked with watches display in the Watches window. However, you may decide you want to check the value for a variable that is not currently being watched.
Hover the mouse pointer over the **INVAL** variable. In a moment, a small popup containing the value of the variable appears.

Working with Breakpoints

Add Breakpoints - Debugging Tutorial

The next sections of this tutorial focus on breakpoints. They assume you have completed the Introductory and Watches sections.

Breakpoints cause the execution of your procedure to stop at the specified location. In the breakpoints tab, you will see two different breakpoints column. One is "line" and the other is "Editor line." Line refers to the line within the procedure block you are working with (excluding comments and blank lines from the count), and Editor line refers to the line number within the editor. This is because you can have more than one procedure open in the same tab at the same time. For this tutorial, however, we only have one procedure open.

1. In the desktop tabs area, click the **Breakpoints** tab. This allows you to see the breakpoints you set.
2. If line numbers are not displayed to the left of your procedure, turn on Display line numbers in gutter as follows:
 - a. From the Edit menu, select **Editor Options**. The Editor Options – PLSQL window appears.
 - b. In the left panel, click **General Options**. In the right panel, double-click **Display Options**. The list of display options appears.
 - c. If the check box beside **Display line numbers in Gutter** is empty, click it to turn the option on.
 - d. If the check box beside **Show Gutter** is empty, click it to turn the option on as well. Click **OK**. Line numbers should now display in the gray gutter beside your procedure.
3. Add a breakpoint to the line containing: `FORLCV IN 1...INVAL`. In my editor, it is line 12. Click in the **gutter** beside the line. The line of code is highlighted, and a **breakpoint** icon appears in the gutter. The breakpoint has been applied. The Editor Line and



Line columns in the breakpoint window may or may not display the same number, depending on how your code is formatted.

4. Add a **breakpoint** to the line containing `TOTAL:=2 * TOTAL +1-TMPVAR2`. This time, click in the line of code, and then press **Shift+F5**.
5. Click . The code stops the line containing the first breakpoint. Click run again, and the code stops at the next breakpoint.

Disable Breakpoints - Debugging Tutorial

As with watches, you can temporarily disable breakpoints.

1. Disable the second Breakpoint. In the Breakpoints window, double-click the breakpoint. The Breakpoint Properties dialog box appears.
2. Click the **Enabled** check box. The checkmark disappears.

Click **OK**. The Breakpoint Properties dialog box closes. The second breakpoint is now disabled in the Breakpoints window.

Note: You can also disable a watch by:

- Selecting the watch and clicking the disable button.
- Right-clicking on the watch and selecting Disable Watch.

To enable a watch you have disabled, simply reverse one of the above methods.

3. You can delete the breakpoint entirely instead of just disabling it. In the Editor, click the **Breakpoint**  icon in the margin by the first.

Edit Line Number

Rather than creating a new breakpoint and deleting an old one, you can change the line number for an existing breakpoint.

1. In the Breakpoints window, double-click the line **12** breakpoint.
2. Double-click in the **Line number** box. The line number is highlighted. Change the number to **11**. Enable the **Breakpoint**.
3. Click **OK**. The dialog box closes, and the breakpoint moves to line **11**.

Use Passcount - Debugging Tutorial

You can set a breakpoint to only break after a certain number of iterations through the loop. This can be useful when you are working with extremely long loops of code, because you can set it to stop after, for example, seven passes.

1. Replace the first breakpoint.
2. In the Breakpoints window, double-click the **breakpoint**.
3. Double-click in the **Passcount** field. Type **7**. Click **OK**.

4. Click the **Run**  icon. The Procedure runs through 6 iterations of the loop and stops just before it reaches line 11 for the 7th time.
5. Click the **Call Stack** tab. It should say LOOPPROC(11). This marks the line where you stopped execution.
6. Click the **Watches** tab. Your watches are still set, and since execution has not completed, they will have values.
7. Click the **Run** icon again. A dialog box appears stating "Execution terminated." This indicates that the Procedure has completed its run. Click **OK**.

Use Conditional Breakpoint - Debugging Tutorial

You can set a condition on a breakpoint, so that the execution will not stop until it meets this condition.

1. In the Breakpoints window, double-click the **breakpoint** that is still enabled.
2. Double-click the **Passcount** field, and replace the **7** with **0**.
3. In the Condition field, add **LCV>=7**. Execution will now break at this line when LCV is greater or equal to 7.
4. Click **OK**.
5. Click the **Run** icon. Execution stops at line 11. Hover the pointer over the variable LCV. The value should be 7.
6. Click the **Run** icon again. LCV is now 8, which is greater than 7, so execution has stopped again.
7. Disable the breakpoint without deleting it. In the Breakpoints window, select the **breakpoint**, right-click and select **Disable breakpoint**. The stop sign icon is unavailable.
8. Click the **Run** icon to complete execution. When the dialog box appears stating that execution has terminated, click **OK**.

Use Passcount and Conditions together - Debugging Tutorial

You can combine passcounts and conditions on breakpoints. When doing this, remember that the passcount counts the number of times the condition is met, not the number of times the code passes the line number.

1. Click the **Set Parameters** button. Change the value for INVAL to **17** and then click **OK**.
2. In the Breakpoints window, double-click the **breakpoint** with the condition added.
3. Check the **enabled** box to enable the breakpoint.

Leave the condition on the breakpoint, but add a **passcount of 9**. Click **OK**. The Breakpoints properties window closes.

The breakpoint now has a passcount of nine and a condition of **LCV>=7**.

4. Run the code again. Execution stops at pass 9 of 9. When you hover the cursor over LCV, notice that it has a value of 15. This is the 9th time that LCV>=7.
5. Click **Run** one last time to end the debugging.

Debugging a Package

Debugging a Package - Debugging Tutorial

Debugging a package works in a similar manner to debugging a procedure or function. You are debugging a group of procedures or functions, however, and how they work together, so it is a little different. This tutorial assumes that you are comfortable with watches and breakpoints, and the features described in the [Debugging a Procedure or Function Tutorial](#).

1. Open a new **PL/SQL Editor** tab.

Enter the code below into the Editor. This is the package we will use.

```
CREATE OR REPLACE PACKAGE trigonometry

IS

    FUNCTION sine (
        opposite  IN NUMBER,
        hypotenuse  IN NUMBER,
        MESSAGE OUT VARCHAR2
    )
        RETURN NUMBER;

    FUNCTION cosine (
        adjacent  IN NUMBER,
        hypotenuse  IN NUMBER,
        MESSAGE OUT VARCHAR2
    )
        RETURN NUMBER;

    FUNCTION tangent (
        opposite  IN NUMBER,
        adjacent  IN NUMBER,
        MESSAGE OUT VARCHAR2
    )
        RETURN NUMBER;

    numcalls  NUMBER := 0;

END trigonometry;
```

```
/  
  
CREATE OR REPLACE PACKAGE BODY trigonometry  
AS  
  
FUNCTION sine (  
    opposite IN NUMBER,  
    hypotenuse IN NUMBER,  
    MESSAGE OUT VARCHAR2  
)  
RETURN NUMBER  
  
IS  
    tmpsine NUMBER;  
  
BEGIN  
  
    numcalls := numcalls + 1;  
  
    IF (opposite <= 0)  
        OR (hypotenuse <= 0)  
        OR (opposite IS NULL)  
        OR (hypotenuse IS NULL)  
  
        THEN  
  
            MESSAGE := 'Opposite and Hypotenuse must be numbers > 0';  
  
            RETURN NULL;  
  
        ELSE  
  
            /*Calculate the sine*/  
            tmpsine := opposite / hypotenuse;  
  
            IF tmpsine BETWEEN -1 AND 1  
  
            THEN  
  
                MESSAGE := 'Success';  
  
                RETURN tmpsine;  
  
            ELSE  
  
                MESSAGE := 'Unreasonable Sine: ' || tmpsine;  
  
                RETURN NULL;  
  
            END IF;  

```

```
END IF;

END sine;

FUNCTION cosine (
    adjacent  IN NUMBER,
    hypotenuse  IN NUMBER,
    MESSAGE OUT VARCHAR2
)
RETURN NUMBER
IS
    tmpcosine  NUMBER;
BEGIN
    numcalls := numcalls + 1;
    IF (adjacent <= 0)
        OR (hypotenuse <= 0)
        OR (adjacent IS NULL)
        OR (hypotenuse IS NULL)
    THEN
        MESSAGE := 'Adjacent and Hypotenuse must be numbers > 0';
        RETURN NULL;
    ELSE
        /*Calculate the Cosine*/
        tmpcosine := adjacent / hypotenuse;
        IF tmpcosine BETWEEN -1 AND 1
        THEN
            MESSAGE := 'Success';
            RETURN tmpcosine;
        ELSE
            MESSAGE := 'Unreasonable Cosine: ' || tmpcosine;
            RETURN NULL;
        END IF;
    END IF;
```

```
END cosine;

FUNCTION tangent (
    opposite IN NUMBER,
    adjacent IN NUMBER,
    MESSAGE OUT VARCHAR2
)
RETURN NUMBER
IS
BEGIN
    numcalls := numcalls + 1;
    IF (adjacent <= 0)
        OR (opposite <= 0)
        OR (adjacent IS NULL)
        OR (opposite IS NULL)
    THEN
        MESSAGE := 'Opposite and Adjacent must be numbers > 0';
        RETURN NULL;
    ELSE
        /*Return the value of the tangent*/
        MESSAGE := 'Success';
        RETURN opposite / adjacent;
    END IF;
END tangent;
END trigonometry;
/
```

2. Click  on the toolbar. The code is formatted to the default format, and a comment to this effect is added to the beginning.
3. Compile the package by clicking . The name *Trigonometry* appears on the tab above the package, and the structure of the package appears in the left panel.
4. Save the file. Close the file and open it again. Toad will ask you if you want to split the file. Select **Yes**. Now the package body and the package spec are in separate tabs in the

editor. In addition, the comments at the beginning of the code specify that each tab is a "Toad Chunk" of one file.

Set Appropriate Options - Debugging Tutorial

Before you debug this example package, you need to set the Debugger Options.

Note: This may not be necessary when debugging your own packages, or you can set the options at different stages in your debugging procedure.

1. From the **View** menu, select **Toad Options**.
2. In the left panel, select **Editor | Debug**. The debugging options panel appears in the right panel.
3. Make sure **Step through package initialization** is checked. This specifies that when you step through the code it will also step through the initialization. If it is not checked, Toad will run the initialization and only step through the procedure you have chosen to debug. This defaults to off, so it is a good idea to check it before you start debugging.
4. Click **OK** to close the Options window.

Set Watches and Breakpoints - Debugging Tutorial

Set any breakpoints or watches.

1. In the body tab, set a breakpoint at Line **25** (`tmpsine := opposite / hypotenuse;`).
2. Set a watch on the variable **Numcalls** in line **14**. This is a package variable. In order to watch it, you will have to change the properties.
3. In the Watches window, double-click the **watch** on **Numcalls**.

Click in the **Package Variable** check box. Notice that the **OK** button is now disabled. You must choose a package to activate this option.

Note: This may not be available if you are connecting on a RAC. See "Debugging on a RAC" (page 908) for more information.

4. The Owner name is automatically filled in with the current schema owner. Change it using the dropdown menu if necessary. For now, it should be correct. From the dropdown Package menu, select **Trigonometry** and then click **OK**. This creates a watch on a package variable.
5. Add a watch on the variable **tmpSine** on line **25**.

Select Procedure or Function to Run - Debugging Tutorial

When debugging a package, you can only debug one procedure or function at a time. The package will run through its initialization process (or step through it if that option is checked in the Options window).

1. Click within the **SINE function**.
2. Click the **Set Parameters**  icon on the toolbar. The Set Parameters window appears.
3. In the left pane, click **Sine**. This selects this procedure. Notice how the arguments in the right pane change.
4. Click in the **value field** for opposite. Enter **15**.
5. Click in the **value field** for hypotenuse. Enter **20**.
6. Click **OK**. The Set Parameters window closes.

Step through Package - Debugging Tutorial

1. Press **SHIFT+F7**. If the parameters window opens, set variables for the other procedures as desired, or leave them NULL, and then click OK. Toad steps into the Package initialization, opening it in another tab. The watch for the Numcalls shows as NULL.
2. Press **SHIFT+F7** again. Toad moves into the SINE procedure. The watch for Numcalls is now 0.
3. Press **SHIFT+F7** again. The Numcalls watch moves up to 1, and Toad steps to line 14.
4. Click  (Run). Toad stops at the breakpoint at line 22.
5. Click **Run** again. Toad completes running the SINE procedure, and notifies you that execution has terminated. All watches are returned to "process not accessible".

In order to debug the other procedures in the package, set watches and variables as desired and select the appropriate procedure from the left pane in the Parameters window. Then repeat the stepping through the code and making changes until you are satisfied.

Debugging an INSERT Trigger

Debugging an INSERT Trigger - Debugging Tutorial

Debugging a trigger works in a similar manner to debugging procedures, functions and packages. As with debugging packages, most of the changes occur when you are setting trigger parameters. This tutorial assumes that you are comfortable with watches and breakpoints, and the features described in the Enter the code in the Editor (page 202).

1. Triggers always need a table to act upon. For this exercise, create a table called **TESTTAB**. (See "Altering Tables" (page 1074) for more information.)Include the following columns:
 - ID - VARCHAR2(3)
 - FIRST_NAME - VARCHAR2(10)
 - LAST_NAME - VARCHAR2(30)
2. Open a new **PL/SQL Editor** tab.

Enter the code below into the Editor. This is the trigger we will use. It simply assigns and declares a variable when you perform an INSERT on the TESTTAB table.

```
CREATE OR REPLACE TRIGGER testtrig
  BEFORE INSERT ON TESTTAB
  DECLARE
    tmpVar NUMBER;
  BEGIN
    tmpVar := 0;
  EXCEPTION
    WHEN OTHERS THEN
      NULL;
  END testtrig;
  /
```

3. Make sure the **Compile with Debug**  button is selected. Click the **Compile**  button to compile the trigger.

Set INSERT Trigger Parameters - Debugging Tutorial

Now that you have a trigger in the editor, you can set parameters for the variables and begin the debugging procedure.

Note: Usually, when debugging, you are not going to want to change the data in your database. However, you must act on that data in order to step through a trigger: the trigger must be activated to debug it. In order to prevent data from changing, you may want to change the commit options in **View | Toad Options | Debugger | Transaction Control** to Rollback or Prompt to keep from altering data. For this tutorial, go ahead and commit the data, as it will be used in the DELETE and UPDATE tutorials later.

1. Press **SHIFT+CTRL+F9** or the parameters  button on the toolbar.
2. If a dialog asking you to compile with debug information appears, click **OK**.
3. In the **Set Parameters** window, **Column Values grid**, modify the anonymous block so that the trigger will fire. In this case, we are adding values that will be inserted into the table. Notice how as you add these values, the anonymous block in the Code area of the dialog changes.

Column Name	Value
ID	13b

Column Name	Value
FIRST_NAME	JOE
LAST_NAME	SMITH

Entering a value in the WHERE clause for an INSERT trigger will produce no results, so don't make any changes to that column.

4. Click **OK**.

Set INSERT Trigger Watches - Debugging Tutorial

Set any watches or breakpoints you want to use for debugging. In this case, we are going to set a watch on the variable TMPVAR.

1. Click in line 4 (tmpVar NUMBER).
2. Click  on the toolbar. The watch is displayed in the Watch window.

Step through the INSERT trigger - Debugging Tutorial

At this point you can proceed with debugging.

- Press **SHIFT+F7** to step through the code. Note how the TMPVAL watch changes values when you reach line 7.

Debugging an UPDATE Trigger

Debugging an UPDATE Trigger - Debugging Tutorial

For this tutorial, we assume you have already gone through the INSERT tutorial. The UPDATE trigger we will be using acts upon the same TESTTAB table, and looks for the data you inserted in the INSERT Tutorial.

The steps for debugging an UPDATE trigger are the same as for an INSERT trigger, but triggering requires different parameters to be included.

1. Triggers always need a table to act upon. For this exercise, we will be using the table we created in the Debugging an INSERT Trigger (page 214), and the data we inserted into it.
2. Open a new **PL/SQL Editor** tab.

Enter the code below into the Editor. This is the trigger we will use. It simply assigns and declares a variable when you perform an DELETE on the TESTTAB table.

```
CREATE OR REPLACE TRIGGER testtrig
BEFORE UPDATE ON TESTTAB
DECLARE
```

```
tmpVar NUMBER;  
  
BEGIN  
  
    tmpVar := 7;  
  
EXCEPTION  
  
WHEN OTHERS THEN  
  
NULL;  
  
END testtrig;  
  
/
```

3. Make sure the **Compile with Debug**  button is selected. Click the **Compile**  button to compile the trigger.

Set UPDATE Trigger Parameters - Debugging Tutorial

Now that you have a trigger in the editor, you can set parameters for the variables and begin the debugging procedure.

Note: Usually, when debugging, you are not going to want to change the data in your database. However, you must act on that data in order to step through a trigger: the trigger must be activated to debug it. In order to prevent data from changing, you may want to change the commit options in **View | Toad Options | Debugger | Transaction Control** to Rollback or Prompt to keep from altering data. For this tutorial, go ahead and commit the data, as it will be used in the DELETE and UPDATE tutorials later.

1. Click  on the toolbar(**SHIFT+CTRL+F9**).
2. If a dialog asking you to compile with debug information appears, click **OK**.
3. In the **Set Parameters** window, **Column Values** grid, modify the anonymous block so that the trigger will fire. In this case, we are adding values that will be *changed* in the table. As such, we need to specify both an identifier (a WHERE clause) to find the record we want to change, and the value in the column we want to change. We will change "JOE SMITH" to "FRED SMITH".

Name	Value	WHERE Value
ID	NULL	13b
FIRST_NAME	FRED	NULL
LAST_NAME	NULL	NULL

Set UPDATE Trigger Watches - Debugging Tutorial

Set any watches or breakpoints you want to use for debugging. In this case, we are going to set a watch on the variable TMPVAR.

1. Click in line 4 (tmpVar NUMBER).
2. Click the  Watch button on the toolbar. The watch is displayed in the Watch window.

Step through the UPDATE Trigger - Debugging Tutorial

At this point you can proceed with debugging.

- Press **SHIFT+F7** to step through the code. Note how the TMPVAL watch changes values when you reach line 7.

Debugging a DELETE Trigger

Debugging a DELETE Trigger - Debugging Tutorial

For this tutorial, we assume you have already gone through the INSERT tutorial. The DELETE trigger we will be using acts upon the same TESTTAB table. The steps for debugging a DELETE trigger are the same as for an INSERT trigger, but triggering requires different parameters to be included.

1. Triggers always need a table to act upon. For this exercise, we will be using the table we created in the Debugging an INSERT Trigger (page 214), and the data we inserted into it.
2. Open a new **PL/SQL Editor** tab.
3. Enter the code below into the Editor. This is the trigger we will use. It assigns and declares a variable when you perform an DELETE on the TESTTAB table.

```
CREATE OR REPLACE TRIGGER testtrig
  BEFORE INSERT ON TESTTAB
  DECLARE
    tmpVar NUMBER;
  BEGIN
    tmpVar := 0;
  EXCEPTION
    WHEN OTHERS THEN
      NULL;
  END testtrig;
```

/

4. Make sure the **Compile with Debug**  button is selected. Click the **Compile**  button to compile the trigger.

Set DELETE Trigger Parameters - Debugging Tutorial

Now that you have a trigger in the editor, you can set parameters for the variables and begin the debugging procedure.

Note: Usually, when debugging, you are not going to want to change the data in your database. However, you must act on that data in order to step through a trigger: the trigger must be activated to debug it. In order to prevent data from changing, you may want to change the commit options in **View | Toad Options | Debugger | Transaction Control** to Rollback or Prompt to keep from altering data.

1. Click  on the toolbar **SHIFT+CTRL+F9**).
2. If a dialog asking you to compile with debug information appears, click **OK**.
3. In the **Set Parameters** window, **Column Values** grid, modify the anonymous block so that the trigger will fire. In this case, we are going to delete rows of the table that have an employee last name of SMITH. The value sections of the grid are irrelevant to the trigger, so we need to modify the WHERE values:

Column Name	WHERE Value
ID	NULL
FIRST_NAME	NULL
LAST_NAME	SMITH

Set DELETE Trigger Watches - Debugging Tutorial

Set any watches or breakpoints you want to use for debugging. In this case, we are going to set a watch on the variable TMPVAR.

1. Click in line 4 (tmpVar NUMBER).
2. Click the **Watch**  button on the toolbar. The watch is displayed in the Watch window.

Step through the DELETE Trigger - Debugging Tutorial

At this point you can proceed with debugging.

- Press **SHIFT+F7** to step through the code. Note how the TMPVAL watch changes values when you reach line 7.

SQL*Loader

SQLLoader Tutorials

Learning to use the SQL*Loader functionality is something best done by trying it out. These tutorials for using the SQL*Loader are designed to let you do just that in a small steps.

Basic SQL*Loader Tutorial

Start by creating an Input file, and then move on to telling Toad how to load your data and execute the import. See "Basic SQL*LoaderTutorial" (page 220) for more information.

Intermediate Tutorials

Move on to some of the more advanced features:

- Intermediate SQL*Loader Tutorials (page 228)
- Conditional Loads into Partitions - Intermediate SQL*Loader Tutorial (page 230)
- Load from Several Files of Different Formats - Intermediate SQL*Loader Tutorial (page 231)

Advanced Tutorial

Learn about more of the Advanced Features of the SQL*Loader interface. See "Advanced SQL*Loader Tutorial" (page 233) for more information.

Basic SQL*LoaderTutorial

Create Input File - Basic SQL*Loader Tutorial

For this tutorial we will need to create an file containing the data we'll insert into a table, and the table where it will be inserted.

1. Create and populate a sample table. Copy and paste the following script into Toad's editor:

```
create);number Rank ),30(varchar2 Name( MarksFavoriteFoods table
insert);1 , 'Tuna'(values MarksFavoriteFoods into
insert);2 , 'Salmon'(values MarksFavoriteFoods into
insert);3 , 'Broccoli'(values MarksFavoriteFoods into
insert);4 , 'Asparagus'(values MarksFavoriteFoods into
insert);5 , 'Bell peppers'(values MarksFavoriteFoods into
```

```
insert);6 , 'Chicken' (values MarksFavoriteFoods into
insert);7 , 'Yogurt' (values MarksFavoriteFoods into
insert);8 , 'Brown rice' (values MarksFavoriteFoods into
insert);9 , 'Carrots' (values MarksFavoriteFoods into
insert);10 , 'Lean ground beef' (values MarksFavoriteFoods into
```

2. Execute the script.
3. Save the new table as an ASCII file.
4. Open the **Schema Browser**. Click the **Tables** tab and then **MARKSFAVORITEFOODS**.
5. In the right panel, select the **Data tab**.
6. Right-click, select **Save As**, choose **Delimited Text**, enter a filename in the Output area, and set Comma as the delimiter.
7. Click **OK**. You have now created the data, or input, file.

Empty the table by running this small script in the Editor:

```
delete from MarksFavoriteFoods;
commit;
```

You can verify in Schema Browser that it is empty.

From the Start menu, open the **NotePad** application and load the data file you just created. You are going to edit the first line to intentionally create "bad" data.

Here is how the first three lines from the data file appear:

```
Name,Rank
Tuna,1
Salmon,2
```

8. Remove the first line from the file.
9. In the second line, replace the comma with a tab. The first line should now appear as follows:

```
Tuna 1
```

10. Save the file and close **NotePad**.

Add Input File - Basic SQL*Loader Tutorial

You must add an input file. The input file is the actual data file that is loaded using the SQL*Loader Wizard.

To add an input file

1. From the Database menu, select **Import | SQL*Loader Wizard**. The first window lets you select, "What would you like to do?" Select **Build Control File**.;Leave the Specify Fields box selected and then click **Next**.
2. The second window is where you enter the list of the data files you want to load into one or more tables. At least one input file is required. Click **Add** to add a file.
3. In the **Add input file** dialog, click the dropdown button next to **Input filename** and choose the data file. In this case, choose the MarksData.txt file that you created in the previous step. The following filenames will be created based on the input file name you enter:
 - Bad file name – This file will contain rejected records. By default, it gets named the same as the input file, with a .BAD extension. In our example, this file should contain our bad Tuna record because it does not conform to the parameters you will specify.
 - Discard file name – The discard file contains records that were not inserted during the load because they did not match any of the selection criteria. You will see in a later example that you can actually tell SQL*Loader WHEN you want a record inserted – it must match criteria you specify.

Note: When the pointer passes over each field in the Add Input dialog box, "MicroHelp" is displayed in the status bar.

4. Records can be in one of three formats:
 - Stream - This is the default format. Lines are read until an end-of-record marker is found (end of line character, by default).

Streamrecord format, end-of-line character – default: Tuna,1

Fixed -- each record must be a fixed number of bytes in length.

Fixed record format - all data records must be same length

Variable -- each record may be a different length, as specified by a special field – the first field in each record. The user must specify the length of this field.

Variable record format, specifier field is 3 bytes long:
006Tuna,1

Stream is chosen by default. Leave the **end of record string** box empty, taking the end of line character as the default.
5. The **Discard** field indicates the maximum number of records to put into the discard file. Leave this empty also, indicating that you want all discarded records.

Click **OK**.

At this point you could choose as many different input files as you want – as long as they all had the same record layout (i.e. they all contained the same fields, in the same order). However, as you will see in a later example, they can have different formats.

6. Click **Next**. The wizard moves to Set Delimiters.

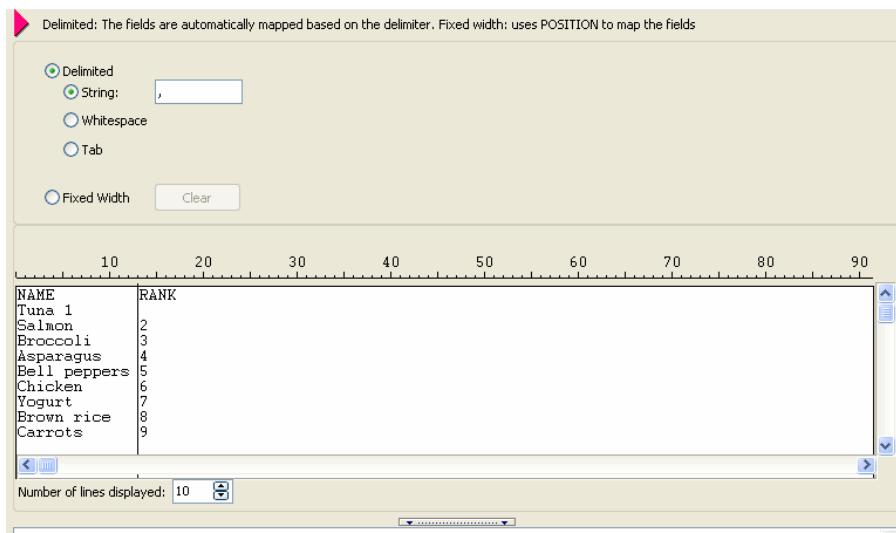
SQL*Loader Tutorial Set Delimiters for Field Mapping - Basic SQL*Loader Tutorial

The third window of the SQL*Loader Wizard lets you set the delimiter for the data file.

Note: If you have cleared the **Specify Fields** box on the **Add Input File** page, this window will not display.

1. Select **String** and enter a comma as the delimiter (this is the default).
2. The grid below lists the data and separates it by the selected delimiter. You can change the number of lines displayed in this grid.

In places where the comma was replaced with a tab, the data does not fit the selection.

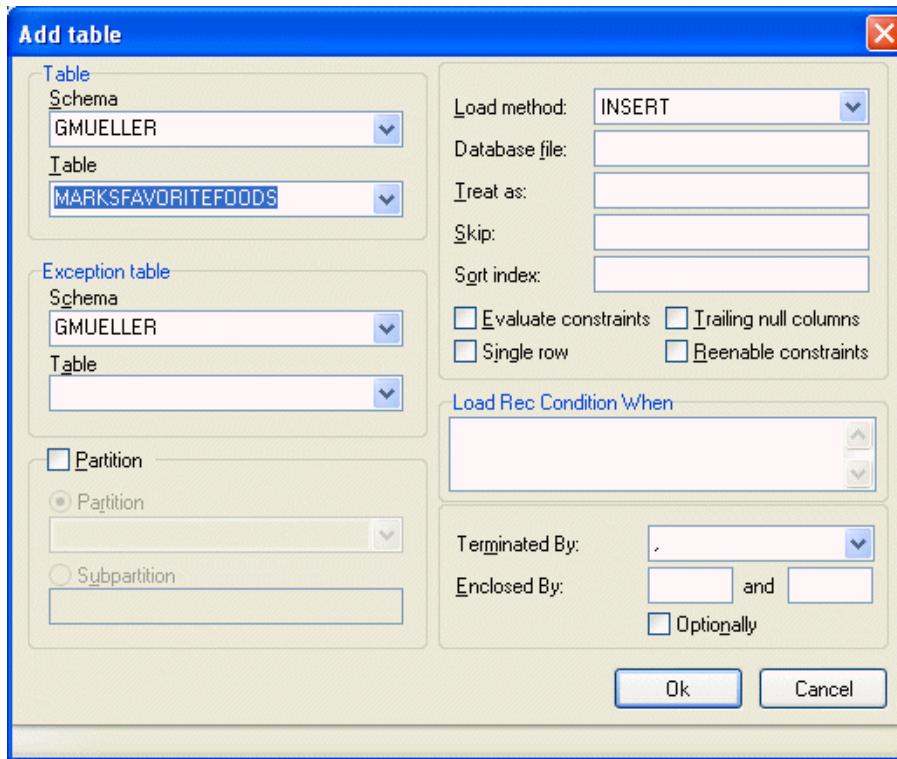


3. Click **Next**.

Choose Destination Table - Basic SQL*Loader Tutorial

The fourth window of the SQL*Loader Wizard lets you choose your destination tables. If you have selected **Specify Fields** on the first screen, you can also map fields to columns. These settings are displayed in the upper and lower grids in this window.

1. In the upper area, add a destination table. Click **Add**.



2. Select **MarksFavoriteFoods** from the table list, and leave the other settings as defaults. Click **OK**.
3. Skip the Columns area for now, and in the **Field Mapping** area, click the **Auto Map** button. The field numbers are mapped to the columns from the tables.

Click the **Preview tab** to see how the data maps to the columns. Notice that the error we included when creating the input file is reflected in the preview data. You may have to scroll to the top of the data to see this.

Field mapping	
By field	Preview fields
NAME	RANK
NAME	RANK
Tuna 1	
Salmon	2
Broccoli	3
Asparagus	4

4. Click **Next** to move to the Global options window and set parameters.

Set Parameters - Basic SQL*Loader Tutorial

The next window of the Wizard lets you Specify global options and default values.

For this tutorial, you are going to use the defaults.

- » Click **Next** to specify control file and log file names.

Control File

At the bottom of all of the previous windows (and this one) is a preview of your control file.

It should appear similar to the following (the paths to the various files will reflect where you saved the original input file):

```
LOAD DATA
INFILE 'C:\marksdata.txt'
BADFILE 'C:\marksdata.bad'
DISCARDFILE 'C:\marksdata.dsc'
INTO TABLE "MARKSFAVORITEFOODS"
FIELDS TERMINATED BY ','
(NAME,
RANK)
```

SQL*Loader Specify Control and Log Files - Basic SQL*Loader Tutorial

This window lets you enter a name for a control file.

1. Enter a name that you want to use as a control file in the **Control file name** box. We used **c:\conf1e.ctl**; you can name it whatever you want. Press <Tab>.
2. The control file name is entered into the log file box with the extension .log. If you want to use a different name for your log file, you can change this now.
3. Click **Save Settings**. Save these settings as MarksFood. You can now Load them at any time.
4. Click **Next** to go to the next step and execute SQL*Loader.

Execute SQL*Loader - Basic SQL*Loader Tutorial

1. The last window of the wizard lets you choose how to execute your load. Select **Execute Now**. Be sure the Watch progress option is selected.

Click **Finish**. The SQL*Loader Watch dialog box appears as follows:



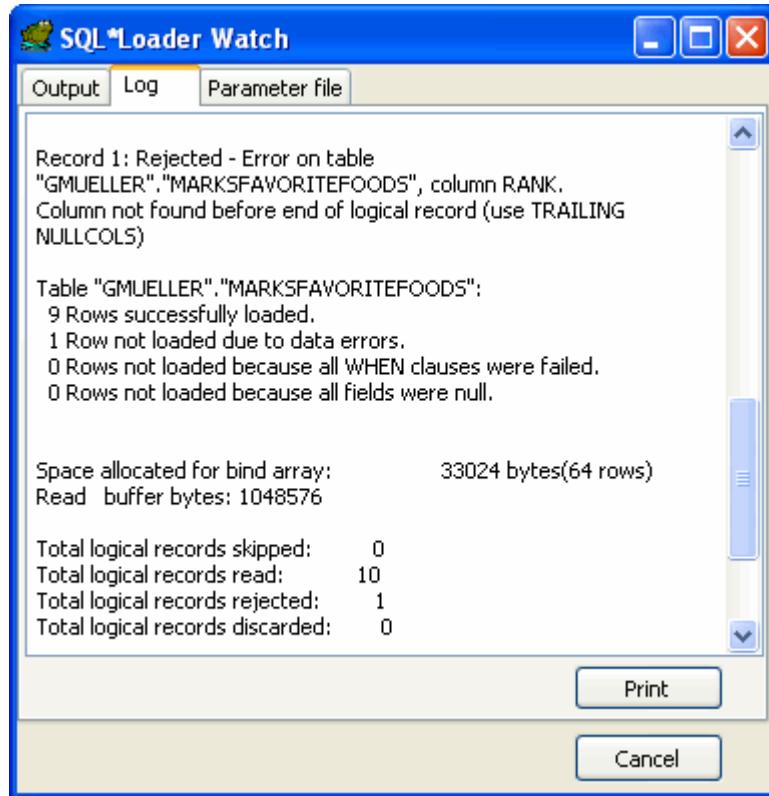
The first tab is the output tab, and provides the standard output from running the loader. If any errors occurred when running the loader itself, they would be displayed here.

- The first thing listed on the Output tab is some information about SQL*Loader itself – its version and the date and time it was executed.
- The last line indicates that 10 rows were inserted into the table. You can verify this with the Schema Browser.

2. Click the **Log tab**.

The log tab contains the text of the log file and presents detailed information about what occurred. The log file contents are loaded into this tab after the SQL*Loader is finished running.

The log file contains a lot of data about what happened as the data was loaded. Scroll down in the window to see that one record was rejected and why.



```
SQL*Loader-601: For INSERT option, table must be empty. Error on table
"MARKSFAVORITEFOODS"
```

Unless otherwise specified, the SQL*Loader performs the load in INSERT mode and does not load data into a table that already contains rows.

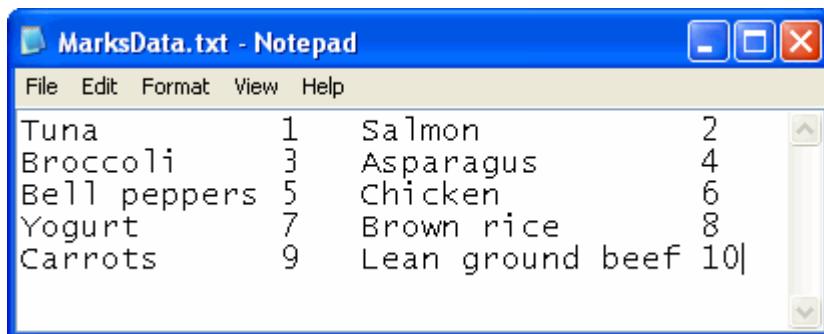
4. You can solve this problem by changing the load method. Return to the SQL*Loader window and open **MarksFood** as described above, but this time uncheck **Proceed to Finish after loading**.
5. Click **Next** three times to get to the Destination table and columns screen. The load method field of the grid is blank, indicating the default of INSERT.
6. Select the **Load Method** cell, click the dropdown arrow and select **Append** from the dropdown list.
7. Click **Next | Next | Next, Execute Now and Finish**.
8. You can read the **Messages** and **Log file** (or simply look in **Schema Browser**) to see that all 9 records (remember that 1 is still bad) were successfully appended into the table.

Intermediate SQL*Loader Tutorials

Load Logical Records into Multiple Tables - Intermediate SQL*Loader Tutorial

This tutorial will demonstrate how you can load data from one data file into multiple tables by using *logical records*. What is different about this data is that each line of the data file corresponds to more than one physical record (row of a table). There are two logical records in each line.

1. Create an input file identical to the one described in Create Input File. See "Basic SQL*LoaderTutorial" (page 220) for more information.
2. Create another table identical to the **MarksFavoriteFoods** table. Name it **TESTTHIS**. Make sure both tables are empty.
3. Edit the input file to make it look like this:



The screenshot shows a Windows Notepad window titled "MarksData.txt - Notepad". The window has a standard menu bar with File, Edit, Format, View, and Help. The main text area contains the following data:

Logical Record 1	Logical Record 2	Logical Record 3	Logical Record 4
Tuna	1	Salmon	2
Broccoli	3	Asparagus	4
Bell peppers	5	Chicken	6
Yogurt	7	Brown rice	8
Carrots	9	Lean ground beef	10

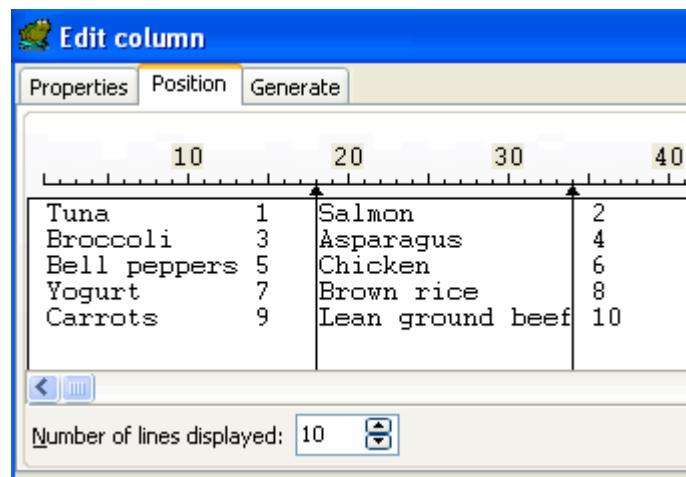
It is important that the data be lined up exactly. Use spaces – no tabs. The first column of numbers should line up as the 14th character. The second column of foods should line up at the 18th character. The second column of numbers should be located at the 35th character.

4. Open the SQL*Loader Wizard, and then select **Build control file**. Uncheck the **Specify Files** box. Click **Next**.
5. Add the new data file as your input file. Click **Next**.
6. From the Destination Tables grid, add both the **MarksFavoriteFoods**, and **TestThis** tables. Clear the **Terminated by** field.
7. Select **MARKSFAVORITEFOODS** in the tables grid.

In the Columns grid, in the **From/To column fields**, **Name** row, enter **1** and **12** respectively.

Note: This tells the table to read the first 12 columns in our data file to extract the Name field.

8. In the Rank row, enter **14** and **14** for the **From/To**. That is where the Rank data resides in our input file for that field.
9. You can also select the column positions graphically. Select **TESTTHIS** in the tables grid and select its **Name column**.
10. Click **Edit** and then click the **Position** tab.
11. Click in front of the **S** in Salmon, and then after the **f** in beef. If you click in the wrong location, you can also drag the marker. Click **OK**.



The From/To columns now contain the numbers 18 and 33.

12. Finally, select the last Rank column, click **Edit** and then **Position**, and set the column boundaries around the rank in the second set of data.
13. Click **Next** twice.

14. Click  and select a control file from the Open dialog box, or enter a new name for your control file. Click **OK**.
15. Click **Next**.
16. Select **Execute Now** and **Watch Progress** and then click **Finish**. If you open the Schema Browser and check the tables, you will see that the foods ranked 1, 3, 5, 7 and 9 went into the first table, while those ranked 2, 4, 6, 8 and 10 went into the second table.

Conditional Loads into Partitions - Intermediate SQL*Loader Tutorial

This tutorial demonstrates loading into a partition with conditions.

Note: At this time when you select a table the subpartitions field does not get populated with the available subpartitions (as the partitions field does with the tables' partitions); you must enter the name directly.

1. Drop and recreate your first table with range partitions. Run the following code:

```
DROP TABLE MARKSFAVORITEFOODS;  
  
CREATE (MARKSFAVORITEFOODS TABLE  
  
NAME ).30 (VARCHAR2  
  
RANK ) NUMBER  
  
PARTITION) RANK(RANGE BY  
  
(PARTITION).5 (LESS THAN VALUES FoodRank1  
  
PARTITION(MAXVALUE)); LESS THAN VALUES FoodRank2
```

If you were to re-run the first tutorial on this table, foods with a ranking up through and including four would go into the partition named FoodRank1, and all the rest would go into the partition named FoodRank2. Try it, and verify the contents through the following SQL:

```
SELECT * from MarksFavoriteFoods partition (FoodRank1)  
SELECT * from MarksFavoriteFoods partition (FoodRank2)
```

For this example, however, you will attempt to load all our data into partition FoodRank1. If you ran the first tutorial again to try out the Note above, empty the table now.

2. Open the **SQL*Loader wizard**.
3. Select **Build control file**. Leave the Specify Fields box checked and click **Next**.
4. Select the original, comma delimited file from the beginning of example 1 and add it to the input file list. Click **Next**.
5. Click the **Add** button in the tables area. Select **MarksFavoriteFoods** from the Table dropdown.

6. Check the **Partition** box. Click the drop down partition list and you will see the two partitions listed that you created. Choose FOODRANK1.

Make sure that the **Terminated by** box contains a comma (,).

NOTE: If the data were tab delimited, you would choose TAB from the dropdown.

On the lower right side of the add table window is the Load Rec Condition When area. This means "load the record into the table when the following conditions are present". In this field, enter the following:

```
RANK != "1"
```

This says that you only want records whose RANK field is not equal to the character "1".

NOTE: All character data is interpreted automatically by Oracle. If you wanted to enforce certain data types for special conditions you could do so under the Column Parameters data type field.

7. Click **OK** and then click **Next**.
8. Leave global options and defaults blank. Click **Next**.
9. Enter a control file name to create. Click **Next**.
10. Select **Execute Now** and **Watch progress** and then click **Finish**. The status window opens.

Click the **Log File** tab. Scroll down and you should come to these lines:

```
Record 1: Discarded - failed all WHEN clauses.
```

```
Record 5: Rejected - Error on table "MARKSFAVORITEFOODS",
partition FOODRANK1.
```

```
ORA-14401: inserted partition key is outside specified partition
```

[and so on for the rest of the records]

This says that the first record failed the WHEN clause. It certainly did – it had a rank of 1 and we told Toad not to load any records with that rank. The rest of the rejection lines state that the inserted partition key is outside the partition bounds. This is because records with a rank of 5 and above exceed the partition bounds you chose for FOODRANK1.

Look in Schema Browser and you should find the foods ranked 2 through 4 in the data.

Load from Several Files of Different Formats - Intermediate SQL*Loader Tutorial

This example will use three different data files and demonstrate the three supported format types: stream, fixed and variable.

1. Use the **MarksData.txt** data file from the previous tutorial. Use **Notepad** (this is important) as an editor.

2. Split the original file, creating three files, **MarksDiet1.dat**, **MarksDiet2.dat** and **MarksDiet3.dat**.

3. Edit the first file (MarksDiet1.dat). It should look as follows:

```
Tuna,1*Salmon,2*Broccoli,3*
```

Note: There are no extra spaces or new line characters at the end of that line. This sample demonstrates using an asterisk as an end of record marker. Up until now, you have been using the carriage return/new line character combo to designate physical records.

4. Edit MarksDiet2.dat as follows:

```
Asparagus, 4,Bell peppers,5,Chicken, 6,
```

Once again, use no spaces or new line characters at the end of the line. This is going to be our fixed record length file. Each record is fixed at precisely 15 characters.

5. The third file should be named MarksDiet3.dat and look like this:

```
0009Yogurt,7,0015Brown rice,8,
```

```
0010Carrots,9,0019Lean ground beef,10
```

Note: On SQL*Loader versions prior to 8 (7.3, for example), a space is required after the record length field

This is the variable format file. At the beginning of each record is a field that designates how long that record is. Notice Brown Rice on the first line. You may count 13 characters. But Notepad also adds two more characters – a carriage return/line feed pair, so they have to be added into the total.

Note: Other editors may only add one line feed character.

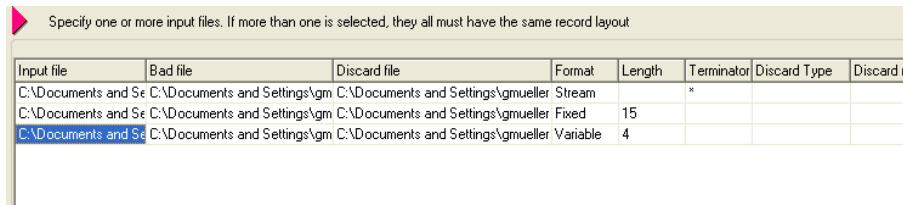
Once again, make sure there are no extra spaces or carriage returns at the end of the second line.

6. Open the SQL*Loader Wizard and select **Build control file**. Uncheck the **Specify Files** check box. Click **Next**.

7. Add files as follows:

File	Parameters
MarksDiet1.dat	Select Stream format, and enter an asterisk into the end of record string field.
MarksDiet2.dat	Select Fixed format, with a length of 15.
MarksDiet3.dat	Select Variable format, with a length of 4 bytes long (enter a 4 in the length field).

After adding these, your Source Files tab should look like:



8. Click **Next**. Select the same **Destination table**.

Note: Remember that the table must be empty before you attempt to Execute the command. If your table is not empty, save the settings, empty it and load the settings back into the wizard.

9. Click **Next**. Leave the global options blank.
10. Click **Next**. Add a control file.
11. Click **Next**. Select **Execute Now** and click **Finish**.

If your table is still partitioned, as mine was, you can use these lines to see the data in each one:

```
select * from MarksFavoriteFoods partition (FoodRank1)  
select * from MarksFavoriteFoods partition (FoodRank2)
```

Advanced SQL*Loader Tutorial

Advanced Features - SQL*Loader Tutorial

This final tutorial will demonstrate specifying input data delimiters at the column level, capturing constraint errors and some of the command line options available.

For this example, you are going to create a foreign key to a table containing all of our food ranks.

2. In the Editor, execute the following as script:

```
CREATE TABLE FOODRANK (RANK NUMBER PRIMARY KEY);  
  
DECLARE  
  
I INTEGER;  
  
BEGIN  
  
I := 1;  
  
LOOP  
  
INSERT INTO FOODRANK  
  
VALUES (I);
```

```
I := I + 1;
IF I > 10
THEN
EXIT;
END IF;
END LOOP;
END;
/
CREATE TABLE MARKSFAVORITEFOODS (NAME VARCHAR2 (20), RANK NUMBER);
CREATE TABLE LOADEREXCEPTIONS (ROW_ID UROWID,
OWNER VARCHAR2 (30),
TABLE_NAME VARCHAR2 (30),
CONSTRAINT VARCHAR2 (30));
ALTER TABLE MARKSFAVORITEFOODS ADD CONSTRAINT CHECK_RANK FOREIGN KEY
(RANK) REFERENCES FOODRANK(RANK)
EXCEPTIONS INTO LOADEREXCEPTIONS;
```

3. Create the input data file as follows. Be very careful about copying and pasting into an editor. Make sure you don't get an empty line at the end.

```
"Grease^#1
"Tuna^#1
"Salmon^#02
"Broccoli^#3
"Asparagus^#4
"Bell peppers^#5
"Chicken^#6
"Yogurt^#7
"Brown rice^#8
"Carrots^#9
Lean ground beef#10
"Egg whites^#11
```

```
"Congealed Fat^#99
```

Look at this input file briefly. It is clear that the first field, **Food Name**, has a **double-quote** as its first delimiter. Its closing delimiter is a **caret**. And its ending field specifier is a **#** character. The Rank field is not delimited. Or is it? Copy and paste that data into an editor and again, make sure there are no hidden characters anywhere. (Incidentally, how did Grease and Congealed Fat make it into the list? You will fix that later.)

4. Save the data file and run the SQL*Loader Wizard, choosing **Build control file** on the first screen and leaving **Specify** fields checked.
5. Select the datafile you just created as the **input file**, leaving all other defaults. Click **OK** and then click **Next**.
6. Click **Next** to skip the **Delimiter** screen.
7. Add **MarksFavoriteFoods** as the destination table:
8. In the **Exception Table** area, enter or pick **LOADEREXCEPTIONS** as the Exceptions table.

Remove any entries in the **Terminated By:** box.

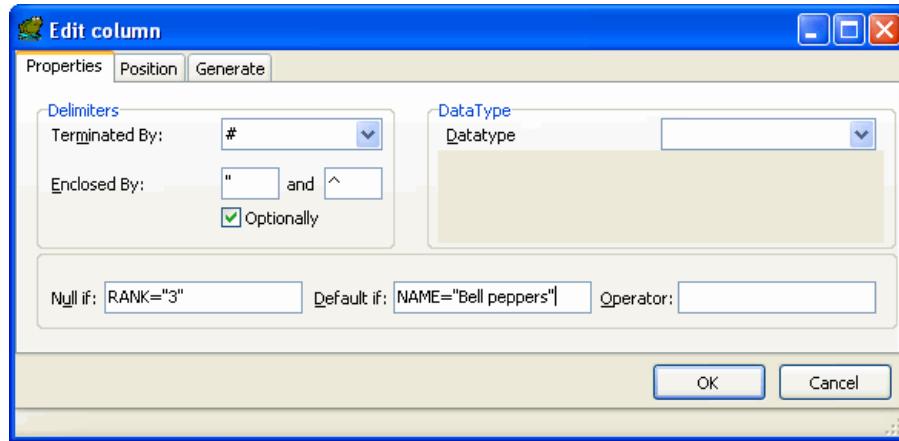
This indicates that you want any constraint exceptions to go into **LOADEREXCEPTIONS**. The exceptions table must be in the format as shown above. The RowID of the rows that violate the constraint go into this table.

In the options area in the upper right area of the Add Table dialog, check **Reenable Constraints**. This tells the SQL*Loader to re-enable constraints when the load is finished. When the constraints are re-enabled, the referential integrity checks fire, causing some of the data to fail and the row to be marked in our exceptions table.

Look back at the data. It is pretty clear that **Congealed Fat** with a food rank of **99**, will violate our referential integrity constraint. You only have ten ranks in our **FOODRANK** table - 1 through 10, so anything else will not be allowed.

9. In the Columns area grid, select the **Name column** and click **Edit**.
10. Enter **#** in the **Terminated by:** field.
11. The Field is enclosed by " and ^, so enter those characters in the appropriate fields as well.
12. Not all of the food name fields are delimited, so you will check the **Optionally** check box.
13. Move to the **Null If field**. Null If tells the SQL*Loader: "set character columns to null, and number columns to zero, upon this condition". Enter **RANK="3"** in the Null If field. This will blank out the Food Name column when Rank is 3. The food for that rank is Broccoli, so it will never appear.
14. Move to the **Default if field**. Enter **NAME="Bell peppers"**. This will set the Food Name column to null whenever the Name is "Bell peppers".

The screen should look like this:



15. Click **OK**.
16. Click **NEXT**. The command line options are options that can be specified on the executable command line. Enter a **1** into **Skip**. This tells Toad to skip 1 record. The Grease field will be skipped.
17. Enter **11** into the **Load field**. This tells Toad to load 11 records from our data file. So the first line will be skipped and the next 11 loaded. The Congealed Fat record will not be loaded. Even if it was, it has a Rank of 99, so it would fail the constraint check.
18. Select the **Direct** check box, since you want to do a **Direct Path Load** (a very different style of loading, and does not perform standard SQL Inserts but rather uses buffers. This will permit the constraint to be turned off).

Finally, under **Silent**, check the **All** check box. This tells loader to suppress all output messages (the log file will still be created).

Note: These options are not mutually exclusive – you can disable Feedback and Errors, but not Discards, and so on.

19. Click **Next**. Enter a **control file name** (we used D:\confile.ctl, but you can name it anything). Click **Next**.
20. Click **Save Settings** and save these settings. We'll want them again later.
21. Select **Execute now** and **Watch progress**. Click **Finish**.

Since you suppressed all messages, the **Messages tab** shows only these lines:

```
SQL*Loader: Release 8.1.6.0.0 - Production on Fri Oct 27 13:57:14 2000
```

```
(c) Copyright 1999 Oracle Corporation. All rights reserved.
```

```
"Yogurt^7
```

What's wrong with that line? It has no field termination character - #. Notice that the lean ground beef line:

```
Lean ground beef#10
```

made it in, even though it does not have delimiters. That's because you said they were optional.

22. The Log file states that 10 rows were loaded; 1 row was not, due to data errors. Which row was that? Open MarksDiet.bad (or whatever you named the data file, plus the .bad extension). You will find this line:

Now, open **Schema Browser** and look at the Data tab for **MarksFavoriteFoods**. It looks like this:

The screenshot shows the Toad Schema Browser interface. The title bar reads "GMUELLER@ROCF510G.QUEST.COM (rocf510g:alvlab107) - Schema Browser (GMUELLER.MARKSF...)". The left pane shows a list of tables under the schema "GMUELLER", including "DATAAGENTTEST", "FOODRANK", "LOADEREXCEPTIONS", "MARKSFAVORITEFOODS" (which is selected), "TEST1", "TESTTABLE2", "TESTTHIS", "TOAD_PLAN_SQL", and "TOAD_PLAN_TABLE". The right pane displays the "Data" tab for the "MARKSFAVORITEFOODS" table. The table has two columns: "NAME" and "RANK". The data is as follows:

NAME	RANK
Tuna	1
Salmon	0
	3
Asparagus	4
	5
Chicken	6
Brown rice	8
Carrots	9
Lean ground	1
Egg whites	1

At the bottom of the table view, it says "Row 1 of 10 total rows".

Broccoli and Bell Peppers were blanked out, as specified. Grease was skipped and Congealed Fat was not loaded because it was beyond our "Loaded" limit. Yogurt was not loaded due to bad data. But Egg Whites had a Rank of 11. Why didn't the constraint fail? And what's up with the Rank of 0 for Salmon? It had a rank of 2.

Open the **log file** to find out. Whatever you named the control file, but with a .LOG extension, and in the same directory as the control file is your log file. Near the bottom you will find the following:

```
Column Name Position Len Term Encl Datatype
-----
-----  

NAME FIRST * # O(")  

CHARACTER  

O (^)  

NULL if RANK = 0X33(character '3')  

DEFAULT if NAME = 0X42656c6c2070657070657273(character 'Bell peppers')  

RANK NEXT 1
```

CHARACTER

Len means length. You see a length of * for Name, meaning – read to the end of field marker, (# - the Terminator character). But Rank has a length of 1. That's why only 1 character was loaded. But why? Well, you never specified a field terminator for Rank. You did for Name, but not Rank.

Open an Editor window and remove the records from MarksFavoriteFoods by entering:

```
delete from marksfavoritefoods
```

23. Open the SQL*Loader Wizard. Load the settings you saved previously (uncheck the **Proceed to finish** box). Click next until you get to the **Destination Tables**.
24. Select **Rank** and change the **Field is terminated by field**, by selecting **WHITE SPACE** from the dropdown.
25. Execute the **SQL*Loader wizard** once more. Notice in Schema Browser that all the numeric data is entered properly. In examining the log file, you see that our constraint was disabled, the records loaded, and an attempt was made to re-enable the constraint. But the particular constraint you used – a foreign key constraint – could not be re-enabled because there were orphaned records – the **Egg White**. Look in the **LOADEREXCEPTIONS table** and you will find the **RowID** of the offending record.

Team Coding

Team Coding Tutorials

Team Coding is a cooperative source control feature. You can use Team Coding alone or in conjunction with a third party version control system. Team Coding works with the Editor to control access and development of functions, procedures, packages, triggers and types.

There are several ways to use Team Coding, and these tutorials will help you set the feature up in the best way for your situation.

[Installing Team Coding Database Objects - Team Coding Tutorial \(page 238\)](#)
[Team Coding Roles \(page 239\)](#)
[Steps \(page 241\)](#)

Installing Team Coding Database Objects - Team Coding Tutorial

Before you can use Team Coding as a basis for source control, it must be set up and configured on your Toad instance. This tutorial will walk you through the most basic Team Coding configuration, using only Toad and no external version control software.

In order to use Team Coding, a repository must be set up on the database (usually in the TOAD schema), and Team Coding must be configured on your machine.

1. If you haven't already, open **Toad**.
2. From the **Database** menu, select **Administer | Server Side Objects** wizard.

3. On the first page of the wizard, select **Install, upgrade or remove objects for all users to share** and then click **Next**.
4. Enter login information for either the TOAD schema or a DBA user (you must have DBA privileges on your account to do this) information and click **Next**. Toad logs in to the selected schema.
5. The Server Side Objects wizard checks to see if Team Coding has been installed and that all components are valid. If they are, the Team Coding area will display "Found and OK." If they are not there, it will display "Team Coding not Found". Click **Add** and then **Next** to install them.
6. Click **Next** to skip the Space Manager features.
7. Create the Team Coding roles. It is recommended that you create new roles for Team Coding, but you can also assign the team coding privileges to an existing role. When you have selected the options for these roles, click **Next**.
8. Select the tablespaces where you want to create the Team Coding Objects. Click **Next**.
9. Click **Run Script** to create the Team Coding Objects. When the wizard displays "Update of TOAD complete," review the output and click **Next**.
10. The Server Side Objects wizard checks for other necessary objects and reports on the status. Click **Close** to finish.

Setting up and Enabling TC without Version Control Software

Setting up Team Coding without Version Control Software - Team Coding Tutorial

Team Coding Roles

Grant Users the Team Coding roles as desired. These roles are:

Administrator (TC_ADMIN_ROLE)

Can configure the instance to define how Team Coding operates, which VCS (if any) is used, and so on. This role is automatically assigned to the Toad user.

Project Manager (TC_MGR_ROLE)

Can create and delete code control groups (CCGs) and relate them to a VCS project.

Team Leader (TC_LDR_ROLE)

Can modify CCGs, define the objects or scripts are included in the group, and freeze objects. Can also delete rows from the Team Coding Viewer.

Users without a role granted

Users not granted one of the three Team Coding Roles hold the default role of developer. They can view the status of objects within the Team Coding Viewer, and check items in and out of source control.

1. Grant Roles as follows:

1. From the Schema Browser | Users tab
2. Select a **user** in the left panel
3. Click the **Alter User** button.
4. Do one of the following:
 - Click the **Roles** tab. Add or remove roles as desired.

You can also grant roles from the Editor. Enter the appropriate SQL and execute it.
For example:

```
grant TC_ADMIN_ROLE to ARTHUR
grant TC_LDR_ROLE to SUSAN
```

Enabling Team Coding in the Database - No VCS - Team Coding Tutorial

1. On the Team Coding Toolbar, click the **View Team Coding Status for this session**  button. The Team Coding Status dialog box displays, with the connection information in the title bar.
If Team Coding is enabled, the Permissions area will display a green check mark beside Team Coding Available and the permissions the current user has.
2. Click **Settings** to see and edit Team Coding status for this connection.
3. Check **Enable Team Coding**.

Setting up and Enabling Team Coding with Version Control Software

Setting up Team Coding using Version Control Software - Team Coding Tutorial

The first step is to grant users the Team Coding roles as desired. These roles are:

- Administrator (TC_ADMIN_ROLE)
- Can configure the instance to define how Team Coding operates, which VCS (if any) is used, and so on. This role is automatically assigned to the Toad user.
- Project Manager (TC_MGR_ROLE)
- Can create and delete code control groups (CCGs) and relate them to a VCS project.
- Team Leader (TC_LDR_ROLE)
- Can modify CCGs, define the objects or scripts are included in the group, and freeze objects. Can also delete rows from the Team Coding Viewer.
- Users without a role granted

- Users not granted one of the three Team Coding Roles hold the default role of developer. They can view the status of objects within the Team Coding Viewer, and check items in and out of source control.

Steps

1. Grant Roles as follows:
 1. From the Schema Browser | Users tab
 2. Select a **user** in the left panel
 3. Click the **Alter User** button.
 4. Do one of the following:
 - Click the **Roles** tab. Add or remove roles as desired.You can also grant roles from the Editor. Enter the appropriate SQL and execute it.
For example:

```
grant TC_ADMIN_ROLE to ARTHUR

grant TC_LDR_ROLE to SUSAN
```
5. From View | Toad Options | Team Coding, set the appropriate Team Coding options. See "Source Control Options" (page 682) for more information and descriptions. At the very least you will need to set:
 - Default Working directory - Enter the full path of the working directory for your Version Control Software. You can browse and select it if necessary by clicking the drilldown  button.
6. If you are using CVS, click **VCS Provider Options** and use CVS_Configurations_ Options to specify the options you want to use for that provider. Other supported providers do not require these options.

Enabling Team Coding in the Database - VCS - Team Coding Tutorial

1. On the Team Coding Toolbar, click the **View Team Coding Status for this session**  button. The Team Coding Status dialog box displays, with the connection information in the title bar.

If Team Coding is enabled, the Permissions area will display a green check mark beside Team Coding Available and the permissions the current user has.
2. Click **Settings** to see and edit Team Coding status for this connection. The Configuration tab is active.
3. Check **Enable Team Coding**.
4. You must use code control groups if you are using 3rd party VCS. Check **Use Code Control Groups** and **Use 3rd party version control**.
5. Select your **Version Control Provider** from the list provided.

6. Click the **File extension tab** to change default file types associated with using Team Coding, and the **General** tab to set defaults such as automatic generation of new version numbers.
7. Click **OK** to save your settings and enable Team Coding.

Setting up Code Control Groups - Team Coding Tutorial

When Team Coding is enabled and your VCS has been set up, you will need to set up your Code Control Groups.

Code Control Groups are like buckets that you can use to separate your code projects. You can put some code into one or more buckets that will be under source control, and you can put some code into a bucket that won't be controlled. In addition, you can sort the code within those buckets into smaller containers using filters. These filters can be applied depending on the developer using the code, as well as globally.

Create a code control group as follows:

1. From the Toad menu bar, choose **Team Coding | Code Control Groups**, or on the **Team Coding** toolbar, click the **Code Control Groups**  button.
2. In the Code Control Groups toolbar, click the **Add Group**  button.
3. If a login window appears, provide the needed information.
4. In the **New Group** dialog box, enter a descriptive name for the Group.
5. If you are using a third party Version Control System (VCS), select a VCS project by following the prompts in the dialog boxes that appear. This will vary depending on the product in use. The Code Control Group window appears.
6. If you are not using a VCS, the Code Control Group window appears immediately.
7. In the Code Control Group window, create New Object and script mask definitions for the current CCG.

Setting up New Object and Script Masks - Team Coding Tutorial

1. From the Code Control Group window, select the group where you want to add masks and then click the Open Group  button.
2. Click the New Database Mask  button.
3. Select from the following options:
 - Object Type - Choose from View, Procedure, Function, Package, Package Body or All.
 - Schema - Pick a user from the list, or type a schema name. You can use the % wildcard character.

- Object Name - You can type an object name, including the % wildcard.
Alternatively, you can launch the Open DB Object dialog box to choose an object matching the Object Type and Schema settings.
- Excluded - Select Excluded to exclude any objects matching this object mask from the CCG.

Mapping Users to CCGs - Team Coding Tutorial

You must be logged in as the user you want to map.

1. From the Team Coding menu, select **Code Control Groups**.
2. Select the appropriate **CCG**.
3. Click the **Map Current User**  button on the toolbar.
4. If the CCG contains object masks for multiple schemas, follow the prompts to select the schema you want.
5. If required, perform an **Import** to update the objects in your schema.

RMAN Templates

RMAN Scripts in Toad

This feature is only available in the commercial version of Toad with the optional DB Admin module.

You can execute RMAN scripts from Toad.

- Edit templates
- Add templates to the listing
- Execute RMAN scripts

See "Working with RMAN Templates" (page 244) for more information.

There is an [online video tutorial](#) for this feature. This opens a new browser window and requires an internet connection.

Templates are edited and created from the Toad Options window. Execution takes place from the Database Browser. RMAN executes outside of Toad and automatically closes when finished.

Working with RMAN Templates

RMAN templates are stored in a property file within the User Files directory. See "Properties Files" (page 163) for more information and more specific location information.

From the Toad Options window, you can add your own files, edit existing ones, and remove them from the listing.

To view the RMAN files listing

- » From the View | Toad Options window, select **RMAN templates**.

To add files to the RMAN files listing

1. From the View | Toad Options | RMAN Templates page, click **Add**.
2. Enter the *name* you want displayed in the listing.
3. Do one of the following:
 - Enter the *filename* and *path* in the Filename box
 - Browse to the file using the drilldown  button.
4. Click **OK**.

To edit an RMAN file

1. From the Options | RMAN Templates page, select the file you want to edit.
2. Click **Edit**.
3. Edit the file in the external editor, save it and close the editor.

To remove files from the RMAN files listing

1. From the Options | RMAN Templates page, select the file you want to remove.
2. Click **Delete**.
3. Click **Yes** when prompted.

Executing RMAN Scripts from Toad

This feature is only available in the commercial version of Toad with the optional DB Admin module.

You can execute RMAN scripts from the Toad Database Browser.

To run an RMAN script

1. From the Database Browser, right-click on the target database. See "Database Browser" (page 532) for more information.
2. Select **Generate RMAN script** and then select the script you want to run.
3. Enter the variables that are not defined automatically, and select the ones you want to apply. Click **OK** to send the script to the editor.

Note: If there are no variables to be defined, the script will be sent directly to the editor.

4. Press **F9** to run the script.
5. RMAN opens and runs outside of Toad and then closes independently.

Comparing

Data Duplicates

Use this dialog box to view record duplicates based on user input.

To view record duplicates

1. Select **Database | Compare | Data Duplicates**
2. Select the **Owner**, **Object Type** and **Object** from the dropdown lists. A list of columns is displayed below. Now, you can either:

Find duplicates on all columns	Check the Find duplicates on all columns option button. Do not select any columns in the list.
Find duplicates on just selected columns	Check the Find dupes of selected columns option button. Select one or more columns in the column list.
On the Duplicate Data tabs, an additional column called Occurrences is added to the end of the grid to display the number of resulting duplicates.	

To edit duplicate data

1. From the Table Data Duplicates window, select **Owner** and **Table** from the dropdown lists.
2. Click the **Duplicate Data (Editable)** tab.
3. Click the cell you want to edit and make your changes.
4. Click  on the toolbar.

Compare Single Objects

You can compare single objects from the Schema Browser. All objects accessible from the Schema Browser can be compared.

To compare objects

1. In the Schema Browser, right-click on an object.
2. Select **Compare with another object**.

Note: Reference source information will be filled in for you.

3. Enter comparison source information (a text file or an object in a live schema).

Select options to apply:

Compare columns only	Applies only to tables, views, and materialized views.
Alphabetical	Arranges columns alphabetically <i>before</i> comparing.
Format before comparing	Formats both files consistently so that cosmetic differences do not impact your results.

4. If you are using Toad with the optional DB Admin Module, you can choose to view your results in one of two ways:

Results as File Compare	Use the Differences Viewer to compare the two selected objects. For more information about the differences viewer, see Compare Files .
Results as Sync Script	Only available if the objects chosen have the same name, and are in different schemas, this option creates a sync script.

Comparing Databases

Compare Databases

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

To compare databases manually

1. From the Database menu, select **Compare | Compare Databases**.
2. Make your selections on the **Databases** and **Objects & Options** tabs, and then click **Compare** to display the results tabs.
3. Click the Object Set tab to specify an object set if wanted.

To compare databases from the Command line

- From the Options tab, you can click the **Save all settings to file** button and then run the comparison from the command line later. (See "Run Compare Databases from Command Prompt" (page 839) for more information.)

Compare Databases - Database Tab

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

After you have opened the Compare Databases window, click the Database tab to set the following:

Option	Notes
Reference Source	The reference source is the source that will not change if you use the sync script.
Comparison Source	The comparison source is the source that will be changed by the sync script.
Database	Select the Connection . You can also choose to create a definition file for either source from either source.
Definition File	<p>Choose definition file to make a comparison with a saved definition file. This option is useful if you have an unchanging database, or you want your various databases to conform to a template.</p> <p>When you create a definition file, you can use variables in the filename. By default, Toad includes the %DATEFILE% and %TIMEFILE% variables, which inserts the current date and time into the filename when the definition file is created. (This ensures that the date and time are inserted accurately if you are creating the definition file from an Action. See "Creating a new action from a Toad window" (page 437) for more information.)</p> <p>Note: Comparing Definition files is only available in the commercial version of Toad with the optional DB Admin Module. See "Generate Schema Script" (page 429) for more information about creating definition files.</p>

Switching Comparison and Reference Databases

Switching comparison and reference databases is performed within memory, so if you have previously run a compare, Toad can switch without querying the database again.

Clicking Switch before you have run the comparison will run the new comparison.

Changing options requires an additional query, and you will need to click compare again after making any such changes.

To switch comparison and reference schemas

- » Click the **Switch** button.

Compare Databases - Options Tab

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

On the options tab of the Compare Databases window, check boxes let you select options and what object types will be compared. (See "Compare Databases" (page 247) for more information about comparing databases.) You can right-click the options tab to check or uncheck all object types.

The options tab contains an additional two tabs:

Tab	Options
Object Types to Compare	Select the object types you want to compare. By limiting what you are comparing, you can speed up a schema compare. To select a set of options, click the Options tab. See Compare Databases - Options Tab for more information.
Options	Check boxes let you select options, and you can enter a filename for the Synchronization file in the box at the bottom. Most of the options are self-explanatory, or Oracle related.

"Safe Drop" Option

If "Safe Drop" on users, tablespaces and profiles is checked :	A DROP USER statement will not include the CASCADE keyword. <ul style="list-style-type: none">• If CASCADE is not included, then the script will only be able to drop the user if the user owns no objects. A DROP PROFILE statement will not include the CASCADE keyword. <ul style="list-style-type: none">• If CASCADE is not included, then the script will only be able to drop the profile if no users have that profile. DROP TABLESPACE statements will not include the INCLUDING CONTENTS keywords, or, if 9i or above, the AND DATAFILES keyword. <ul style="list-style-type: none">• If INCLUDING CONTENTS is not included, then the script will only be able to drop a tablespace if the tablespace contains no objects.
If "Safe Drop" on users, tablespaces and profiles is unchecked :	A DROP USER statement in the migration script will include the CASCADE keyword. A DROP PROFILE statement in the migration script will include the CASCADE keyword. <ul style="list-style-type: none">• If CASCADE is included, then any users with the dropped profile will be reassigned to the DEFAULT profile. A DROP TABLESPACE statement in the migration script will include the INCLUDING CONTENTS keywords, plus, if 9i or above, the AND DATAFILES keyword.

Compare Databases - Object Set Tab

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can use the Object Set tab of the Compare Databases window to select a specific object set to compare. This lets you limit your comparison even more than the options. You can also specify an object set and save it for later use.

This topic only covers unfamiliar information. It does not include all step and field descriptions. See "Compare Databases" (page 247) for more information about comparing databases.

To specify an object set

1. In the Database Compare window, click the **Object Set** tab.
2. Select the **Specify Object Set** check box. Options with special features include:

 (Add object)	If you already have objects loaded, a confirmation dialog will ask you if you want to clear the grid before loading the new objects. Choose Yes to start over, or No to append the new objects into the grid
Like box	If you leave it unchecked, all objects of the selected type will be loaded.
Auto-check the grid rows	Use this if you know you want to compare everything that loads.
Select view/edit query	Use the view dialog to check the query and alter it if necessary.
 (Save As)	Save the object set so you can use it later.

Loading a Saved Object Set

If you have saved an object set, you can load it into this window instead of creating a new set.

To load a saved object set

1. From the Database Compare window, click the **Object Set** tab.
2. Click the **Load Object Set from File**  button.
3. Select the object set you want to load and click **Open**.

Compare Databases - Results

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Results of comparing databases can be viewed in several different ways. See "Compare Databases" (page 247) for more information about comparing databases.

Results of a compare database display the changes required to make the second database look like the reference database. Therefore, if you reverse the order of the databases, there may be differences in the number of objects reported as "missing."

You can switch the order of the databases by clicking  in the middle of the Compare Database window, Databases tab.

The results grid details the differences between the databases in an interactive format. Differences are separated into three groups. Each type of item has an icon assigned to it, making it easy to see at a glance what object it is.

Icon	Meaning
	Objects Which Differ
	Objects in Reference Source not in Comparison Source
	Objects in Comparison Source not in Reference Source

Results Toolbar

The toolbar allows easy access to several formatting options, as well as a print preview screen and the migration SQL dialog box. These are also available from the right-click menu.



Icon	Meaning
	Expand all
	Expand to First Level
	Collapse all
	Show Sync Script for selected items.
	Show difference details for one selected and supported object type (for example a table or a directory). See "Viewing File Differences" (page 257) for more information.
	You can save your comparison to a file. You can choose text, html, or rtf file from the Save As window. NOTE: When you create a results file, you can use variables in the filename.
	Send to Excel.
	Display summary view.
	Print results.
Group by Object Type	Items within groups can be grouped according to type. Each type of item has an icon assigned to it.

Compare Databases - Sync Script

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Sync Script tab

The Sync Script tab displays the migration SQL for the entire comparison. Running this SQL will change everything in the comparison database.

Caution: You will lose data whenever a table is truncated or dropped, so check this script thoroughly before executing it.

Sync Script toolbar



Icon	Meaning
	Save Sync Script as a text file.
	Print the Sync Script.
	Load the Sync Script in the Toad Editor. See "Toad Editor" (page 854) for more information.
	Execute the Sync Script immediately. Caution: Remember that this SQL is designed to change the comparison schema. Be sure you won't lose any important data before you execute it.
	Schedule the Sync Script to run at a later time using Windows Task Scheduler. See "Task Scheduler" (page 762) for more information.

Scheduling Compare Databases as Windows Task

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can schedule a Windows task for comparing databases. You can also save your settings to a file and load them at a later time.

To schedule a database compare task

1. Set up your options to Compare Databases. See "Compare Databases" (page 247) for more information.

2. From the Options tab, click the **Schedule**  button.
3. Select your settings and output options and click **Schedule** to continue to the Schedule Windows Task wizard. See "Task Scheduler" (page 762) for more information.

Saving and Loading Settings

You can save your settings to a file and then later reload them from the file. This makes it easier to compare with the same settings in the future.

In addition, if you save your settings to a file you can later choose to run the Copy function from the command line. See "Run Compare Databases from Command Prompt" (page 839) for more information.

To save settings

Options tab		Save All Settings
Object Set tab		Save Object Set

To load settings

Options tab		Load All Settings
Object Set tab		Load Object Set

Comparing Data

Comparing Data

You can use Toad's Compare Data wizard to compare data between tables within different schemas, or different databases. This can be useful for comparing the data in a production and test environment, for example.

This topic only covers unfamiliar information. It does not include all step and field descriptions

To access the Compare Data wizard

1. From the Database menu, select **Compare | Data**.
2. Review the following for additional information:

Select data sources page	Description
--------------------------	-------------

Use DB Link box	If your first data source is remote, select an existing DB Link. If your first data source is local, leave this box blank.
Object Type	Tables, Views and Snapshots are supported.
Select Performance Options Page	Description
Sort Area Size	This only affects queries going through a Database Link. When selected: <ul style="list-style-type: none">• The default area size is 10 MB• You can select to set another sort area size when the first window closes. The default for this is also 10MB.
Optimizer Hints - Use parallel hint	The default is unchecked. When selected, you can set the amount of parallelism you want. The default amount when checked is 4.
Select Columns to Compare	Description
Column colors	Black - Columns appear in both sources and can be compared. Red - Columns cannot be compared. Purple - Columns appear only in Source 1. Teal - Columns appear only in Source 2.

Reviewing Differences

From the last three windows of the Compare Data wizard you are now ready to view the differences between your data sources. See "Comparing Data" (page 254) for more information.

- The first window reviews rows in Source 1 that are not in Source 2.
- The second window reviews rows in Source 2 that are not in Source 1.
- The last window reviews all differences.

You must run the SQL code for each window as described below.

Editable Datasets

You can edit the dataset from within the grid. In some editions of Toad, you can delete rows from one table, and insert them into the other directly in the grid.

To make dataset editable

- » On the Review Differences page, select the **Editable Dataset** checkbox.

To review rows

1. Perform any desired optional steps:

- Click the **View/Edit SQL** button to view or edit the SQL used to compare differences. You can make changes in the Edit SQL dialog box.
- Click **Check** to verify that the query parses correctly.
- Click **OK** to apply changes to your query.
- Click **Execute** to find differences in the columns you want to compare.

To delete selected rows

1. Select the rows you want to delete.
2. Right-click and select **Delete Selected Rows**.

To delete all rows

- » Right-click and select **Delete All Rows**.

Compare Files (Difference Viewer)

Compare Files and Objects

You can use the compare files window (**File Differences Viewer**) to compare the contents of two files from a disk, or an object to a file or to another object.

You can access the Differences Viewer from three different areas. Each uses it to compare different objects.

To compare two files on disk

1. From the Utilities menu, select **Compare Files**.
2. Select one or two files.
3. Click **OK**.

To compare objects in the Schema Browser

- » From either the Procedures or Views page, right-click on an object and select **Compare with another object**. See "Compare Single Objects" (page 246) for more information.

To compare differing objects from a schema compare

- » From the Schemas | Results (Interactive) tab, right-click an object listed as differing between schemas and select **Show Difference Details** to compare the scripts of the two objects. See "Compare Schemas" (page 260) for more information.

Viewing File Differences

When you have specified the objects you want to compare, whether they are files, database objects, or scripts, you can use the Differences Viewer. See "Compare Files and Objects" (page 256) for more information.

The Differences Viewer lets you compare database objects in a split window. Differences between the objects are highlighted and the toolbar gives you access to controls for customizing the view and creating reports.

File Comparison Rules and Options let you specify the way Toad displays the similarities and differences between two files, or two versions of a file.

Differences Viewer Toolbar



Button	Command
▶	Reload files and execute the comparison
⇨	Open a file
⇨	Paste contents of clipboard into selected side of viewer
⇨	Switch sides
↶	Go to Previous difference
↷	Go to Next difference
*	Show all lines of compared objects
◦	Show only lines with differences
◦	Show only lines with major differences. See "File Comparison Rules" (page 258) for more information.
-	Show only matching lines
⌕	Find a text string
⌕	Find next text string
ℓ	Go to a specific line number
↶	Copy to right
↷	Copy to left
⌫	Delete text to left

	Delete Text to right
	Undo
	Generate a report of differences
	Generate a comparison summary
	Show space characters using tilde (~) characters
	Toggle line numbers on or off
	Show a thumbnail view of the file. See "Thumbnail view" (page 258) for more information.
	Set file comparison rules. See "File Comparison Rules" (page 258) for more information.
	Display and set options. See "Difference Viewer Options" (page 260) for more information.

Thumbnail view

This lets you quickly change sections of the file. The thumbnail view (to the left of the viewing window) is a visual summary of differences. Colored lines show the relative position of line mismatches. A white rectangle represents the part of the text currently visible in the Differences Viewer window. You can click the thumbnail view to position the viewer at that point in the documents.

File Comparison Rules

To access file comparison rules

- » Click on the differenced viewer toolbar. See "Compare Files and Objects" (page 256) for more information.

Available Rules

This topic only covers unfamiliar information. It does not include all step and field descriptions.

General Tab	
Synchronization Settings	<p>Synchronization Settings control the comparison engine that reports differences and similarities between files. Unless you are experienced in manipulating comparison synchronization algorithms, you will probably find that the default settings work well enough for most situations. In general, the following principles apply:</p> <ul style="list-style-type: none">• Set the synchronization parameters low - Allows more efficient searches for small differences.• Set the synchronization parameters

	<p>higher - Handle larger files or files with large differences.</p> <ul style="list-style-type: none">Initial Match Requirement - The minimum number of lines that need to match in order for text synchronization to occur.Skew Tolerance - The number of lines the Differences Viewer will search forward or backward when searching for matches. Smaller numbers improve performance.Suppress Recursion - Refers to the method used to scan for matches. Recursion improves the ability to match up larger as well as smaller sections of text, but it can take longer.
Minor Differences	Use the Ignore Minor Differences check box to activate or deactivate the highlighting of minor differences in the Differences Viewer window. (As explained below, you specify what constitutes minor differences in the Rules options under Define Minor Differences.)
Define Minor tab	You can have the comparison engine either highlight or ignore minor differences—such as comments, or spacing characters and tabs. This gives you the option of focusing only on significant differences, or, alternatively, reviewing even minor differences between versions. Place a checkmark next to the items that you want to classify as minor differences. Then, under the General category, you can select or clear the Ignore Minor Differences check box.
Line Weights tab	The Line Weights tab lets you assign synchronization priorities to the lines that match. You can use the values listed in the tab, or you can create your own.
Miscellaneous tab	Use the Miscellaneous tab to make choices about line termination. You can also limit comparisons to specific columns by entering a column range in the comparison boxes.

Difference Viewer Options

To access options

- » Click  in the Differences Viewer. See "Compare Files and Objects" (page 256) for more information.

From this dialog box, you can set the colors and other visual characteristics used to highlight the following elements in the Differences Viewer:

- Matching text
- Similar text
- Different text
- Missing text
- Horizontal lines between mismatches

You can also set Find Next difference to use position only (so as not to obscure color coding), or normal line selection.

Comparing Schemas

Compare Schemas

Use this window to compare two schemas and ascertain what has changed from the original reference source to the comparison source. You can set various options, including choosing schemas, setting options, and selecting object sets.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

Note: You can compare schemas in the base Toad editions, but definition files and sync scripts are available only in the commercial version of Toad with the optional DB Admin Module.

To compare schemas

1. From the Database menu, select **Compare | Compare Schemas**.
2. Make your selections on the **Schema**, **Options**, and **Object Set** tabs, and then click **Compare** to display the results tabs.

You can also create an Action and then run the comparison later from within Toad or from the command line. See "Compare Schemas Action" (page 447) for more information.

Compare Schemas - Schemas Tab

After you have opened the Compare Schemas window, select the **Reference Source** and the **Comparison Source (Target)**.

Radio buttons let you choose either **Schema** or **Definition File**.

Option	Notes
Reference Schema (Source)	The reference source is the source that Toad will use as the basis for comparison.
Schema	If you choose Schema, you must select both a connection and a schema.
Create Schema Definition File	When you create a definition file, you can use variables in the filename. By default, Toad includes the %DATEFILE% and %TIMEFILE% variables, which inserts the current date and time into the filename when the definition file is created. (This ensures that the date and time are inserted accurately if you are creating the definition file from an Action.) Note: Comparing Definition files is only available in the commercial version of Toad with the optional DB Admin Module. See "Generate Schema Script" (page 429) for more information about creating definition files.
Target and Output	The targets are the schemas that will be compared to the reference. If you run a created sync script, these are the schemas that will be changed. Each target can have a separate output file. To add targets, click +.

Defining Targets and Output

Option	Notes
Target Schema	<p>Choose one of the following:</p> <ul style="list-style-type: none">• Connection - If you choose Connection, enter both a connection and a schema.• Schema Definition File - Choose definition file to make a comparison with a saved definition file. This option is useful if you have an unchanging schema or you want your various schemas to conform to a template. <p>Note: Comparing Definition files is only available in the commercial version of Toad with the optional DB Admin Module. See "Generate Schema Script" (page 429) for more information about creating definition files.</p>
Output	<p>Output can be created in several ways:</p> <ul style="list-style-type: none">• Auto-Complete output File Names - Toad create output filenames for you.• Enter the filenames and paths for output files manually in the appropriate boxes.• Select the Email boxes if you want the output sent by email to the settings specified in the Email Options page. See "Email Settings" (page 652) for more information.

Switching Comparison and Reference Schemas

Switching comparison and reference schemas is performed within memory, so if you have previously run a compare, Toad can switch the schemas for you without querying the database again. Clicking **Switch** before you have run the comparison will run the comparison.

Changing options requires an additional query, and you will need to click **compare** again after making any such changes.

To switch comparison and reference schemas

- » Select a schema in the **Targets and Output** area and select **Switch with Reference Schema**.

Compare Schemas - Options Tab

On the options tab of the Compare Schemas window check boxes let you select options and what object types will be compared. You can right-click the options tab to check or uncheck all

object types.

The options tab contains an additional three tabs:

Tab	Options
Object Types to Compare	Select the object types you want to compare. By limiting what you are comparing, you can speed up a schema compare.
Object Type Specific Options	Use these options to limit how you compare specific objects.
Misc Options	Select how you want to create your script and what you want to include.
Storage Clause Options	Use these options to limit the objects based on storage clauses.

Compare Schemas - Object Set Tab

You can use the Object Set tab of the Compare Schemas window to select a specific object set to compare. This lets you limit your comparison even more than the options. You can also specify an object set and save it for later use.

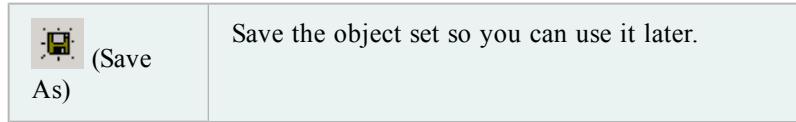
This topic only covers unfamiliar information. It does not include all step and field descriptions.

To specify an object set

1. In the Schema Compare window, click the **Object Set** tab.

Select the **Specify Object Set** check box. Options with special features include:

 (Add object)	If you already have objects loaded, a confirmation dialog will ask you if you want to clear the grid before loading the new objects. Choose Yes to start over, or No to append the new objects into the grid
Like box	If you leave it unchecked, all objects of the selected type will be loaded.
Auto-check the grid rows	Use this if you know you want to compare everything that loads.
Select view/edit query	Use the view dialog to check the query and alter it if necessary.



Loading a Saved Object Set

If you have saved an object set, you can load it into this window instead of creating a new set.

To load a saved object set

1. From the Database Compare window, click the **Object Set** tab.
2. Click the **Load Object Set from File** button.
3. Select the object set you want to load and click **Open**.

Compare Schemas - Results

Results of comparing schemas display the changes required to make the second schema look like the reference schema. Therefore, if you reverse the order of the schemas, there may be differences in the number of objects reported as "missing."

For example:

Schema A contains 2 tables; one of them has a PK constraint.

Schema B contains 1 table that matches the unconstrained table in A.

- If A is the reference schema, then the migration script would attempt to change B to make it look like A. In that case, two objects are needed - a table and a constraint.
- But if B is the reference schema, then the migration script would attempt to change A to make it look like B. In that case, one object needs to be dropped - the table. The constraint will be dropped automatically with the table.

You can switch the order of the schemas by clicking the **Switch** button in the middle of the Compare Schema window.

Results

The tree view details the differences between the schemas in an interactive format.

Each item has a check box. By default, all items are checked. Clearing a checkbox will remove that item from the main Sync Script. See "Compare Schemas - Sync Script" (page 266) for more information about sync scripts.

Differences are separated into three main node groups:

Icon	Meaning
	Objects in Comparison Source not in Reference Source
	Objects in Reference Source not in Comparison Source
	Objects that Differ

Each type of item has an icon assigned to it, making it easy to see at a glance what object it is.

Results Toolbar

The toolbar allows easy access to several formatting options, as well as a print preview screen and the migration SQL dialog box. These are also available from the right-click menu.



Icon	Meaning
	Expand all
	Expand to First Level
	Collapse all
	Show Sync Script for selected items.
	Show difference details for one selected and supported object type (for example a table or a directory). See "Viewing File Differences" (page 257) for more information.
	You can save your comparison to a file. You can choose text, html, or rtf file from the Save As window. NOTE: When you create a results file, you can use variables in the filename.
	Send to Excel.
	Display summary view.
	Print results.
Group by Object Type	Items within groups can be grouped according to type. Each type of item has an icon assigned to it.

Compare Schemas - Sync Script

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can create and execute migration SQL (a sync script) for all of the differences in the comparison, or only selected objects.

Sync Script tab

The Sync Script tab displays the migration SQL for the entire comparison. Running this SQL will change everything in the target schema.

Sync Script toolbar



Icon	Meaning
	Save Sync Script as a text file.
	Print the Sync Script.
	Load the Sync Script in the Toad Editor. See "Toad Editor" (page 854) for more information.
	Execute the Sync Script immediately. Caution: Remember that this SQL is designed to change the comparison schema. Be sure you will not lose any important data before you execute it.
	Schedule the Sync Script to run at a later time using Windows Task Scheduler. See "Task Scheduler" (page 762) for more information.

Sync Script for Selected Objects

You can also display a sync script for one or more selected objects. This does not use the Sync Script tab.

To show migration SQL (Sync Script)

You can show the migration SQL (Sync Script) for a selected object or objects.

Caution: Remember that this SQL is designed to change the comparison schema. Be sure you will not lose any important data before you execute it.

1. In the Results tab, select the objects by clicking on them. Multi-select by holding down either CTRL or SHIFT while clicking.

Note: You must select objects individually rather than by node to use this feature.
2. Right-click and select **Show Sync Script for selected items**. The SQL Statement dialog box displays the SQL to migrate only the selected items. You can copy this to the clipboard or save directly to a file.

Scheduling Compare Schemas as a Windows Task

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can schedule a Windows task for comparing schemas. You can also save your settings to a file and load them at a later time.

Scheduling the Compare

You can add your compare schemas task to the task scheduler.

To schedule a schema compare task

1. Open the Compare Schemas window and set up your options. See "Compare Schemas" (page 260) for more information.
2. From the **Status bar**, click the **Schedule**  button to open the Schedule Task wizard. Enter the information requested and Click **OK**.

Saving and Loading Settings

You can save your settings as an action, and then later reload them from the file. This makes it easier to compare with the same settings in the future.

In addition, if you create an action from your settings, you can later choose to run the Compare function from the command line. See "Run Compare Schemas from a Command Prompt" (page 842) for more information.

Controlling Sessions

Select Session

Use this dialog box to select a current session to end.

Note: All windows connected to this session will close.

To access Select Session

- » From the Session menu, select **End Connection**.

End Connections

You can choose to end connections without closing Toad. You can also use this dialog to change sessions. See "Select Session" (page 268) for more information.

To end one connection

- » Select **Session | End Connection**.

To end several, but not all, connections

1. Select **Session | End Connection**.
2. Select the connections you want to end.

To end all connections

- » Select **Session | End All Connections**.

Test Connections

This command reconnects if Oracle has dropped the session.

To test connections

- » Select **Session | Test Connections (Reconnect)**

Configure User Lists

Many databases have hundreds of users, most of which own no database objects and exist only for secure access to the database. You can remove these unwanted users from the dropdown user lists on many screens in Toad by using the Oracle Users List window to select users.

The Oracle Users List displays a list of all users for the current database connection. You can select users or groups of users from this window by clicking in the check boxes. Click **OK**, and Toad will restrict all dropdown user lists to the users you have selected.

The user list is stored in an ASCII file, SCHEMA_DATABASE.LST, where SCHEMA is the schema in use, and DATABASE is the current database alias.

There is another option to only show users that own objects in the database. See "Schema Browser - Data" (page 674) for more information.

To access configure user lists

- » Select **Session | Oracle Users Lists**.

Session Information

This general-purpose utility window displays information about the current Oracle user as well as information on the Oracle connection itself.

This window displays:

- Session Rights for the current user
- Roles assigned to the current user
- Access assigned by roles to the current user
- Version information for the core Oracle processes
- The registry settings for Oracle

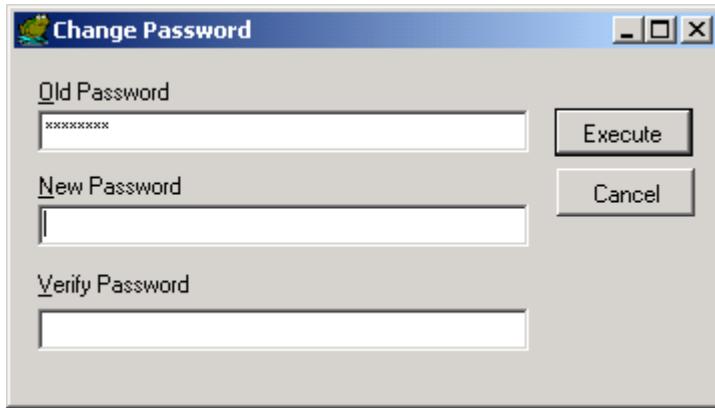
To view session info

- » Select the **Session | Session Info** menu item.

Change Password

To change your password for the active Oracle schema

1. Select Session | Change Password.



2. Your old password is entered, but displays only asterisks for security purposes. Enter your **New Password** in the **New Password** field.
3. Enter it again in the **Verify Password** field.
4. Click **Execute**.

Commit & Rollback

You can commit or rollback recent changes to the database from the Session menu at any time while working with Toad. In addition, there are options to either auto-commit or to prompt to commit on exit

To commit your changes

- Select Session | Commit.

To rollback your changes

- Select Session | Rollback.

Transaction Processing with Auto-commit

You can configure Toad to either Auto Commit or prompt to commit on exit when Auto Commit is disabled. See "Oracle - Transactions" (page 669) for more information.

When enabled, Toad will check for the current user's access to DBMS_TRANSACTION. If the user has access, Toad can determine whether there are actual transactions pending and prompt on exit only when necessary. If the user does not have access, the other "Prompt on exit" options are followed.

Checking for system views is optional because of the additional time required at Login time to check for access. You may prefer to commit manually when needed and not have Toad prompt you.

Connect and Disconnect

Use the connect and disconnect menu items to easily choose to connect or disconnect from a previously-used schema. The schema must be listed in your connection list. See "Server Login Window" (page 177) for more information.

To connect to a schema

- » From the Session menu, select **Connect |schema you want to connect**.

To disconnect from a schema

- » From the Session menu, select **Disconnect | schema you want to disconnect**.

DBMS_Flashback

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Using Oracle's DBMS_FLASHBACK, you can revert to a version of the database at a specified wall-clock time or a specified system change number (SCN). When enabled, the user session uses the Flashback version of the database, and applications execute against the Flashback version of the database.

You can use the DBMS_FLASHBACK functionality to restore data to your sessions. You may want to use DBMS_FLASHBACK for the following reasons:

- Self-service repair. If you accidentally delete rows from a table, you can recover the deleted rows.
- Packaged applications such as email and voicemail. You can use Flashback to restore deleted e-mail by re-inserting the deleted message into the current message box.
- Decision support system (DSS) and online analytical processing (OLAP) applications. You can perform data analysis or data modeling to track seasonal demand, for example.

DBMS_FLASHBACK is turned off automatically when the session ends, whether by disconnection or by starting another connection.

Requirements

- You must have EXECUTE privileges for DBMS_FLASHBACK.
- This Toad feature is only available in commercial versions of Toad with the DB Admin Module.

Using Wall-Clock time

When enabling Flashback using a wall-clock time, the database chooses an SCN that was generated within five minutes of the time specified.

Using an SCN

You can enable an SCN for finer control of the flashback. An SCN identifies the exact version of the database, and therefore allows you to specify the exact moment you want to flashback.

Using Flashback

PL/SQL cursors opened in Flashback mode return rows as of the flashback time or SCN, letting you recover data. These cursors will remain open when you disable the Flashback session so that you can transfer the data to the current session.

Different concurrent sessions (connections) in the database can perform Flashback to different wall-clock times or SCNs.

DML and DDL operations and distributed operations are not allowed while a session is running in Flashback mode.

You can use PL/SQL cursors opened before disabling Flashback to perform DML.

Note: In a Flashback-enabled session, SYSDATE will not be affected; it will continue to provide the current time.

Additional information about DBMS_FLASHBACK, please see your Oracle documentation.

To use Toad's Flashback functionality

1. From the Session menu, select **DBMS Flashback**.
2. If necessary, change the session for the window by selecting the active session .
3. Click .
4. Select either:
 - >Enable at Timestamp
 - Enable at System Change Number
5. Enter the timestamp or SCN in the appropriate box.
6. Click **OK**.

Diagnosing Problems

View Extents

To view extents

1. From the Database menu, select **Diagnose | Extents**.
2. Select the desired **Object Type**: All Objects, Tables, Indexes, Rollback, or Cluster.
3. Click  to fetch results.

To see extents for objects owned by SYS

- » Select **SYS** from the Owner list.

Note: If you have access to the DBA_views, make sure the **View | Toad Options | Startup | Check for DBA Views** check box is checked. If it is checked, the Owner dropdown list will become active, and a DBA user can select a specific schema owner. Click **GO** to fetch the results.

Identify Space Deficits

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You get to this window from Database | Diagnose | Identify Space Deficits.

This displays tables that do not have enough free disk space to allocate their next extent.

Select tablespaces and act upon them:

Option	For more Information
Alter Tablespace	See "Create and Alter Tablespace" (page 1085) for more information.
Rebuild	See "Rebuild Multiple Objects Overview" (page 612) for more information.
Alter Table	See "Altering Tables" (page 1074) for more information.

Log Switch Frequency Map

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

This screen displays log switch records. Many DBAs try to size their redo logs so that there are few log switches per hour. Frequent log switches can drastically decrease performance, and infrequent log switches can increase database startup times. Use this window to judge the balance of log switches.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

To access the Log Switch Frequency Map

- » From the Database menu, select **Diagnose | Log Switch Frequency Map**.

The database schema for the active connection is shown in the grid.

Note: Log switches in each hour of the day begin with Midnight to 1:00 a.m. A cell is left empty if there were no log switches during that hour, and days with no log switches do not appear in the grid at all. Every log switch that is recorded in the control file for the database is displayed.

To see log switch details

- » Double-click in any cell for details:
 - Hour column - Just the selected hour.
 - Date, day or total column - Details for the entire day.

To export the grid

- » Right-click and choose **Save As** from the menu. See "Export Dataset" (page 390) for more information.

Tablespace Map

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Access this window from **Database | Diagnose | Tablespace Map** on the menu.

This map provides a graphic view of how space is allocated to objects in the tablespaces in your database. This lets you view Segment Fragmentation by tablespace.

As you move the pointer over cells in the map, Toad displays the segments that consume data blocks represented by that cell. However, if this is a large tablespace that cell might represent hundreds of actual data blocks. Thus they may not overlap at all. Keep in mind that red cells

really represent segments that consume a high percentage of blocks for their overall size. Thus they may be candidates for object rebuilds.

To view tablespace graphically

1. Select a **tablespace**.

Click  to fetch the data for the map.

Green	Areas used by selected Tablespace
Red	<p>Areas that equal or exceed fragmentation limits (set in View Toad Options DBA).</p> <p>Note: Toad measures <i>Internal Fragmentation</i>, a measure of the fragmentation of the object within the tablespace. The actual SQL Toad uses to measure this can be found in the Toad FAQ, under the question "How does the Tablespace Map Work?"</p>

To coalesce a fragmented chart

1. Select a **tablespace**.
2. Click  to coalesce and analyze the tablespace.

To view segments and extents

1. Click either the **Segments** or **Extents** tab.

View details for segments and extents as follows:

Hover the pointer over the tablespace map.	Segments display beside the pointer.
Click in a grid cell	All segments containing those in the clicked cell display in yellow.
Click 	Now when you hover the pointer, details display in the Segments dialog, along with percentage of fragmentation.

To filter the tablespace map

1. Select a **tablespace**.
2. Click  to fetch the data. Cells representing occupied blocks are highlighted in green.
Click . Filters are arranged in categories:

Note: Selected filters are cumulative, whether on the same tab or on multiple tabs. They remain in effect until you clear them.

3. Select the filters you want to see.
4. You can select multiple filters by holding down CTRL while selecting.
5. You can also select filters on multiple tabs. The spaces covered by the filters you choose turn yellow on the Tablespace map.

To clear highlighting from View settings and Filters

- » Click .

To restore window size

- » Click .

To Display Tablespace Legend

- » Click .

Quest Space Manager

Space Manager can only be launched if you have it installed and licensed.

To launch space manager

- » On the Tablespace Map toolbar, click .

TKProf Interface Wizard

The TKProf Interface wizard lets you easily use the TKPROF feature of Oracle, creating the necessary scripts to set parameters and options. For details about parameters and options, see your Oracle documentation.

This topic only covers unfamiliar information. It does not include all step and field descriptions.

To use this wizard

1. Select Database | Diagnose | TKProf Interface.

Enter the parameters and options in appropriate fields. Review the following for additional information:

Some Helpful information	This section displays Ora.ini parameter information. In order to see this information you will need select privileges on v_\$parameter.
Define Input and Output	Description

Files	
Input Files	These are the trace files that were produced by Oracle when you enabled tracing. Oracle places them in the directory specified by the script USER_DUMP_DEST, also known as the "udump directory".
Add Input files	<p>Click the drilldown button beside Files at the top right of the Input Files field.</p> <ul style="list-style-type: none">• Browse Windows files - select a file from a Windows OS.• Open files with FTP - this lets you select files on a UNIX based server.• UNIX File name Browse (no file transfer) - This lets you select files on a UNIX server without transferring them. If you want to run TKProf against trace files that are still on the server, you will need to copy the code and run it server side. See "TKProf Interface Wizard" (page 276) for more information.
Output File Extension	The output files are placed in the same directory as the input files. The filenames are the same, but the extension is different. You can change the extension if necessary.
Insert File Extension	Inserts the results of the trace file into a database table
Record Files	The record file is a script produced by TKPROF. It records the SQL statements issued by the traced session
Sort Options	Description
Sort Options	You can choose more than one sort option, and sort results are cumulative from the top of the list to the bottom.
Other Options	Description

Use this table for Explain Plan	You must also choose Connect to DB to perform Explain Plan to use this option.
Execution Options	Description
Execute Locally	<p>Use the instance of TKPROF located on your computer. If you do not connect to the database to perform explain plans, you can copy files from any Oracle database of the same or earlier version to your machine to run TKPROF.</p> <p>This works as file parsing, with no database activity. Define where your TKPROF is located in Toad Options Executables. See "Executables" (page 654) for more information.</p>
View Output Files When Finished	Output files open in your external editor.
Just copy the commands to the clipboard	Copies all generated commands into the clipboard. You might use this option if you run TKPROF on a Unix machine by telnet. Toad's TKPROF interface lets you just paste the code in, saving you the time spent typing.
<p>Note: If you have not selected at least one input file, clicking finish will do nothing. If you have selected all pertinent options and click Finish, a confirmation dialog box appears.</p>	

2. Complete the wizard.

Undo Advisor

Undo Advisor (OEM) Overview

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Undo Advisor in Oracle versions 10g and above provides advice and helps to automate the establishment of the database undo environment.

Note: By default, unless you have instructed Toad to make this window accessible, this functionality is disabled. You can restore functionality from **View|Toad Options|Windows** and clicking the Available checkbox in the appropriate row of the grid.

To access the Undo Advisor

- » From the Database menu, select **Diagnose | Undo Advisor**.

Use the advisor to analyze the health of the current undo configuration, either overall or within a given time range. From this baseline, you can then:

- Alter the Undo tablespace
- Switch to another Undo tablespace
- Adjust the database's retention time
- Create projections of required undo space given a retention time that you define

The Undo Advisor Toolbar

The Undo Advisor toolbar provides an easy way for you to alter undo tablespaces, and manipulate the undo environment.



Button	Command
	Alter current undo tablespace
	Alter undo retention
	Switch current tablespace
	Refresh date in screen

Altering the Undo Tablespace

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Undo Advisor lets you alter the current Undo Tablespace. You can change some of the basic information options, and also add, edit or remove data files.

This topic only covers unfamiliar information. It does not include all step and field descriptions.

To alter the undo tablespace

1. Confirm that the current tablespace is the one you want to alter. If not, switch to the correct tablespace before continuing. See "Switching Tablespaces" (page 280) for more information.
2. On the **Undo Advisor** toolbar, click .

Altering Undo Retention

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Altering the undo retention time frame may require additional tablespace. Because of this, Toad also provides an estimate of required tablespace so that you can gauge what to add. See "Undo Advisor (OEM) Overview" (page 278) for more information

This topic only covers unfamiliar information. It does not include all step and field descriptions.

To estimate required tablespace

- » Enter the desired retention in the **For this amount of retention** box.

Note: The required undo size for the selected options is displayed beneath it.

To alter the undo retention

1. Click .
2. Enter the desired retention in the box.

Switching Tablespaces

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

If you have multiple undo tablespaces, you can switch between them from the Undo Advisor. See "Undo Advisor (OEM) Overview" (page 278) for more information.

To switch between tablespaces

- » From the Undo Advisor, click  and select a tablespace.

Segment Advisor

Segment Advisor (OEM)

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Active with Oracle 10g and above, this screen is an interface to Oracle's segment advisor. It can examine tables, indexes, and partitions to determine if and how much, space can be reclaimed in them with the SHRINK command.

Note: By default, unless you have instructed Toad to make this window accessible, this functionality is disabled. You can restore functionality from **View|Toad Options|Windows** and clicking the Available checkbox in the appropriate row of the grid.

To Access Segment Advisor

- » From the Database menu, select **Diagnose | Segment Advisor**.

The Segment Advisor generates advice at three levels:

Object Level	Advice is generated for the entire object, such as a table. If the object is partitioned, then the advice is generated on all the partitions of the object. Advice does not cascade to dependent objects such as indexes, LOB segments, and so forth.
Segment Level	Advice is generated for a single segment, such as unpartitioned table, a partition or subpartition of a partitioned table, or an index or LOB column.
Tablespace Level	Advice is generated for every segment in the tablespace.

Examining Objects

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The heart of the Segment Advisor is its ability to examine objects and give recommendations. See "Segment Advisor (OEM)" (page 280) for more information. You can view objects by owner, object type, or tablespace and then select objects to be examined.

To examine objects

1. From the Database menu, select **Diagnose | Segment Advisor**.
2. Click the **Examine Objects** tab.
3. Select a schema from the Object Owner drop down menu.
4. Select an object type.
5. From the Tablespace dropdown, select a tablespace (or All tablespaces).
6. In the grid, select the objects you want to submit for advice in the grid.
7. Click .
8. Select **Segment Advisor options**.

9. Click **Execute**.
10. Enter connection information if necessary, and click **Connect**.

Advisor Tasks

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

When you have examined objects, you can view or delete the tasks run by the Segment Advisor. See "Segment Advisor (OEM)" (page 280) for more information.

To review tasks

- » Click the **Advisor Tasks** tab.

To delete tasks

1. Click the **Advisor Tasks** tab.
2. In the data grid, select the tasks you want to delete.
3. Click .
4. Click **Yes** to confirm.
5. Enter connection information if necessary and click **Connect**.

Advisor Recommendations

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Advisor recommendations is the output of a Segment Advisor task. See "Segment Advisor (OEM)" (page 280) for more information about creating tasks. Toad sorts recommendations into an easy-to-read grid format.

You can choose to display either only the tasks you have created, or only tasks entered through Toad.

Recommendation Toolbar



Button	Command
	Show recommendation script
	Execute recommendation script

Button	Command
	Schedule Script Execution
	Set Status (Accept, Ignore, Implemented, Reject)
	Delete selected tasks
	Refresh Grid

To act on recommendations

1. Select the recommendation you want to use.
2. Click on one of the toolbar buttons.
3. Complete any required steps.

LogMiner Interface

LogMiner Overview

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Oracle LogMiner packages DBMS_LGMNR and DBMS_LOGMNR_D help you extract information from the online or archived Oracle redo logs. This information can be used to analyze where problems occurred. With LogMiner, if a System Change Number (SCN) caused a corruption problem, you can analyze the database and recover to the transaction exactly before the corruption.

This package is only available in Oracle 8i and above.

To access the LogMiner Interface

From the Database menu, select **Diagnose | LogMiner**.

See "Logminer Wizard" (page 284) for more information about the wizard itself.

Requirements

Before Toad starts LogMiner, it checks whether all of the requirements for using the LogMiner have been satisfied. These include:

- Execute privileges on DBMS_LOGMNR
- Execute privileges on DBMS_LOGMNR_D
- Select privileges on V\$LOGMNR_CONTENTS

- Select privileges on V\$LOGMNR_LOGS
- Parameter UTL_FILE_DIR set in init.ora (required for Oracle 8i only)

If any of these parameters are not met, Toad will display a screen listing them, with the missing requirement displayed in red.

Troubleshooting

- Access to some V\$ tables are required to use this option. See "Database | Diagnose | LogMiner" (page 156) for more information about required tables for LogMiner.
- If you cannot access V\$PARAMETER, V\$LOGFILE, V\$SESSION, V\$VERSION, the screen will still work, but will not do some things automatically for you (such as tell you if utl_file is not set up, automatically determine where your log files are stored, or so on).
- If you cannot access things that are actually required (like execute privs on dbms_logmnr) the screen will tell you what is required, and the permissions you are missing will be highlighted.

Logminer Wizard

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

This topic only covers unfamiliar information. It does not include all step and field descriptions.

To use the Logminer wizard

1. From the Database menu, select **Diagnose | LogMiner**.
2. Review the following for additional information:

Dictionary	<p>You can choose to use DBMS_LOGMNR_D.BUILD to create a new dictionary file, or you can specify the location of an existing file.</p> <p>This window saves its settings. If you enter a path and filename, then close the wizard; the path and filename will still be filled in when you reopen the window. Options vary depending on what version of Oracle you are using:</p> <p>Oracle 8i</p> <ul style="list-style-type: none">• Verify UTL_FILE Parameter - This box displays the value of the UTL_FILE_DIR. <p>If it is incorrect, you will need to edit your init.ora file and then shut down and restart the database to make the parameter change take effect.</p> <ul style="list-style-type: none">• Dictionary File Name and Path - Enter the file name and directory path of the dictionary. Whether you build a new file or use an existing one, these paths
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	<p>must be entered.</p> <p>The dictionary file path must be a path accessible by the database server, and accessible by UTL_FILE.</p> <p>Oracle 9i & up</p> <p>Dictionary</p> <ul style="list-style-type: none">• Use Online Data Dictionary - This option is the fastest, because there is no file building required.• Use Dictionary in Redo Logs - This option activates the next area, "Next" button action, letting you choose to build a new dictionary or use an existing dictionary.
Files to Mine	<p>Click Find Files.</p> <ul style="list-style-type: none">• From the dropdown, select Select from Online redo logs to open the browse dialog box in the redo log directory. If you have a network drive mapped to the server, the browse dialog box will show the redo log directory; otherwise it will show the last browsed directory you browsed.• From the dropdown, select Select from Archive Logs to open the browse dialog box in the archive log directory. If you have a network drive mapped to the server, the browse dialog box shows the archive log directory; otherwise it shows the last browsed directory you browsed.• If your database is on a UNIX server, use the FTP-style dialog box.• If you are running Oracle 9i and have written a dictionary to the redo logs, be sure to include the redo log containing the dictionary in your file selection. <p>Note: If your database is running on a Windows server (but not your local PC) it is important to make sure that the drive letters appear as they do on the server when selecting files. For example, if the Browse window adds this file to your file list:</p> <p><code>\Car004555\d\$\oracle\oradata\CARY9I\REDO01A.LOG</code></p> <p>You may want to change it to this:</p> <p><code>D:\oracle\oradata\CARY9I\REDO01A.LOG</code></p> <p>You can edit directly in the files list window.</p>

3. Complete the wizard.
4. View results in the Logminer Interface grid.

LogMiner Interface Grid

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To view results in the LogMiner interface grid

1. Click  on the toolbar.
2. Select the columns you want displayed.
3. Do one of the following:

Execute the LogMiner SQL immediately	Click  Note: This can take some time, depending on the size of the LogMiner files.
Copy the SQL into the Editor to edit, save and execute later	Click 

4. Right-click the grid to:

Print Grid	Open the Print dialog, where you can format and print the grid contents. See "Printing" (page 705) for more information.
Save as	Export the grid's contents to a file or to the clipboard.
Filter	Filter the information retrieved into a format more suited to your needs. You can set Boolean filter conditions and Apply them to the grid. Click Cancel or close the dialog box to continue. The filter remains on the grid until you open the filter dialog box and click Clear .

In the Editor

Alternatively, you can leave this window open and open a Editor window to view your results. You may need to do this if you want to specify a 'where clause' so you can retrieve a more

focused dataset from v\$logmnr_contents.

To view results in the Editor

1. Leave the Logminer window open and open an **Editor** window.
2. In the Editor, **SELECT** data from v\$logmnr_contents. This data is only available from your current session in the database. It will be cleared when you close the LogMiner interface window or click **Back**.

Health Check

DB Health Check

Note: This Toad feature is only available in the commercial version of Toad with the optional **DB Admin Module**.

The DB Health Check performs a series of checks on a selected database and displays the results. You can save the results to a color-coded RTF or HTML file, or to a plain text file. You can also send the results through email in any of these formats.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

Health checks utilize optimizer hints as configured in Toad Options | Oracle | Optimizer Hints. See "Oracle - General" (page 664) for more information.

Health checks require access to the DBA_views and to some of the V\$ views. See "V\$ Tables Required" (page 153) for more information.

Note: The DB Health Check opens a separate connection to Oracle, and then closes it after the check, even if Toad already has a connection open to the selected database. This connection will show in the Session Browser as a separate session, and could cause difficulties if you have limited Toad connections.

To run a health check

1. From the Database menu, select **Diagnose | DB Health Check**.
2. In the left pane, select the databases you want to check.
3. In the Checks and Options tab on the right side of the window, select pre-defined health checks. See "DB Health Check - Checks and Options" (page 288) for more information.
4. If you want to email the results, make appropriate settings to the **Email Settings** tab. See "DB Health Check - Email Results" (page 311) for more information.
5. When all your options have been set, click  on the toolbar.
6. View results on the **Report Output** tab. See "DB Health Check - Saving Results" (page 311) for more information.

Scheduling Health Check to run later

To save your settings as an action from the DB Health Check window

Note: See "Managing Projects" (page 433) for more information about ToadApps and Actions.

1. Create your health check as described above in steps 1 through 4.
2. Click  in the status bar at the bottom of the window.
3. Select **Create**, select the ToadApp where you want it to reside, and give it a name.
4. Click **OK**.

To create a DB Healthcheck Action from the Automation Designer

1. From the Automation Designer window, select the app you want to contain the health check.
2. Click the **DB Misc** tab, click  and then click in the app.
3. Double-click on the action icon and set properties as described in DB Health Check (page 287).
4. Click **Apply**, then **Cancel** to save your settings and close the window.

To schedule your health check

- From the command line: See "Running Actions from the Command Line" (page 835) for more information about how to schedule or run your health check.
- As a Windows Task: See "Using the Automation Designer to Schedule Actions and Apps." (page 435) for more information.

DB Health Check - Checks and Options

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

In the Checks and Options tab of the [Health Check](#) window, you can set many different pre-set conditions. Each of these preset checks represents something that a DBA or Developer should be aware of in their databases. In addition, some of these conditions are adjustable.

Finding Specific Checks

There are many checks that you can run on your database. Although checks are grouped by settings, database, and schema checks, you may find that it is difficult to locate every check you want to make just by looking down the list. Toad provides a search feature that will highlight the checks that meet your specified criteria.

To search for a specific health check

- » In the **Filter:** box, enter the word you want to search for.

Note: Toad searches for entries as they are typed. You can enter entire words, multiple or portions of words. For example, entering data will find checks containing data, datafile, datatype, and so on. However, if you are using multiple words, Toad sees everything you enter as one word. Therefore, Toad will only find the words that are in the order you enter. For example, if you are looking for the check containing "datafile IO distribution," entering "IO datafile" will not find the check you want. You must enter "datafile IO."

Adjusting Conditions in Checks

Some of the conditions described in Check Descriptions are adjustable.

To change parameters

1. In the Parameters column, click **params**.
2. Change the **condition** and click **OK**.

Dropping Synonyms

Health check items listing synonyms pointing to nonexistent objects can be dropped using the script provided within the report. The synonyms will be listed, and a script provided.

DB Health Check - Check Descriptions

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The following is a list of checks that the DB Health Check can perform, separated by category. (See "DB Health Check" (page 287) for more information.)

- Settings tab (page 290)
- Checks tab
 - Configuration (page 293)
 - Performance (page 297)
 - Alert Log (page 299)
 - Storage (page 300)
 - Schema (page 302)
 - Vulnerability Assessment (page 307)

Note: Actions performed on jobs are not viewable to other connections until they are committed. This means that when it is run the DB Health Check will not catch actions that have been performed, but not committed.

Settings tab

Note: Check numbers are for reference only, and may change between releases of Toad. Items that refer to "item numbers" refer to the check number within the active Toad release.

Check Number	Check Name	Description
1	Show output only for 'bad' conditions	If this option is checked, Toad displays only items that fail the health check. If your databases are generally in good working order, this can shorten your reports dramatically.
2	Suppress header for a database when the report is empty	If this option is checked, and your health check ran on several databases in one report, then only the databases that failed the health check will appear in the report. While this can shorten your reports dramatically, you will not have a record of the databases that pass all aspects of the health check.
3	Include user comments at top of the report output	
4	For items 72, 73, and 74, exclude objects in "SYSTEM" tablespaces	This option applies to: <ul style="list-style-type: none">• List tablespaces that are more than 30% fragmented, having more than 50 total extents• List tablespaces with less than 10% free space remaining.• List segments that can't extend because there is

Check Number	Check Name	Description
		not enough room in the tablespace.
5	Play a custom script at the end of the health check	<p>This option executes a user-supplied script at the end of the health check. The script output is included in health check report.</p> <p>The file name for the script to play is adjustable.</p>
6	Store results in table TOAD.TOAD_HEALTH_CHECK in database being checked	<p>Use this option to populate results into a table on each database being checked, or results of all health checks into a single table in a repository database. Use the adjust option to specify one database, or many.</p> <p>If the table specified does not exist, Toad will attempt to create it when the health check runs.</p>
7	Save results to file:	<p>This option automatically saves health check results to a file at the end of the health check.</p> <p>The file name is adjustable, and the type of file is determined by the file extension you specify.</p> <ul style="list-style-type: none">• If file extension is "HTML", the file will be HTML format.• If the file extension is

Check Number	Check Name	Description
		<p>"RTF", the file will be a rich-text format.</p> <ul style="list-style-type: none">• All other file extensions will result in a non-color coded ASCII text file.
8	Archive results for differences report	
9	Save differences report to file:	This option saves your differences report to the file specified. Clicking Params lets you change the path to the file location, and the filename.
10	Always send results by email as HTML	When selected , this option sets when Toad emails results, and the file format of those results. Click params to change when and how results are sent.

Checks Tab

Check Number	Check Name	Description
Configuration		
11	List default initialization parameters	
12	List non-default deprecated initialization parameters. (10g+)	
13	Verify compatible matches version major.minor	
14	Verify optimizer_features_enable matches version major.minor	
15	Verify optimizer_index_caching >= 50 (9i+)	You can set the value that caching should be greater than or equal to.
16	Verify optimizer_index_cost_adj >=50 (9i+)	When selected, Toad will verify that the optimizer index cost adjustment is greater than or equal to the value you specify.
17	List incompatible parameters if pga_aggregate_target (10g) or memory_target (11g) is set.	Lists the following parameters if pga_aggregate_target is set in 10g, or if memory_target is set in 11g: <ul style="list-style-type: none">• bitmap_merge_area_size• create_bitmap_area_size• hash_area_size• sort_area_retained_size• sort_area_size
18	Verify pga_aggregate_target >=10MB (10g only)	On a 10g database, verify the pga_aggregate_target value.

Check Number	Check Name	Description
19	Verify control file count >=2	Verify that the control file count is greater than or equal to the value you set.
20	Verify CPU count - 0 (let Oracle determine the value)	
21	Verify cursor_sharing='SIMILAR' (9i+)	
22	Verify cursor_space_for_time='TRUE' (pre 11g)	This option is only valid on pre-11g databases.
23	Verify db_cache_size set instead of db_block_buffers (9i+)	
24	Verify Buffer Cache >=200MB	Verify that the buffer cache is set to greater than or equal to the value you set.
25	Verify Large Pool >=50MB	Verify that the Large Pool is set to greater than or equal to the value you set.
26	Verify objects using KEEP buffer pool exist if db_keep_cache_size is set.	If db_keep_cache_size parmaeter is set, make sure there are objects that actually use it.
27	Verify db_keep_cache_size>=50 MB if objects exist within the KEEP buffer pool	If objects do not exist within the KEEP buffer pool, then this test is ignored. The value of the KEEP buffer pool size is adjustable.
28	Verify objects using RECYCLE buffer pool exist if db_recycle_cache_size is set	If db_recycle_cache_size parmaeter is set, make sure there are objects that actually use it.

Check Number	Check Name	Description
29	Verify db_recycle_cache_size>=50MB if objects exist which use RECYCLE buffer pool	If objects do not exist within the RECYCLE buffer pool, then this test is ignored. The value of the RECYCLE buffer pool size is adjustable.
30	List db_nk_cache_sizes without corresponding tablespaces (9i+)	If a db_nk_cache_size does not have a corresponding tablespace, then it will be listed in the report.
31	List tablespaces without corresponding db_nk_cache_sizes(9i+)	If a tablespace does not have a corresponding db_nk_cache_size, then it will be listed in the report.
32	Verify db_block_size<=4K for RAC, >=4K for non-RAC	Database block size should be set according to type of database. Values are not adjustable.
33	Verify multiblock_read_count between 4 and 16	Values are not adjustable.
34	Verify disk_asynch_io is TRUE (Pre-11g)	
35	Verify compatibility of db_writer_processes and dbwr_slaves with disk_asynch_io setting	If disk_asynch_io is true, verify that dbwr_slaves is 0, and db_writer_processes >= 2. If disk_asynch_io is false, verify dbwr_io_slaves >= 2, and db_writer_processes = 1 .
36	Verify dml_locks=0 or >=transactions * 4	DML locks should be either equal to zero, or greater than or equal

Check Number	Check Name	Description
		to four times the number of transactions. These amounts are not adjustable.
37	Verify filesystemio_options='SETALL'	
38	Verify fast_start_mttr_target is set when log_checkpoint_timeout=0 (9i+)	
39	Verify max_dump_file_size <=20MB	The size of the dump file is adjustable.
40	Verify open_cursors >=50	The number of open cursors is adjustable.
41	Verify query_rewrite_enabled = TRUE (9i+)	
42	Verify recyclebin='OFF' (10g+)	On Oracle versions that have recycle bin capability, you can verify that the capability is on or off. The choice of ON or OFF is adjustable.
43	Verify remote_login_password_file='SHARED'	
44	Verify session_cached_cursors >=20	The number of cursors you want to check is adjustable.
45	Verify sga_target >=200MB and sga_max_size same value (10g+)	The value is adjustable.
46	Verify star_transformation_enabled=TRUE	
47	Verify sql_trace = FALSE (Pre 11g)	
48	Verify timed_os_statistics = FALSE	
49	Verify timed_statistics = FALSE	
50	Verify trace_enabled = FALSE (9i+)	
51	List DB Links which are inaccessible	This option displays

Check Number	Check Name	Description
		<p>any DB links that cannot be accessed, for whatever reason.</p> <p>Some (but not all) possible reasons a link cannot be accessed are:</p> <ul style="list-style-type: none">• The linked database is down• The linked database is accessible through the network• That the link is no longer valid
52	Check redo log sizes and quantities (min. groups: 3; min. members per group: 2)	Checks for a minimum number of log groups, and that each group has the same size members.
53	Verify SYS.AUD\$ isn't in SYSTEM tablespace	Checks that SYS.AUD\$ isn't located in the SYSTEM tablespace.
54	Verify AWR collection interval >=30 minutes, retention <=90 days (10g and newer)	In Oracle 10g or newer databases, checks that AWR collections are set to perform at more than 30 minute intervals, and that they are retained for less than 90 days. Both of these values are adjustable.
Performance		
55	List connect time, version info, and a few basic ratios	If this option is

Check Number	Check Name	Description
		<p>checked, the Health Check report lists the following:</p> <ul style="list-style-type: none">• the time it took Toad to connect to this database• database version• how long the database has been up• buffer cache hit ratio• library cache miss ratio• dictionary cache miss ratio
56	List SGA usage stats	If this option is checked, the report lists SGA total size in MB, amount used, amount unused, and percent usage.
57	List archive log info	<p>This option controls display of the following in the Health Check Report:</p> <ul style="list-style-type: none">• archiving is turned on or not• average log switches per day• the predicted amount of disk space necessary to store a day's

Check Number	Check Name	Description
		worth of archive logs.
58	List datafile IO distribution	<p>Lists all datafiles and their tablespaces, and the percentage of the total reads and writes from the database for each datafile.</p> <p>If your datafiles are on different disks, this can show you if you have them properly distributed across your disks. It can also help you determine if your objects are properly distributed across your tablespaces.</p>
59	List rollback segments with a wait ratio > 1%	If the wait ratio is above the selected percentage, the rollback segment is included on the report. This percentage is adjustable.
60	List analyzed SYS and SYSTEM Objects (Pre 10g)	This option lists all SYS and SYSTEM objects that you have analyzed.
61	List unanalyzed SYS and SYSTEM Objects (10g+)	This option lists all SYS and SYSTEM objects that you have not yet analyzed.
62	Verify sequence sys.audses\$ has sufficient cache for high login rates	Checks that SYS.AUDSES\$ has enough cache to handle a high login rate.

Alert Log

Check Number	Check Name	Description
63	Alert.Log - check for Ora-600 errors (all alertlog items require UTL_FILE access)	This shows each error and the three previous lines.
64	Alert.Log - list trace files with errors	Parses the alert.log file, and lists lines that start with "Error in file." Double-click the entry in the results to display the trace file.
65	Alert.Log - show summary	This displays a count of all the 600 errors, checkpoint not complete messages, database startups, count of each ORA error found in the file, and a count of new trace files reported.
66	Alert.log - Mark file so next Toad Health check against it examines only new items	Places a bookmark record in the alert.log file so that the next time you run a Health Check against it, Toad will only display new items.
67	Alert.log - Save local copy in User Files dir	This saves a copy of the alert.log file in the Toad for Oracle\Temp directory.
Storage		
68	List users with SYSTEM as a temporary tablespace	This option displays any users that are using SYSTEM as a temporary tablespace.
69	List users except SYS with SYSTEM as a default tablespace	This option displays any users that are using SYSTEM as a default tablespace,

Check Number	Check Name	Description
		with the exception of the SYS user.
70	List users with a non-existent temporary tablespace	This option displays any users that are using a temporary tablespace that does not exist.
71	List users with a non-existent default tablespace	This option displays any users that are using a temporary tablespace that does not exist.
72	List tablespaces > 30% fragmented having > 50 total extents	This options list tablespaces that are more than a stated percentage fragmented and have more than the selected number of total extents. Both the percentage and the number of extents are adjustable.
73	List tablespaces with < 10% free space remaining	This option lists tablespaces that have filled. The percentage of free space remaining is adjustable.
74	List segments which can't extend because there is not enough room in the tablespace, including autoextend tablespaces	Optionally, using the Adjust column can include objects in autoextend tablespaces. This option takes the maximum size for autoextend datafiles into account.
75	List dictionary managed tablespaces (8i+)	In Oracle 8i or newer databases, lists all

Check Number	Check Name	Description
		tablespaces that are dictionary-managed.
Schema		
76	List tables with no primary key	<p>Primary keys uniquely define a record in a database. Most tables should have a primary key.</p> <p>Check this option to alert you of tables that do not have such a key assigned.</p>
77	List tables with no unique key or index	Check this option to alert you of tables that do not have a unique key or index assigned to them.
78	List non-system tables with > 6 indexes	The number of indexes defined in this check is adjustable.
79	List tables with > 100 columns	The number of tables defined in this check is adjustable.
80	List indexes with > 6 columns	The number of indexes defined in this check is adjustable.
81	List tables with LONG or LONG RAW datatypes	This lists all tables that include LONG or LONG RAW datatypes.
82	List partitioned tables with non-partitioned indexes	Lists all partitioned tables with non-partitioned indexes.
83	List tables with max row size > tablespace (or db) block size	Lists all tables where maximum row size exceeds tablespace (or database) block size.

Check Number	Check Name	Description
84	List redundant indexes (same leading columns)	Lists objects that have indexes with the same leading columns; this indicates that the index is redundant.
85	List primary and unique keys using non-unique indexes (9i+)	Lists primary and unique key constraints that are using non-unique indexes. This applies to Oracle versions 9i and newer only.
86	List foreign keys with non-matching column definitions (causes poor performance)	This option lists foreign keys that have parent table columns with a different type as the child table columns. This situation causes performance degradation.
87	List foreign keys with no matching index on child table (causes locks)	This option is listed because without such an index, deletes and updates on the parent table result in table-level locks on the child table until the transaction is complete.
88	List foreign keys with a mix of nullable and not nullable columns	Lists all foreign keys on a mix of nullable and not nullable columns.
89	List unique keys with one or more nullable columns	Lists all unique key constraints with one or more nullable columns.
90	List objects with mixed-case names	Check this option to

Check Number	Check Name	Description
		alert you of tables that have mixed-case names.
91	List object type counts by owner and tablespace	<p>One reason to use this option is to see if you have indexes in your "tables" tablespace.</p> <p>Selecting this option lists object</p> <ul style="list-style-type: none">• owners• tablespaces• number of storage objects (tables, indexes, and so on) in each tablespace.
92	List analyzed tables with > 5% chained rows and > 500 total rows	<p>Both the percentage and the number of total rows are adjustable.</p> <p>Note: To produce accurate results, you must have recently analyzed the tables in the selected database.</p>
93	List analyzed table partitions with > 5% chained rows and > 500 total rows	<p>Both the percentage and the number of total rows are adjustable.</p> <p>Note: To produce accurate results, you must have recently analyzed the tables in the selected database.</p>
94	List schemas with unanalyzed tables	This option excludes objects owned by SYS, SYSTEM, and

Check Number	Check Name	Description
		other "built in" schemas.
95	List schemas with unanalyzed table partitions	This option lists table partitions you have not analyzed, or that have had the analyze statistics deleted. This option excludes objects owned by SYS, SYSTEM, and other "built in" schemas.
96	List schemas with unanalyzed indexes	This option lists indexes you have not analyzed, or that have had the analyze statistics deleted. This option excludes objects owned by SYS, SYSTEM, and other "built in" schemas.
97	List schemas with unanalyzed index partitions	This option lists index partitions you have not analyzed, or that have had the analyze statistics deleted. This option excludes LOB indexes, and objects owned by SYS, SYSTEM, and other "built in" schemas.
98	List objects where number of hash partitions is not a power of two	
99	List segments with a possible poorly sized next extent	Lists segments where the NEXT_EXTENT is less than 10% or more than 200% of the object's total size.

Check Number	Check Name	Description
		<p>These numbers are not adjustable.</p> <p>A small NEXT_EXTENT can lead to an object with lots of extents, and a large NEXT_EXTENT can lead to an object that takes up more space than it needs.</p> <p>Note: This health check item does not necessarily indicate a problem.</p>
100	List segments with < 1% of extents remaining and > 10 maxextents	Lists segments that are approaching maxextents. Both percentage and number of maxextents are adjustable.
101	List segments with > 1000 extents	This number is adjustable. This health check item can be used to find "runaway" segments due to extent sizes being too small.
102	List jobs with broken = Y	Lists jobs that have failed with an error.
103	List jobs with Next Date < Sysdate	Lists jobs that will never run again unless altered.
104	List jobs that have been running longer than 60 minutes	The number of minutes is adjustable.
105	List objects for which there is a granted privilege but no corresponding synonym	This option displays objects that have a privilege granted to them, but do not have a synonym. This can

Check Number	Check Name	Description
		be useful if you need to check that you've granted both a privilege and a synonym or that you've dropped both.
106	List unusable indexes	This option lists indexes that are unusable until they are rebuilt.
107	List invalid objects	This option lists invalid objects, allowing you to easily locate and correct the problem.
108	List package bodies with no associated packages	This option lists package bodies that cannot be used because they have no associated package specification.
109	List disabled constraints and triggers	This option lists constraints and triggers that are disabled. While there may be good reason for a disabled constraint or trigger, this health check item can help find those that should not be disabled.
Vulnerability Assessment		
110	List redundant object privileges with conflicting grant options	Lists any duplicate object privileges that have conflicting grants.
111	List public synonyms that point to non-existent objects	Lists public synonyms that point to objects

Check Number	Check Name	Description
		that have been dropped.
112	List private synonyms that point to non-existent objects	Lists private synonyms that point to objects that have been dropped.
113	List roles not granted to any role or user	This option displays any roles that are not assigned to roles or users. This can be used to decide if a particular role is unused and can be dropped.
114	List profiles not granted to any user	This option displays any profiles that are not assigned to roles or users. This can be used to decide if a particular profile is unused and can be dropped.
115	Check if XML DB is installed	Checks to see if Oracle's XML DB is installed.
116	List hidden users	
117	List nested roles	
118	List db links with passwords	
119	List operating system authenticated users	
120	List powerful system privileges granted directly to users	
121	List powerful roles granted directly to users	
122	List object grants granted directly to users with grant option (follows schema settings)	
123	List system privileges granted directly to users with	

Check Number	Check Name	Description
	admin option (follows schema settings)	
124	List roles granted directly to users with admin option (follows schema setting)	
125	List grants on V\$ views granted directly to users (follows schema settings)	
126	List grants on SYS tables granted directly to users (follows schema settings)	
127	List usage of vulnerable profiles	
128	List powerful sys packages granted to PUBLIC	
129	Check for DBA, RESOURCE, CONNECT roles	
130	List insecure initialization parameters	
131	List built-in users which are not expired and locked	
132	List built-in Oracle or 3rd party users with default passwords	

DB Health Check - Schemas

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Schemas tab on the Database Health Check window provides you with a location to select the schemas you want to examine.

From this tab, you can:

- Load schemas from the selected database.
- Choose how to include schemas (the default is to include all schemas except for SYS, SYSTEM, and so on).

Health Check - Differences Since Last Run

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Toad's DB Health Check automatically saves health check reports to your user files directory. When a new healthcheck is run on the same database, you can click the Diffs since last run tab

to display differences in findings. The differences tab can also be used to compare previously saved reports, and can be printed or saved.

To view differences since last run

Run a second health check on the same database.

Note: Settings do not need to be identical.

3. Click the **Diffs Since Last Run** tab.
4. Change any options in the toolbar as desired.

If there are no differences, the differences report will remain blank.

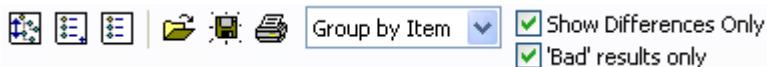
To view differences between two saved reports

1. Click  on the toolbar.
2. Select two files and click **OK**.

Toad compares the two and provides a difference report in the Diffs Since Last Run tab.

Diffs Since Last Run Toolbar

You can alter how you view your differences report using the toolbar. You can also save or print the file.



Button	Command
	Expand all nodes.
	Expand to first level.
	Collapse all nodes.
	Load two reports and run a differences check on them.
	Save the differences report to a file.
	Print the Differences report.
Group By	Choose to group by run or item.
Show Differences Only	Show only differences. If there are no differences, the report will be blank.

Button	Command
'Bad' Results only	Display only results that fail the health check.

DB Health Check - Email Results

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To have email sent when you run a health check you must first set up the email pages. From the Database Health Check window, click the **Checks and Options** tab.

You must also have the global Email Options set up with your SMTP server, and recipient addresses. See "Email Settings" (page 652) for more information.

To set email parameters

1. From the Checks and Options tab, Settings section, find the setting listed as one of the following:
 2. Always send results by email as...
 3. Only when "bad" conditions exist send results by email as...
4. Click **Params** in the Parameters column.
5. Select when and how to send email.
6. Click **OK**.

DB Health Check - Saving Results

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

When the Database Health Check report has been executed, you can save the results to a file, in Rich Text Format (.rtf), web page (.htm), or plain text (.txt) format.

To save the report

1. From the Report Output tab, click  on the toolbar.
2. Enter a name for the report in the File name: box.
3. Select the type of file format you want to use for your report.
4. Click **Save**.

Trace File Browser

Trace File Browser

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Trace File Browser displays the contents of an Oracle trace file so you can easily isolate problem areas. An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

These tabs consolidate information from the trace file into categories. Each category is accessed from a separate tab in the browser. The browser displays trace files on four tabs:

- Statement Details (page 314)
- Wait Summary (page 315)
- Query Summary tab (page 316)
- File Header (page 316)

To access the Trace File Browser and load a trace file

1. From the Database menu, select **Diagnose | Trace File Browser**.

In the Trace File Browser toolbar, click .

Note: If your trace file is still located on the server, you will need to use the FTP feature to copy it to your machine where Toad can open it. Click  and transfer your file. See "FTP" (page 752) for more information.

2. Select your trace file and click **Open**.

Troubleshooting the Trace File Browser

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

There are several issues that can interfere with how you trace files using the Trace File Browser.

Issue	Possible Reason
Blank Columns	In the last several releases, Oracle has added more information to trace files. If the Trace File Browser is displaying a trace file produced by an older version of Oracle, some columns may be blank.
Slow database Performance	Your trace files will be most helpful if you set the statistics_level initialization parameter to ALL.

Issue	Possible Reason
	However, some people in the Oracle community warn that setting it to ALL has an adverse effect on performance. You may want to test it and draw your own conclusions.
Timing and Statistics in Trace Files are set to ZERO	If you have the statistics level set to BASIC or NONE then many of the timings and statistics will be ZERO. Be sure to set statistics level to TYPICAL or ALL before starting a trace on a session.

General Functionality

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

There are several features that can be found throughout the Trace File Browser to make viewing data easier. See "Trace File Browser" (page 312) for more information.

Hiding and moving columns in column grids

In many of the grids, right-click in the column header to see a listing of all columns. By default, all columns are visible. If you want to hide certain columns, uncheck them and they will disappear from the grid. Toad remembers changes to column visibility, not only when you open the current trace file, but also when you open others.

Change the column order by clicking a column header and dragging the column where you want it. Column position will be remembered.

Autosize columns

You can also right-click in the column header to manually adjust column sizes. Manually sized columns will be remembered.

To manually adjust columns

1. Right-click in a column header and clear the Autosize column selection.
2. Manually resize your columns by dragging the edges to the size you want.

To revert to autosize

- » Right-click in a column header and select **Autosize Columns**.

Saving, Printing and Sending to Excel

Right-click in any grid to save, print, or send the contents to Microsoft Excel.

Advice

Toad can provide advice about certain wait events. If a wait event is blue and underlined in the grid, double-click on it to open an advice window.

Navigating the Trees and Grids

You can use the keyboard to move around in the trees and grids as well as the mouse.

Key Command	Navigation
Arrow Up	Previous Node
Arrow Down	Next Node
Arrow Right	Next column to the right
Arrow Left	Prior column to the left
HOME	Leftmost column
END	Rightmost column
SPACE	Expand/Collapse
CTRL+HOME	First Node, Leftmost column
CTRL+END	Last Node, Rightmost column
CTRL+Arrow Right/Left	Scroll horizontally without changing focused node
CTRL+Arrow Up/Down	Scroll vertically without changing focused node
SHIFT+Arrow up	Jump to parent node
SHIFT+Arrow down	Jump to next sibling. If there is no sibling, jump into child nodes

Statement Details

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

In the [Trace File Browser](#), the Statement details tab displays details of each statement.

Filtering the statement details grid

Within this window, you can filter the statements by wait with a number of predetermined filters.

To filter the grid

- Click on the **Filter by Wait** box and select one of the following filters from the drop down list:
 - None (Show all statements)
 - SQL*Net message from client
 - SQL*Net message to client
 - SQL*Net more data to client

Viewing Selected Details

You can select specific statements and see details of that statement. Details available are displayed on the following tabs in the lower section of the window. In many of these tabs, you can right-click in the grid to hide the idle events.

Tab	Description
SQL Statement	Displays the current statement in full, including any bind variables. Some bind variables may show "n/a" for data type and value. This occurs if the variable is used more than once in the query.
Explain Plan	Displays the execution plan actually used by the query. All timings and totals of each step include child steps. In this way you can see the total for the whole query by looking at the top line.
Executions	Lists the statistics for each execution of the statement.
Fetches	Lists each fetch by query.
Waits	Lists each wait by query. If the "filter by wait" filter is active, then wait types matching the filter are highlighted in blue.
Wait Summary	Displays the wait types for the selected statement, including min, max and average for each wait type.
Transaction Waits	Displays each transaction wait by query. If the "filter by wait" filter is active, then wait types matching the filter are highlighted in blue.
Raw data	Displays the data from the trace file for the selected query. If you want a particular piece of information that is not otherwise displayed in the Trace File Browser, it will appear here.
Using these details combined with the aggregate details as provided in the statement grid above it allows you to focus on and diagnose the trouble spots within the trace file.	

Wait Summary

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The wait summary tab in the Trace File Browser displays aggregate wait information for the various types of Wait Events. The summary grid at the top of the window displays each distinct wait time in the trace file and some statistics. For details about Oracle statistics, please see your Oracle documentation.

Within this grid, you can right-click to hide idle events.

Details of wait events

The lower portion of the screen displays all statements with at least one wait of the type selected in the summary grid at the top of the screen. A statement will be listed in this area if it has the corresponding wait in the Waits tab, or the Transaction Waits tab of the Statement Details tab.

To view details of the wait events

- Select a **Wait Event** in the upper data grid to view details of the statements with that wait in the lower grid.

Query Summary tab

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Query Summary tab in the Trace File Browser displays a summary of queries and statistics contained in the open trace file.

The Bar graph

In addition, the query summary provides a bar graph that charts the Number of queries against the combined exec, parse, fetch and wait times.

You can also separate the Recursive queries from the user queries in the bar graph.

To separate query types

- Right-click over the bar graph and select **Display User and Recursive Queries Separately**.

To aggregate query types

- Right-click over the bar graph and clear **Display User and Recursive Queries Separately**.

File Header

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Select the File Header tab to view the file header for the open trace file. This information includes information about the database, server, and session.

All additional information from the trace file can be found in the other tabs of the Trace File Browser.

CodeXpert

CodeXpert Overview

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

CodeXpert analyzes the code against a set of rules for best practices. These rules are stored in a ruleset and can be either user-defined or pre-defined. (See [Configuring Rulesets](#).) CodeXpert can be accessed from various locations within Toad.

CodeXpert can store reports within the Toad schema on the database. To enable this feature, CodeXpert objects must be set up using the [Server Side Objects](#) window.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

Accessing the CodeXpert from the Editor

When run in the Editor, the CodeXpert window opens as a tab within the Output Frame. The window consists of the CodeXpert toolbars, the Results tab, the CodeXpert Report tab and the Rules and Statements Totals.

To access the CodeXpert from the Editor

- If the CodeXpert tab is not displayed, right-click and select **Desktop Panels | CodeXpert**.

Accessing the CodeXpert throughout Toad

You can run the CodeXpert in its own window. Do this from the menu at Database | Diagnose | CodeXpert, or from various places in Toad via the right-click menu. Running CodeXpert from these areas allows you work with multiple objects at the same time. When run in areas other than the editor, the CodeXpert opens in its own window. In addition, you can drag and drop objects into this window to analyze code as you work.

To access the CodeXpert from the Menu

- From the Database menu, select **Diagnose | CodeXpert**.

To access the CodeXpert from other windows

- Right-click to run the CodeXpert in:
 - Schema Browser
 - - Procedures
 - - Functions
 - - Packages
 - - Triggers

- - Views
- - Users (runs CodeXpert on all objects owned by the selected user)
- Project Manager
- Code Road Map

CodeXpert Icon Legend

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

The tree structure of the [CodeXpert](#) includes icons to identify the various objects listed.

Toad includes an Icon Legend that you can use to easily decipher these images.

To access the icon legend

- » On the CodeXpert Toolbars (page 318), click .

CodeXpert Toolbars

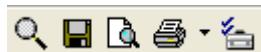
Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

The toolbars at the top of the CodeXpert window let you easily access the features of the advisor. There are two toolbars. Buttons may be rearranged slightly depending on whether you are accessing CodeXpert from the Editor desktop tab or from the CodeXpert window. In general, however, the Main toolbar will be located at the top of the tab or window, and the reports toolbar will be located on the results tab.

Main Toolbar



Reports Toolbar



Button	Command
	Change active session. In the drop down list, the active session is denoted by a check mark.
	Run the CodeXpert against the selected code or the code in the Editor
	Load code from file

Button	Command
	Load code from database
	Include the selected ruleset
	Scan for SQL Optimization when running the CodeXpert
	CodeXpert can store reports within the Toad schema on the database. To enable this feature, CodeXpert objects must be set up using the Server Side Objects window. See "Installing Server Side objects" (page 172) for more information.
	Schedule a CodeXpert run
	Create a command file
	Find a rule in the results tree by rule number
	View the advice tip for the selected rule
 All Rules	Select ruleset
	Launch the RuleSet Window to configure, edit, create or remove RuleSets
	Configure SQL Scanning options
	Email results as an XML attachment. See "Email Settings" (page 652) for more information.
	Zoom on summary: opens the summary report in a separate window
	Save the CodeXpert Report to a variety of HTML formats
	Print Preview
	Print

Code Xpert Options

General Options

General options are applicable to all of the [CodeXpert](#).

Prompt for CodeXpert Run names

When checked, Toad will prompt you for a name to use for the database insert. If not checked, Toad will insert it with a number followed by the date and time stamp.

The default is checked.

Use Central Repository for DB Inserts

When this option is checked, Toad will use a central database for database inserts.

If not checked, it will use the active connection. The default is unchecked.

To change the repository connection

1. Select Use Central Repository for DB Inserts.
2. Click **Change**.
3. Do one of the following:
 - a. Select a connection from the list of current connections.
 - b. Click **New** and select a connection from the login window.
4. Click **OK**.

SQL Scanning Options

Note: This extended Toad feature is only available in Toad for Oracle Xpert edition.

To select SQL Scanning options

- » Click  on the CodeXpert toolbar.

Scanning tab

Scanning options are designed to help you specify how and what the scanner will scan. In this way, you can choose to ignore duplicate statements, skip some SQL, and so on. See "Scanning tab" (page 338) for more information.

SQL Classification Options tab

The classification of SQL statements is designed to help you quickly identify the SQL statements that are likely to be causing performance problems in your database environment. This classification lets you specify the criteria to analyze your SQL statement. A problematic SQL statement indicates potential performance problem because the SQL statement has characteristics that can contribute to poor performance. Optimizing these SQL statements gives you the best possibility for improving the database performance.

These classification settings are used to set the criteria for Simple, Complex, and Problematic SQL statements. See "SQL Classification Tab" (page 339) for more information.

Running CodeXpert

Running CodeXpert in the Editor

By running [CodeXpert](#) from the Editor window, you can check your code against the desired ruleset while you are developing it. This can streamline the optimizing process and allow you to create better code faster.

To run CodeXpert in the Editor

1. From the editor window, open the code you want to scan in the editor window.
2. From the desktop panels at the bottom of the window, click the **CodeXpert** tab.
Note: If you do not see the CodeXpert tab, right-click, select **Desktop panels** and then select **CodeXpert**.
3. Select the ruleset you want to use from the ruleset dropdown in the toolbar.
4. Click .

Running CodeXpert Alone

By running [CodeXpert](#) away from the Editor window, you can analyze multiple files (from either the database or saved files) at one time and schedule CodeXpert runs.

To run CodeXpert in its own window

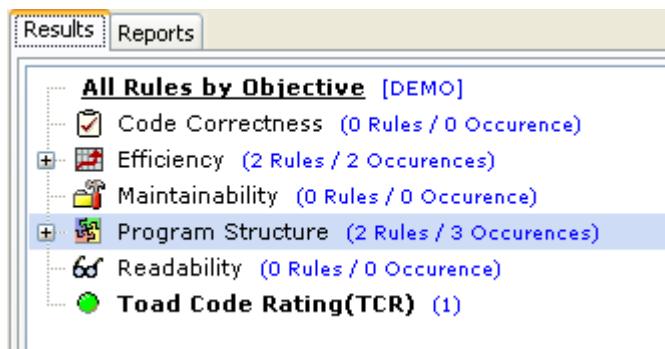
1. From the Database menu, select **Diagnose | CodeXpert**.
2. Load the files you want to analyze into the grid by selecting one of the following:
 3. Click the **Load Files**  button to load saved files.
 4. Click the **Load my Objects**  button to load objects from the database.
Note: you can also click the dropdown arrow beside the load my objects button to choose a group of objects to load.
5. Select the files or objects you want to analyze. You can multi-select using either the <Shift> or <Control> key.
6. In the Ruleset dropdown, select the ruleset you want to use. See "Configuring RuleSets" (page 327) for more information. If you have the Toad Xpert Edition, you can toggle the SQL Scan button on or off as desired. (The default is on.)
7. Click .

Working with Results

Results Tab

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

The CodeXpert Results tab displays results of the analysis. This is provided in a tree hierarchy. The main window displays all rules in the selected ruleset, and provides details of the rules that have been violated and where in the code the problem resides. (See "Rules" (page 322) for more information.) For a quick review of the state of the analyzed code, you can glance at the Toad Code Rating line in the tree.



Additional Information

Beneath the tree, there are three more tabs:

- All Rules by Objective (the default display) - lists the results of the rules scan. See "Rules" (page 322) for more information.
- Properties - Displays the properties of the code analyzed. See "CodeXpert Properties" (page 324) for more information.
- SQL Scan - This displays the results of running a SQL scan on the code. See "SQL Scanning" (page 332) for more information.

Note: The SQL Scan tab is visible only if you have run a scan with the review.

Rules

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

The contents of the [CodeXpert](#) Rules area is sorted according to how the sorting option is configured on the [RuleSet](#). The two sorting options are:

- Severity, then Objective
- Objective, then Severity

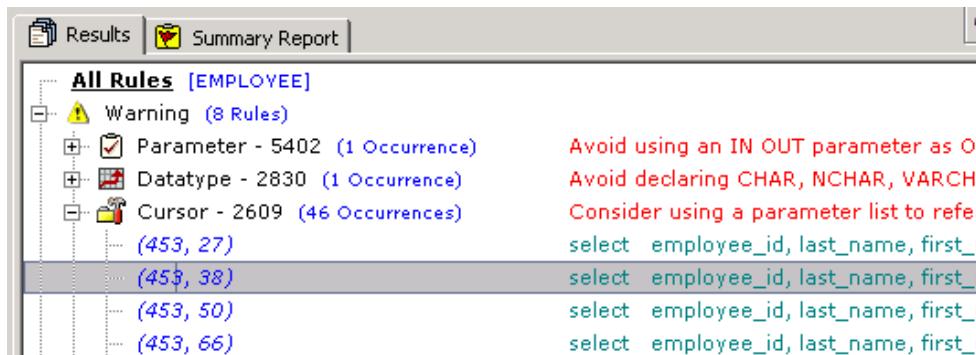
To view rules

- Select the results tab and then click the Rules tab at the bottom of the window.

The different types of rules issues are represented by icons to the left of the topic. (See [Icon Legend](#) for more information.)

Moving to the right, the information provided in the second level of the Rules node is:

- Icon
- Code Element
- RuleNumber
- (Number of Occurrences)
- Rule Title



For example, the highlighted occurrence in the screen above, is one occurrence of forty-six for Rule 2609 – ‘Consider using a parameter list to reference variables outside of this cursor’, belonging to the ‘Cursor’ Code Element group.

The numbers in parentheses represent where the occurrence appears in the code:

(453, 38) = Line 453, Column 27 of the code

By observing the icons in the tree, it can be determined that this rule falls under the Maintainability Objective, and a Warning Severity.

Statistical Analysis

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

There is a code metrics column in the stand-alone CodeXpert and a tab in the CodeXpert Results panel, both within the Editor and the standalone CodeXpert window, that displays a statistical analysis of your code. See "CodeXpert Overview" (page 317) for more information.

The code metrics area contains three sections that highlight program units that exceed criteria for:

- Computational Complexity (Halstead Volume)
- Cyclomatic Complexity (McCabe's)
- Maintainability Index

CodeXpert Properties

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

The CodeXpert Properties tree contains a profile analysis of the PL/SQL.

To view the Properties tree

- » At the bottom of the Results tab, click the **Properties** tab. See "Additional Information" (page 322) for more information.

Categories include:

- Cursor Analysis
- Declaration Analysis
- DML Analysis
- Exception Handling Analysis
- Flow of Control Analysis
- Module Analysis
- Oracle Version Dependencies
- Procedure/Function Analysis
- Complexity Analysis

Overriding Statements

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

You can override specific occurrences in CodeXpert. An overridden occurrence is not counted against the total statements 'Flagged'.

This feature is only available in a single-user environment and will be overwritten if source control is used and another user runs an analysis on the code.

Toad will add a comment to your code to mark that you want to override certain rules or occurrences of rules violations.

To override a rule

1. In the Results area, select the rule you want to override.
2. Right-click and select **Override Rule**.

To override an occurrence

1. In the Results area, elect the occurrence of the rule you want to override.
2. Right-click and select **Override Occurrence**.

Reports Tab

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

The Reports tab contains graphical displays of the CodeXpert analysis. These reports can be saved as HTML documents, printed, or viewed in a separate viewer through the functionality of the Report Toolbar.

Reports available from this tab include:

Report	Description
Rules Summary	The Rules Summary displays any best practices rules violated in a graphic form. See "Configuring RuleSets" (page 327) for more information.
CRUD Matrix	The CRUD (Create (i.e. INSERT), Retrieve (i.e. SELECT), Update and Delete) matrix, can be used to analyze the consistency of functional requirements. This analysis helps to identify performance bottlenecks in the form of unused tables, as well as tables used heavily.
Code Metrics	Code metrics analyze your code for performance issues under the Halstead Volume (computational complexity), McCabe's (cyclomatic complexity), number of statements and Maintainability Index (MI). For more information on any of these metric scales, click the appropriate header in the first chart for a detailed description.

Report Toolbar

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

The CodeXpert Report toolbar consists of the last four buttons in the toolbar area, and are only available when the CodeXpert Report tab is selected. The functions relate specifically to the Report window.

Button	Command
	Zoom on summary: opens the summary report in a separate window
	Save the CodeXpert Report to a variety of HTML formats
	Print Preview
	Print

Toad Code Rating

The Toad Code Rating (TCR) is displayed in the [CodeXpert](#) | Results | Rules. It provides a quick reference for how your code has performed in the analysis.

Toad rates each metric as follows:

Metric	Status Value	Value
Existing Metrics	4	>=251
	2	101-250
	1	<101
Halsted Metric	4	<=3001
	2	1000-3000
	1	<1000
McCabe's Cyclomatic	4	<=51
	3	21-50
	2	11-20
Maintainability Index	1	<=10
	4	<=64
	2	65-85
	1	>=85

The TCR is derived from the average rating of all the metrics (TCR always rounds up), and then the numbers are assigned a color as follows:

- 1 = Green
- 2 = Yellow
- 3 = Orange
- 4 = Red

Email Results

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

You can email the results of a CodeXpert run to an email of your choice.

Settings must be set before using the email feature.

To set email settings

1. From the **View** menu, select **Toad Options**.
2. On the left hand side, click **Email settings**.
3. In the Windows area, select **CX Results**.
4. Enter the settings for to and from, and the global email settings (if they are not already set).
5. Click **OK**.

Configuring RuleSets

Configuring RuleSets

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

The selected CodeXpert RuleSet determines what rules will or will not be included in a particular Analysis. How a RuleSet is displayed is configured through the CodeXpert RuleSet window. See "Left Pane" (page 328) for more information on creating your own rulesets and otherwise using your ruleset window.

To configure custom rulesets

1. Click  on the CodeXpert General Toolbar.
2. Check and clear the checkboxes for the rules you want to include or exclude.
3. Click **Close**.

To configure Quest-defined rulesets

1. Click  on the CodeXpert General Toolbar.
2. Check and clear the checkboxes for the rules you want to include or exclude.

3. Change the **Sort Order** drop down selection.
4. Click **Close**.

RuleSet Window

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

The CodeXpert RuleSet Window is divided into two panels with the right panel containing two tabs.

Left Pane

The left pane contains the RuleSet list, a list of all available RuleSets for CodeXpert. Every RuleSet is uniquely identified by its properties and will be one of two types – User-defined or Quest-defined.

Icon	Meaning
	Quest-defined RuleSet
	User-defined RuleSet

Right Panel

The right panel contains two tabs: Rules and Summary.

Rules Tab

The rules tab contains the Rules List, a list of all available rules for the CodeXpert. Every rule is identified by a rule number. These can be sorted, and searched from the Rules Tab toolbar. See "Rules Tab Toolbar" (page 329) for more information.

To view the advice tip for a rule

- » Double-click the item in the list.

Summary Tab

The Summary tab contains a graphical display of the RuleSet's properties and characteristics. This summary can be saved as an HTML document, printed, or viewed in a separate viewer. See "Summary Tab Toolbar" (page 330) for more information.

RuleSet Toolbars

RuleSet Toolbar

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

The [CodeXpert](#) CommandRuleSet toolbar lets you adjust and optimize RuleSets for the way you work.



Button	Command
	Create new RuleSet. Only available if have the RuleSet node active.
	Deletes the selected user-defined RuleSet. Note: Toad RuleSets cannot be deleted.
	Load an existing RuleSet.
	Save RuleSet.
	Save RuleSet with new name.
	Save all RuleSets.
	Add new folder.

Rules Tab Toolbar

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

From the [CodeXpert](#) Rules tab toolbar, you can:

- Change the sort order for the selected rule.
- Find a rule by rule number
- View the icon legend



Button	Command
Sort Order	Select a sort order from the drop down menu.
	Find a rule by its number.
	View icon legend. See "Icon Legend" (page 980) for more information.

Button	Command
	Open CodeXpert Options. See "Code Xpert Options" (page 319) for more information.
	Save Ruleset to Text, CSV, or HTML.

Summary Tab Toolbar

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

The CodeXpert Summary tab toolbar provides the means to save or print the summary in various ways. See "CodeXpert Overview" (page 317) for more information.



Button	Command
	Zoom in on Summary by launching in a separate viewer
	Save the Summary to a variety of HTML formats
	Print Preview
	Print

Creating RuleSets

Creating a RuleSet

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

You can create custom CodeXpert RuleSets that include the rules your company wants code to follow. RuleSets can be organized into folders under the RuleSets node on the RuleSet tree.

To create a new folder

- » Right-click in the tree structure and then select **New Folder**. Name your folder.

To create from a blank RuleSet

1. Select the folder or node where you want your ruleset created.
2. Click on the Ruleset toolbar.

To create from a template

1. Select the folder or node where you want your ruleset created.
2. Near , click the dropdown arrow to the right of the button.
3. Select an existing RuleSet to use as a template. All rules selected in the existing RuleSet are selected for the new template.
4. Make changes as desired by selecting or clearing boxes in the tree.

Create Ruleset Wizard

If the provided [CodeXpert](#) RuleSets do not meet your needs, you can create your own.

1. Click . The configuration window opens with a RuleSet selected.
 2. Click the **RuleSets** node.
 3. Click .
- Note:** If you want to base your ruleset on another ruleset, click the dropdown button beside the New Rule Set button and then select the ruleset you want to use as a template. Rules will be pre-selected using this method.
4. Enter a title in the Rule Set Title field.
 5. Toad creates a filename for you based on your title and stores it in the Rulesets folder. You can change this if desired.
 6. The author is automatically filled in from your computer information. If this is not correct, change it now.
 7. Enter any comments about your ruleset.
 8. Click **Next**.
 9. Change the sort order if desired.
 10. Select the rules you want to enforce.
 11. Click **Finished**.

The ruleset is now listed at the bottom of the navigation panel, with the User-created  icon identifying it.

RuleSet Properties

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

When a CodeXpert RuleSet is newly created, it appears as a generic node on the RuleSet tree, usually possessing a name such as **RuleSet0***. This indicates that the properties have not been set for this RuleSet and they must be done before a save can be performed.

When the RuleSet has had properties set, rules selected, and been saved it is available for selection and use in the RuleSet drop-down found on the CodeXpert General Toolbar.

To select RuleSet properties

1. Right-click the **RuleSet** and select **Properties**.

Set the properties:

Rule Set Title	The title identifies the RuleSet in the tree
Author	The author of the RuleSet
Comments	Comments about the RuleSet can be entered here

SQL Scanning

SQL Scanning Overview

Note: This extended Toad feature is only available in Toad for Oracle XPert edition.

Including a SQL Scan within your [CodeXpert](#) ruleset can find additional ways to improve your code. You can attach a SQL scan to all rulesets, or you can attach it to limited numbers of them.

To include a SQL Scan

1. Click on the [CodeXpert](#) tab at the bottom of the editor.
2. Toggle  into the depressed position.
3. Click  and select any [SQL Scanning Options](#).
4. Run CodeXpert against the chosen code with whatever ruleset, if any, you want to use.

SQL Scanning Results

Note: This extended Toad feature is only available in Toad for Oracle XPert edition.

When you choose a CodeXpert Ruleset that includes SQL Scanning, the results nodes in the Report tab will include a SQL Scan Results node.

Results are divided into four areas:

- Invalid SQL
- Problematic SQL
- Complex SQL
- Simple SQL



The numbers in parenthesis refer to the location of the SQL statement in the code. For example, the notation (10,1) means that the code in question begins at line 10, column 1.

In addition, if Toad has had to convert any code (see SQL Conversion Overview), it will appear here. The notation **Double-click for more information** displays. When you double click on that line, a dialog with details on the conversion appears. Any other pertinent information will display in the line below the entry.

SQL Scanning Conversions

SQL Conversion Overview

Note: This extended Toad feature is only available in Toad for Oracle Xpert edition.

When the [SQL Scanning](#) process identifies a SQL statement, it retrieves the execution plan. If it is unable to retrieve the execution plan, it checks to see if a SQL conversion can be applied to the SQL statement in order to render the SQL statement as a valid standalone SQL statement. The following conversions may be applied:

- [Indicator Conversion](#)
- [External Parameter Conversion](#)
- [PL/SQL Conversion](#)
- [Date Conversion](#)
- [COBOL Conversion](#)
- [Local Variable Conversion](#)

If any of the above conversions were applied to the SQL statement during the scanning process, the results panel shows what conversions were applied and what changes were made to the SQL text.

Indicator Conversion

Note: This extended Toad feature is only available in Toad for Oracle Xpert edition.

Within [SQL Scanning](#), for Pro*C or similar programming languages, every host variable can be associated with an optional indicator variable. There are two cases in which the Indicator Conversion is applied by the SQL scanning algorithm.

INDICATOR keyword found in an INTO clause

When the INDICATOR keyword is found in an INTO clause, it is concatenated with the variable name. For example:

Original SQL statement

```
SELECT EMP_ID, EMP_NAME  
  
INTO :v_empid INDICATOR :I_emp_id,  
:v_empname INDICATOR :I_empname  
  
FROM EMPLOYEE  
  
WHERE EMP_ID = 100
```

After conversion

```
SELECT EMP_ID, EMP_NAME  
  
INTO :v_empid_INDICATOR_:I_emp_id,  
:v_empname_INDICATOR_:I_empname  
  
FROM EMPLOYEE  
  
WHERE EMP_ID = 100
```

TWO Variables found in the INTO clause without a separator

When two variables are found in the INTO clause without a comma separator, it is concatenated together. For example:

Original SQL statement

```
SELECT EMP_ID, EMP_NAME  
  
INTO :v_empid :I_emp_id,  
:v_empname :I_empname  
  
FROM EMPLOYEE  
  
WHERE EMP_ID = 100
```

After conversion

```
SELECT EMP_ID, EMP_NAME  
  
INTO :v_empid_:I_emp_id,  
:v_empname_:I_empname  
  
FROM EMPLOYEE  
  
WHERE EMP_ID = 100
```

External Parameter Conversion

Note: This extended Toad feature is only available in Toad for Oracle Xpert edition.

In some source codes, a question mark (?) is used to define external parameters. In order to make it possible to use unique referencing for individual parameter, the SQL Scanner adds a number so that each parameter has a unique name within the SQL statement. For example:

Original SQL statement

```
SELECT EMP_ID  
      FROM EMPLOYEE  
     WHERE EMP_ID = ?  
       AND EMP_NAME = ?
```

After conversion

```
SELECT EMP_ID  
      FROM EMPLOYEE  
     WHERE EMP_ID = ?1  
       AND EMP_NAME = ?2
```

PL/SQL Conversion

Note: This extended Toad feature is only available in Toad for Oracle Xpert edition.

This conversion in SQL Scanning simulates the behavior of PL/SQL by adding a /*+CHOOSE*/ hint when the optimizer_mode is FIRST_ROWS. For example:

Original SQL statement

```
SELECT EMP_ID  
      FROM EMPLOYEE  
     WHERE EMP_ID = 100
```

After conversion

```
SELECT /*+CHOOSE*/ EMP_ID  
      FROM EMPLOYEE  
     WHERE EMP_ID = 100
```

Date Conversion

Note: This extended Toad feature is only available in Toad for Oracle Xpert edition.

The Date conversion within SQL Scanning adds the TO_DATE function to a date variable parameter. See "SQL Scanning" (page 332) for more information.

If there is an "Inconsistent datatype" error returned when the execution plan is retrieved from your original SQL, then the SQL Scanner checks for a variable calculation using a date (for example: var_date - date_field) and applies the conversion since only a date can perform a calculation using another date. If there is still an "Inconsistent datatype" error, then the SQL Scanner checks all remaining variable names for "%date%" and converts all variables whose name includes the word "date", (for example datefield - lastdateused).

An expression with the pattern date_field - var_a, where the variable name is on the right side of the expression and does not include the word "date", is not converted. This is because the variable can be a date, a number, or even a string. Oracle can perform an implicit conversion on this variable or on the result of this expression, therefore making it difficult to detect if the variable on the right-side of the expression is actually a date.

The following are examples when the conversion is applied.

Example 1

Original

```
SELECT 1 FROM dual WHERE a - sysdate = 1
```

Conversion

```
SELECT 1 FROM dual WHERE to_date(a) - sysdate = 1
```

Example 2

Original

```
SELECT 1 FROM dual WHERE sysdate - mydate = 1
```

Conversion

```
SELECT 1 FROM dual WHERE sysdate - to_date(mydate) = 1
```

Example 3

Original

```
SELECT 1 FROM dual WHERE sysdate - a = 1
```

Conversion

No conversion

COBOL Conversion

The COBOL conversion within SQL Scanning searches for three items within the syntax of a SQL statement that are allowed in the COBOL, but are not valid SQL syntax: 1) a dash or minus in a variable name, 2) comments in the middle of the SQL statement, and 3) the]] (double right square bracket) as the concatenate symbol. See "SQL Scanning" (page 332) for more information.

Conversion for variable name

If a variable name contains "-" minus sign, then it will be replaced with an "_".

Conversion for comment

If the 7th column of the line is an "*" (asterisk) then the complete line will be recognized as a line comment.

Conversion for concatenate character

If "]]" (two right square brackets) are used to concatenate column names, they will be replaced with a "+".

For example:

Original SQL statement:

```
SELECT * FROM EMPLOYEE
          * Get the department number
WHERE EMP_ID > :employee-id
AND ENAME]]JOB = :name-job
```

After conversion:

```
SELECT *
  FROM EMPLOYEE --  * Get the department number
 WHERE EMP_ID > @employee_id
 AND ENAME || JOB = @name_job
```

Note: If your COBOL file has tags at the beginning of the lines of code, you need to use the "Number of characters to be skipped at the beginning of every line for all files" option found on the [SQL Scanner tab page in the Preferences window](#).

This conversion is only applied when the Scanner Job is added to the Job Manager window using the COBOL option under the Source Codes tab in the Add Jobs window.

Local Variable Conversion

Note: This extended Toad feature is only available in Toad for Oracle Xpert edition.

The local variable conversion within SQL Scanning is only applied to the Single Command Line Dynamic (SCLD) SQL files and database objects. See "SQL Scanning" (page 332) for more information.

If a local variable is detected in the SQL statement, the SQL Scanner encloses the variable name with "&[" and "]".

For example:

Original source SQL statement before scanning:

```
"SELECT " + VEMPID + " FROM EMPLOYEE WHERE EMP_ID > 100"
```

After conversion:

```
SELECT &[VEMPID] FROM EMPLOYEE WHERE EMP_ID > 100
```

Note: The local variables in a scanned SQL statement should be treated as replacement or substitute variables rather than bind variables. Therefore, you should hard code the values before you optimize the SQL statement. The reason for hard coding the values is that the local variables may be literals and when the application is run, these values are replaced before the SQL is sent to the database. That's why the SQL Scanner uses "&[" and "]" to differentiate the local variables from the bind variables.

This conversion is only applied if the SCLD option is selected from the Summary tab page in the Add Jobs window or from the Modify option from the Pop-up menu in the Job Manager window.

SQL Scanning Options

Scanning tab

Note: This extended Toad feature is only available in Toad for Oracle Xpert edition.

The Scanning tab is part of Code Xpert options. See "Code Xpert Options" (page 319) for more information.

Skip SQL within comments

Specify that the scanning algorithm ignore any SQL statement within comments using the /* */,
// or -- comment format. Otherwise, the scanning algorithm finds SQL statements that are not currently being executed in the application. It may also attempt to build a SQL statement if it finds the word SELECT, INSERT, UPDATE, or DELETE within the text of a comment.

Skip SQL that only involves the SYS.DUAL table

Specify to ignore any SQL statement that only references the SYS.DUAL table.

Ignore duplicate SQL statements

Specify to include a SQL statement only once in the scanning results when it is found multiple times in the text.

Whole word matching for the first SQL keyword

Specify to search for SELECT, INSERT, UPDATE, or DELETE as a whole word. When this option is selected, these keywords must be preceded and followed by a space or end of line character and, therefore, the SQL Scanner will not find the word INSERT in text like PROCEDUREINSERT and then attempt to build a SQL statement from it.

Maximum scanned word size (Bytes)

Specify the largest size (in bytes) for scanned word. If a word is larger than this size, the SQL is ignored, and the scan resumes in the next position.

The default is 1024KB. Choose from 30 to 9,999,999.

SQL Classification Tab

Note: This extended Toad feature is only available in Toad for Oracle Xpert edition.

[SQL Scanning](#) Classification lets you specify the criteria to analyze your SQL statement. A problematic SQL statement indicates potential performance problem because the SQL statement has characteristics that can contribute to poor performance. Optimizing these SQL statements gives you the best possibility for improving the database performance.

To access the SQL Classification options

1. From the Code Xpert toolbar, click .
2. Click the **SQL Scanning** tab.
3. Click the **SQL Classification** tab.

Simple SQL

Number of table scan operations less than

This read-only field indicates the number of table scan operations referenced in the execution plan. If the total number of table scan operation is less than this value, then this SQL statement is classified as Simple. This value is the same as the lower limit of the Complex table scan operations range.

The default is 2.

Complex SQL**Number of table scan operations**

Specify the number of table scan operations referenced in the execution plan for Complex SQL statements. The default is 2 /3 and the range is 2 to 99.

Including SYS.DUAL table

Select this box to include the SYS.DUAL table when counting the number of tables referenced by the SQL statement.

With Full Index Scan

Specify whether SQL statements with full index scans are classified as Complex SQL statements.

Problematic SQL**Number of table scan operations greater than**

This is a read-only field indicating the number of table scan operations referenced in the execution plan. If the total number of table scan operation is greater than this value, then the SQL statement is classified as Problematic. This value is the same as the upper limit of the Complex table scan operations range.

The default is 3.

With full table scan

Specify to classify, as Problematic, a SQL statement with one or more full table scans when the table size is greater than or equal to the defined table size (in Kbytes) or the specified number of rows. For a detailed explanation for setting the table size or number of rows see the Full Table Scan Threshold topic.

Option	Description
Table size	The default is 8 and the range available for selection is 8 to 9,999,996. With the Table size (KBytes) option, the unit of comparison is Kbytes. The value specified for the Table size (KBytes) option should be divisible by 4.
Number of rows	Select either Table size or the Number of rows in the table to determine how large the table must be before the SQL statement is classified as Problematic. The default is 1000. Note: If a more precise table size calculation is required, then the use of the Table size (KBytes) is recommended.
Including SYS.DUAL table	Specify to investigate the full table scans referencing the SYS.DUAL table.

With full table scan iterated by nested loop

Specify to classify as Problematic, SQL statements with a full table scan inside a nested loop. This classification depends upon the size of the table. For a detailed explanation for setting this table size or number of rows see the Full Table Scan Threshold topic.

Option	Description
Table size	The default is 8 and the range available for selection is 8 to 9,999,996. With the Table size (KBytes) option, the unit of comparison is Kbytes. The value specified for the Table size (KBytes) option should be divisible by 4.
Number of rows	Select either Table size or the Number of rows in the table to determine how large the table must be before the SQL statement is classified as Problematic. The default is 1000. Note: If a more precise table size calculation is required, then the use of the Table size (KBytes) is recommended.
Including SYS.DUAL table	Specify to investigate the full table scans referencing the SYS.DUAL table.

Retrieve table size by counting: **SYS.DBA_SEGMENTS**

To calculate the table size using **SYS.DBA_SEGMENTS**, the SQL Scanner counts the total number of bytes allocated for a table. This information is obtained with the following SQL statement:

```
SELECT SUM(BYTES) /1024 AS "KB"  
      FROM SYS.DBA_SEGMENTS  
     WHERE OWNER = :OWNER  
       AND SEGMENT_NAME = :TABLE_NAME  
       AND SEGMENT_TYPE LIKE 'TABLE%'
```

Retrieve table size by counting: **System tables**

To calculate the table size the SQL Scanner utilizes the information on table blocks. This information can be obtained with the following SQL statement:

```
SELECT SUM(SEG.BLOCKS * TS.BLOCKSIZE)/1024 AS "KB"  
      FROM SYS.USER$ USR,  
           SYS.OBJ$ OBJ,  
           SYS.TS$ TS,  
           SYS.SYS_OBJECTS TAB,
```

```
SYS.SEG$ SEG
WHERE SEG.FILE# = TAB.HEADER_FILE
AND SEG.BLOCK# = TAB.HEADER_BLOCK
AND SEG.TS# = TAB.TS_NUMBER
AND SEG.TYPE# = TAB.SEGMENT_TYPE_ID
AND SEG.TS# = TS.TS#
AND TAB.OBJECT_ID = OBJ.OBJ#
AND TAB.OBJECT_TYPE_ID = OBJ.TYPE#
AND OBJ.OWNER# = USR.USER#
AND TAB.OBJECT_TYPE_ID IN (2, 19, 34)
AND USR.NAME = :OWNER
AND OBJ.NAME = :TABLE_NAME
```

Applying the Classification Options

Note: This extended Toad feature is only available in Toad for Oracle Xpert edition.

When performing a [SQL Scan](#), you can specify if full table scans should be analyzed in execution plans to categorize SQL statements as Problematic.

You can access the classification options from the [CodeXpert Options](#) window. Click the SQL Scanner tab and then the SQL Classification tab.

For more information about these options, see the [SQL Classification tab](#) topic.

Full Table Scan Threshold

Since each database environment is unique, you can specify the threshold (size of the table) for the full table scan to be considered a problematic operation. If the full table scan threshold is exceeded and the execution plan has a full table scan operation, then the SQL statement is classified as Problematic.

Default values

The default table size threshold for the full table scan operation is 8 KB. This threshold may be too low for production systems. It is recommended to review the [SQL Classification options](#) before using the SQL Scanner.

Calculating Table Size

To calculate the table size that is compared against the full table scan threshold, the SQL Scanner uses one of the following methods depending on your selection in the [Retrieving table size by counting](#) option:

- Method 1 - Utilizing the table information from `SYS.DBA_SEGMENTS` system view
- Method 2 - Utilizing the table information from the system tables `SYS.SEG$`, `SYS.OBJ$`, `SYS.TS$`, `SYS.SYS_OBJECTS`, and `SYS.USER$`.

The table size reported by each of these methods may differ according to the information available in Oracle in the system view or tables utilized. The performance of retrieving the table information under each method could be different according to the specific database environment, thereby affecting the time it takes to scan.

To use `SYS.DBA_SEGMENTS` or system tables, select the corresponding option in the [Problematic SQL section](#) of the SQL Classification Preferences.

Example – Determining the Full Table Scan threshold using `SYS.DBA_SEGMENTS`

This example illustrates how it was determined what number of Kbytes to use for the Full table scan threshold to classify SQL statements. It was decided that a full table scan on the `EMPLOYEE` table was not a performance problem for this database and should not be classified as Problematic.

First, it was decided that a full table scan on the `EMPLOYEE` table was not a performance problem for this database and should not be classified as a Problem.

Second, the table size of the table `EMPLOYEE` was obtained by running the SQL statement from Method 1 above using `SYS.DBA_SEGMENTS`.

```
SELECT SUM(BYTES) /1024 AS "KB"  
FROM SYS.DBA_SEGMENTS  
WHERE OWNER = OWNER_NAME  
AND SEGMENT_NAME = EMPLOYEE  
AND SEGMENT_TYPE LIKE 'TABLE%'
```

The result of this SELECT statement showed that the table size for the table `EMPLOYEE` is 64,804 KB.

Third, in the CodeXpert – SQL Classification Options, the `SYS.DBA_SEGMENTS` option was selected and the full table scan threshold was set to 64,800 KBytes (or slightly higher to allow for growth).

Database Administration

Audit SQL/Sys Privs

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Audit SQL/Sys Privils window displays the audit monitoring options for SQL Statement Objects, Reserved Words and System Privileges in the database.

To access Audit SQL

- » From the Database menu, select **Administer | Audit SQL/Sys Privils**.

Note: To use auditing functionality within Toad, AUDIT_TRAIL must be set to DB.

From this window, you can enter and modify monitoring levels for each type or for groups of types. You can also view the audit trail records for the selected schemas.

Note: Certain privileges are required to use this screen. These include:

- To audit occurrences of a SQL statement, you must have the AUDIT SYSTEM privilege.
- To audit operations on a schema object, the object you choose for auditing must be in your own schema or you must have AUDIT ANY system privilege. In addition, if the object you choose for auditing is a directory object, even if you created it, then you must have AUDIT ANY system privilege.

Audit SQL/Sys Privileges Toolbar



Button	Command
	Change active connection
Schema	Choose schema
Audit Options	View Audit Options
Audit Trail	View Audit Trail

To view audit details

1. From the Database menu, select **Administer | Audit SQL/Sys Prvs.**
2. From the Schema drop down menu, select the schema you want to audit.
3. Click one of the following:
 - Audit Options
 - Audit trail

NLS Parameters

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

This window is used to view the Session, Instance, and Database parameter settings, and to change the Session and/or Instance parameters.

The window includes tabs for **Session**, **Instance**, and **Database**.

To access NLS Parameters

From the Database menu, select **Administer | NLS Parameters**.

To change a NLS (National Language Support) setting

- » Do one of the following:
- Double-click a **parameter**; enter the new setting.
 - Single-click the parameter line, click ; enter the new setting.

If a parameter cannot be edited, the Edit button will be disabled. Session parameters are all editable. Other parameters may not be editable.

Notice that changing a value in one cell can cause a change in other cells. For example, if you change the NLS_TERRITORY from America to Japan, the NLS_CURRENCY symbol changes from the dollar to the yen.

Toad Features Security

This feature restricts Toad users from having access to specific Toad features. By default users are granted access to all features of Toad. You can restrict individuals or groups of users from accessing some Toad features. In addition, you can make Toad read-only for individuals or groups of users.

Caution: Toad Security Read-only only affects Base Toad. If you have the DB Admin Module, those module components will remain fully accessible.

To set up the security mechanism

1. Run the Server Side Objects Install Wizard to create the Toad_RESTRICTIONS table in the Toad schema. This is REQUIRED to be in the Toad schema, not another schema with synonyms pointing back. See "Installing Server Side objects" (page 172) for more information.
2. Run **Toad**, log in as the **DBA_USER** (as you set it in step 1), and then select the **Administer | Toad Security** menu item to bring up the Toad Features Security window.
3. Select the user or role, and then select the features you want to deny to that user or role.

All other Toad Security features will be granted to this user. Since other non-DBA users only have SELECT privileges to the Toad_RESTRICTIONS table, they cannot make changes to the security.

4. Click the **Grant Select** button so that the user or role can see the Toad.Toad_RESTRICTIONS table.
5. If the user cannot "see" the Toad_RESTRICTIONS table (in other words, they do not have SELECT access granted to them), then they have FULL access to all Toad features.
6. If the user has SELECT privilege on the Toad_RESTRICTIONS table, then the security is in effect.
7. Move any commands you do not want the user to have from the Features list to the Restricted Features list. Not all buttons, menus, or functions in Toad are contained within this security scheme. If you need to restrict other functionality, please let us know.
8. When you have completed restricting features, click **OK** to save your changes. You can also create collections of Toad features using existing Oracle roles. Grant the features to a role (for example, DEVELOPER_ROLE), then those Toad users will get the collections of Toad functionality without having to set up the same list of Toad features for multiple users.

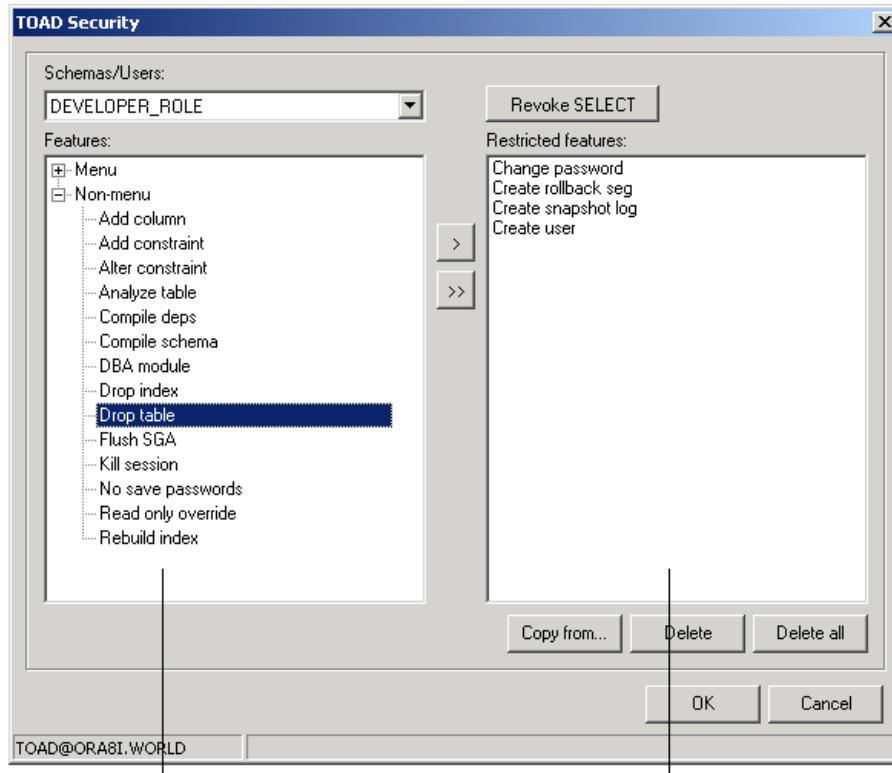
Example

To set up a list of different kinds of Toad Features, and then revoke that list of features from select groups of users, do the following.

1. Start **Toad**, log in as user **Toad**, go to **Administer | Toad Security**.
2. Select a role, for example "DEVELOPER_ROLE" from the user/role dropdown list. These are standard Oracle roles. Have your DBA create the roles if necessary.

Caution: DO NOT use the DBA role for users subject to Toad Security. When Toad starts, if the user has the DBA role, then that overrides everything else, security included.

3. Ensure that DEVELOPER_ROLE has SELECT privilege to the Toad.Toad_RESTRICTIONS table. If the **Grant Select** button caption is "Grant Select", then click it to execute the grant. If the button caption is "Revoke Select" then the grant already exists.
4. Copy the desired features to the "Restricted Features" list.



Features you can restrict from the user or role.

Features the user or role does NOT have the authority to use.

- Click **OK**. Toad will "grant select on toad_restrictions to developer_role" and write these records into the Toad_RESTRICTIONS table:

USER_NAME	FEATURE
DEVELOPER_ROLE	CHANGE A PASSWORD
DEVELOPER_ROLE	CREATE ROLLBACK SEG
DEVELOPER_ROLE	CREATE SNAPSHOT LOG
DEVELOPER_ROLE	CREATE USER

- Ensure that the Oracle Roles have been granted to the user: [grant developer_role to scott].
- Have user SCOTT log off/on to Toad. Scott's Toad features should be limited as specified.
- Repeat setting up restricted features for the other desired roles, e.g., TUNER_ROLE, MAINTENANCE_ROLE, and so on.

Disable Saving Oracle Passwords by Toad

This option is in the Features | Non-menu list as Save passwords. Moving it to the Restricted list lets you disable the ability to save passwords.

Read-only

You can make Toad read-only to a selected user or role. This is useful if you have someone who needs to view database objects but does not have the authority to change them.

To make Toad read-only, move the Read-only Override function from the Features | Non-menu list to the Restricted features list. This makes Toad read-only to the selected user.

Note: This Toad Security option does not apply to the DB Admin Module. To restrict Toad entirely, you will also need to restrict the DB Admin Module from the appropriate users.

ASM Manager

ASM Manager Overview

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To access the ASM manager

- » From the Database menu, select **Administer | ASM Manager**.

In Oracle 10g and above, Oracle provides a means for managing the Oracle DB file system from within the Oracle database: Automatic Storage Management (ASM).

In ASM, a standalone Oracle instance collects Raw server disks into disk groups and performs management functions necessary to make ASM files available to database instances. Oracle database files are then stored in these disk groups.

A template, or collection of file attributes, is used by ASM during file creation. Templates simplify file creation by mapping complex file attribute specifications into a single name. A default template exists for each Oracle file type. You can modify the attributes of the default templates or create new templates.

For full information about ASM, Raw server disks, and templates, please see your Oracle documentation.

Toad's ASM Manager gives you an easy interface to the Oracle ASM features, and lets you easily manage your disk groups.

Note: Connection to the ASM instance is created through the Toad ASM Manager from the Database | Administer menu. Toad does not support creating a connection to this instance in any other way.

The ASM Manager window is divided into two pages, accessible by tabs: Disk Groups and Clients. You can view by database instance or ASM Instance, which opens a new connection to that instance while you are viewing and working with information. Using the ASM instance will display more data and allow you to make changes to your disk groups.

From the Disk group tab, you can:

- View disk groups
- Create disk groups
- Alter disk groups
- Drop disk groups

From the **Clients tab** you can see the client information for the various disk groups.

Viewing Disk Groups

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can view disk groups from Toad's ASM Manager. See "ASM Manager Overview" (page 348) for more information.

Disk group information is divided into summary information and detail information. Summary information is displayed in the upper grid, and includes the group number and disk group name. Detail information is provided in the lower grid when you select a disk group in the upper panel.

To view disk groups

1. From the Database menu, select **Administer | ASM Manager**.

Select either the database instance or the ASM instance you want to use.

Note: The ASM instance provides more data and allows changes.

2. If it is not selected, click on the **Disk Groups** tab.

In the upper panel, select the disk group you want to view.

Note: Data for that disk group is displayed in the lower pane.

Signing in with an ASM instance

Using an ASM instance instead of a database instance provides more data and allows changes.

To select an ASM instance

When you select ASM instance from the Connected to box, the **Connect to ASM Instance** dialog appears.

Note: You must log in as SYS to use the ASM instance. This username cannot be edited.

3. Enter the **password**.

Select the **database**.

Note: ASM instances are designated as `+databasename` and appear near the top of the list.

4. *Host and Connect As* information is static and cannot be changed.
5. Click **OK**.

Summary information

You can view summary information about a particular disk group in the upper area of the grid. Information provided includes Group number, Disk Group name, sector size, block size, allocation unit size, state, type, total MB, free MB, Required mirror free MB, and so on.

Using the toolbar, you can create, drop, and alter disk groups if you are connected to the ASM instance (see related topics).

Disk Group Toolbar



Button	Command
	Refresh Upper Pane
	Create disk group
	Alter disk group
Show Related Items	Drop disk Group
	Refresh Lower Pane

Detail information

Detail information is provided in the lower panel grids. Information is separated into five data grids: Disks; Templates; Operations; Files, Directories, and Aliases; and Usage. If connected by ASM Instance, changes can be made to the Files, Directories, and Aliases area by use of the provided toolbar.

Files, Directories and Aliases toolbar



Button	Command
	Create alias for selected file
	Create directory in selected directory
	Rename selected object.
	Drop selected object.

Creating Disk Groups

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

If you are connected through an ASM instance, you can create and drop disk groups from the Disk Groups toolbar.

Creating disk groups

You can create a disk group quickly using the combination of Oracle ASM and Toad's [ASM Manager](#).

To create a disk group

1. From the Database menu, select **Administer | ASM Manager**.
2. Select an ASM Instance in the **Connected To** box.
3. Click .
4. Enter a Disk Group Name.
5. If it is not already selected, click the **Basic Info** tab.
6. Select the redundancy of the disk group:

Select an availability from the Status after creation drop down box.

Note: The Alter Actions section will be disabled when creating a disk group. See "Altering Disk Groups" (page 352) for more information.

7. If you are using Oracle 11g, you can also set several attributes.
8. Click the **Disks** tab.
9. Click **Add Disks** and select any disks you want to include in this disk group. Click **OK**.
10. Click **OK** to add the disk group.

Dropping Disk Groups

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can drop disk groups from the ASM Manager. See "ASM Manager Overview" (page 348) for more information.

To drop a disk group

1. From the ASM Manager | Disk Group tab, select the disk group you want to drop.
2. Click .

In the Confirm dialog, choose to include or exclude contents when you drop the disk group.

Note: if you are using Oracle 11g or later, you can also apply the FORCE option.

3. Click **OK**.

Altering Disk Groups

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To alter a disk group

1. From the **Database menu** | **Administer** | **ASM Manager**, click the Disk Groups tab.
2. Make sure the ASM instance is selected in the **Connected To** drop down box.
3. Select the disk group you want to alter and then click.

Make any changes you need to make. You can change disk groups in any one of the three tabs:

Basic Info tab	Information
Availability	The availability of the disk group can be changed with the Alter command. Toad displays the current status of the disk group and provides a change to drop down to select a new status easily.
Alter Actions	For detailed information regarding these options, please see your Oracle documentation): Check All Disks - <ul style="list-style-type: none">• Repair

Rebalance - can be used alone or with Add/Drop/Resize disk commands	
	<ul style="list-style-type: none">• Specify power• Wait
Disks tab	Information
Add or Drop	Select the disk you want to alter, click Add or Drop .
Alter	Click in the cell you want to alter and make changes. Note: You can alter some, but not all data.
Templates Tab	Information
Add or Drop	Select the disk you want to alter, click Add or Drop .
Alter	Click in the cell you want to alter and make changes. Note: You can alter some, but not all data.

4. Click **OK** to commit changes.

Viewing Clients

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can use the ASM Manager to view client information for each disk group.

As for disk groups, if you are connected to an ASM instance you will see more information than if you are connected via the database instance.

To view client information

1. From the Database menu, select **Administer | ASM Manager**.
2. From the **Connected to** drop down, select either the Database instance (default) or an ASM instance.
3. Click the **Clients** tab. Information is displayed in the grid.
4. Refresh the grid if necessary by clicking .

Audit Objects

Audit Objects

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To access the Audit Objects window

- » From the Database menu, select **Administer | Audit Objects**.

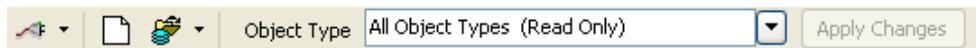
Note: To use auditing functionality within Toad, AUDIT_TRAIL must be set to DB.

The Audit Objects window displays the audit monitoring options for selected database objects. You can enter and modify monitoring levels for each individual object or for groups of objects.

Note: Audit parameters for objects are also available in the **Schema Browser | Object Page | RHS Auditing tab**.

Audit Objects Toolbar

The audit objects toolbar gives you control of the objects you are auditing.



Button	Command
	Change active connection
	Clear Object List
	Load Objects from Database
Object Type	Select object type to audit from the drop down menu.
Apply Changes	Apply changes you have made to the grid

To populate the audit object data grid

1. From the Database menu, select **Administer | Audit Objects**.
2. From the **Object Type** drop down, select the type of object you want to audit.
3. Click the drop down, and select what you want to load.

Setting an Object Audit

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To view the Audit Objects window

- » From the Database menu, select **Administer | Audit Objects**.

Audits display in the grid in an abbreviated code. Audit options for when successful come first, followed by a slash, followed by when not successful.

Option	Abbreviation
By Access	A
By Session	S
No Audit	-

Therefore, an audit pattern will display in the grid as follows:
A/S - audit records when successful by access, and when not successful by session

To set audit options

1. Populate the audit object grid.

Note: This must be something other than All Object Types, which is read-only.

2. In the row containing the object you want to audit, click in the column of the audit you want to perform.

Note: For example, if you want to audit on Alter commands, click in the Alter box.

3. Click .
4. Select the options you want to audit when the command is successful or when it is not successful.
5. Click **OK**.

Multiple Object Privileges

Multiple Object Privileges

You can manage privileges for multiple objects from the Multiple Object privileges screen. You can grant or revoke privileges on multiple objects at once.

To access multiple object privileges

- » From the Database | Administer menu, select **Multiple Object Privileges**.

To grant privileges

- » Click the **Grant** tab. See "Granting Multiple Privileges" (page 356) for more information.

To revoke privileges

- » Click the **Revoke** tab. See "Revoking Multiple Privileges" (page 356) for more information.

Granting Multiple Privileges

You can grant multiple privileges at once, either from selected objects, or from all objects on the screen. See "Multiple Object Privileges" (page 355) for more information.

To grant all objects to selected grantees

1. From the Objects Owned by dropdown, select the schema owning the objects you want to grant.
2. In the Grantees area, select the users or roles to whom you want to grant privileges.
3. In the toolbar, click .
4. Choose **All** or specify privileges you want to grant on the objects.
5. Choose to include Grant or Hierarchy options.

To grant selected objects to selected grantees

1. From the Objects Owned by dropdown, select the schema owning the objects you want to grant.
2. In the Objects area, select the objects you want to grant.
3. In the Grantees area, select the users or roles to whom you want to grant privileges.

Note: You can select or clear the Users and Roles check boxes to limit the list to one or the other or both.

4. In the toolbar, click .
5. Select privileges you want to grant on the objects.
6. Choose to include the Grant or Hierarchy options.

Revoking Multiple Privileges

To revoke privileges

1. From the Multiple Object Privileges screen, select the schema that owns the objects with privileges you want to revoke. See "Multiple Object Privileges" (page 355) for more information.
2. Click the **Revoke** tab.

3. Do one of the following:
 - Select **All**.
 - Select **Objects I granted**.
4. In the grid, select the privileges to revoke.

Note: You can filter the grid by any column by clicking the arrow in the column header. Select **Custom** and set the filter.
5. Click **Actions**.
6. Do one of the following:
 - Select either:
 - **Revoke all**
 - **Revoke selected**.

Oracle Parameters

Oracle Parameters

Note: Oracle parameters are available to view in Base Toad editions. To alter them requires the DB Admin module.

Oracle Parameters allows you to modify or edit the System Modifiable and Session Modifiable options.

To access the Oracle Parameters window

- » From the Database menu, select **Administer | Oracle Parameters** menu item.

The grid provides information about the Oracle parameters in the active session.

Note: Access to some V\$ tables are required to use this option. See "Database | Administer | Oracle Parameters " (page 156) for more informationand a list of these permissions.

When you change a parameter, you are presented with a window listing the current setting and boxes to change it, adding comments if desired. In addition, if applicable, you can set the scope, choose where to apply the change, and, if on a RAC, whether to make the change in all instances, or only the current instance.

Parameters Toolbar



Button	Command
	Change the active session.

Button	Command
	Refresh the grid data.
	Edit parameter. Note: Editing parameters is only available in the commercial version of Toad with the optional DB Admin Module. See "Changing a Parameter String" (page 359) for more information.
	Print the parameter grid.
	Export the dataset. See "Export Dataset" (page 390) for more information.
Default	Use this dropdown to quickly filter the grid by the Default column contents to Yes, No or All.
Filter	Use the QuickFilter box to filter the grid by contents you specify. See "Using the QuickFilter Box" (page 993) for more information.
Single Grid	Toggles whether Toad displays a single grid or a multi-grid when connected to an Oracle RAC database. In single-grid view, Toad sorts first by default on the option and then by the instance name for easier readability. If you choose the multi-grid view, Toad displays a separate tab for each RAC instance.

Viewing Parameter Strings

Viewing a Parameter Setting

If you do not have the DB Admin Module, you can view the parameters but not change them.

To view a parameter setting

- » Double-click on the **parameter** you want to view.

Searching for a Parameter Setting

There are several ways to search for a parameter string. For example,

- You can search for a specific Oracle setting in any column of the grid using incremental search.
- You can use the QuickFilter to filter the grid. See "Using the QuickFilter Box" (page 993) for more information.

To find a parameter setting using incremental search

1. Click in the column describing the parameter you want to find.
2. Enter the first few characters of the entry you want to find. The cursor will jump to the entry as you enter characters.

Changing a Parameter String

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

If a parameter is both session modifiable and system modifiable, Toad modifies at the system level. You can change Oracle Parameter settings individually. See "Oracle Parameters" (page 357) for more information.

If you are using a RAC-based database, you will also have the option to choose whether to apply the change to all instances or only the current instance.

Note: Some parameters may not allow changes. The Change Parameter Setting button will remain disabled even if you select one of these parameters.

To change a setting using the mouse

1. Do one of the following:
 - Double-click the **parameter** you want to change.
 - Click the **parameter** you want to change and then click .
2. Make any changes to your setting and click **OK**.

To change a setting using the keyboard

1. Double click the **parameter** you want to change.
2. Make any changes to your setting and click **OK**.

Tablespaces

View Tablespaces

To view tablespace information

- » From the Database menu, select **Administer | Tablespaces**.

Note: This feature requires SELECT access to the DBA_ Oracle dictionary views. Without access, you will get an error dialog box, "This function requires access to: dba_free_space, dba_data_files, and dba_tablespaces".

From either the Space or Data Files tab, double-click a tablespace to see details. (Note: This Toad feature is only available in the commercial version of Toad with the optional DBA module.) See "Tablespace Details" (page 361) for more information.

Tabs

Note: The Space, Space History, and IO History tabs are only available in the commercial version of Toad with the optional DB Admin Module.

On each of these tabs, to sort the information in ascending order, click the desired column header. To sort in descending order, click the same column header a second time. Double clicking on the divider between two column headings, where the mouse pointer turns into a vertical line with left and right arrows, will size the column to the width of the data.

Tab	Description
Space	<p>Note: The Space, Space History, and IO History tabs are only available in the commercial version of Toad with the optional DB Admin Module.</p> <p>Lists each tablespace by name, including Usage, Size Mgs, Free Mgs, Used Mgs, Free Pct, Used Pct, and Used Pct of Max.</p>
Files	<p>Lists each tablespace by name, including Type, Status, Used MB, Free MB, Reclaimable MB, Min MB, Initial Extent, Next Extent, Min Extents, Max Extents, Percent Increase, and Filename.</p> <p>Note: By default, Reclaimable MB and Min MB are not filled in. The query used to calculate this data can be slow. Click Calculate Reclaimable MB to populate these columns. In addition, you can right click on one or more datafiles and choose Shrink to Min MB to shrink the selected datafiles.</p>
Free Space (in KB)	<p>Lists each tablespace by name, including Blocks, Min, Average, Max, and Total.</p>
Objects	<p>Select a Tablespace from the dropdown list. Toad will display all objects contained within the selected tablespace, including Owner, Object Name, Object Type, Size (MB), Initial Extent, Next Extent, Num Extents, and Size (bytes).</p> <p>The totals of Size (MB), Num Extents, and Size (bytes) will be listed on the "TOTAL SIZE" line, at the bottom of the list.</p>
Fragmentation	<p>This tab describes the fragmentation of your tablespace, including the number of total blocks, empty blocks, how many fragments (pieces) there are, the sizes of those pieces (largest, smallest and average) and the number of extents are below the high water mark.</p>
Space History	<p>Note: The Space, Space History, and IO History tabs are only available in the commercial version of Toad with the optional DB Admin Module.</p>

Tab	Description
	<p>Admin Module.</p> <p>From the Space History tab, Space Manager tracks and forecasts database usage over time, displaying the results in an easy to read, and easily configured graph format.</p> <p>For more information, see Using Space Manager.</p>
IO History	<p>Note: The Space, Space History, and IO History tabs are only available in the commercial version of Toad with the optional DB Admin Module.</p> <p>From the Space History tab, Space Manager tracks and forecasts datafile usage over time, displaying the results in an easy to read, and easily configured graph format. For more information, see Using Space Manager.</p>

Tablespace Details

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Tablespace Details window displays the same information that is found in the Schema Browser | Tablespaces tab. However, because it is displayed in a unique window, the majority of the grid can be seen without scrolling.

To Access Tablespace Details

- » From the View Tablespaces window, in either the **Space** or **Data Files** tab, double-click a **tablespace**.

Datafiles tab

Lists general information about the file, for example, number of files in each file, a usage graph, the percentage used, and so on.

Free Space tab

Displays the statistics for the free space parameters of the datafile.

Fragmentation tab

Displays the number of files and information about the general fragmentation of those files, including number of pieces, the size of those fragments, and the number of empty blocks remaining.

Objects tab

Displays a list of all objects in the datafile and their pertinent statistics.

Quotas tab

Displays a list of quotas and space-used statistics by user for the selected datafile.

Extents tab

Displays a list of segments, owners and ID numbers for extents.

Space Manager

Space Manager Setup

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Toad Space Manager is a part of the [View Tablespaces](#) window. In order to use Space Manager, you must have certain objects in the TOAD Schema.

To access Space Manager

You must have SELECT access on several V\$ tables to use this option. To see a list of required permissions, see [Space Manager Setup](#).

1. From the Database menu, select **Administer | Tablespaces**.
2. Space Manager consists of the final two tabs on the Tablespaces window: **Space History** and **IO History**. Click one of these tabs to access Space Manager.

Setting up Space Manager

Before you can use Space Manager, you must set up specific objects in the Toad schema. These objects can be created from Space Manager, or from the [Server Side Objects](#) wizard.

To Set up Space Manager

1. Click the **Create/Recreate Toad Space Manager Tables** button . If you are not logged in under the Toad Schema, the following dialog box appears:

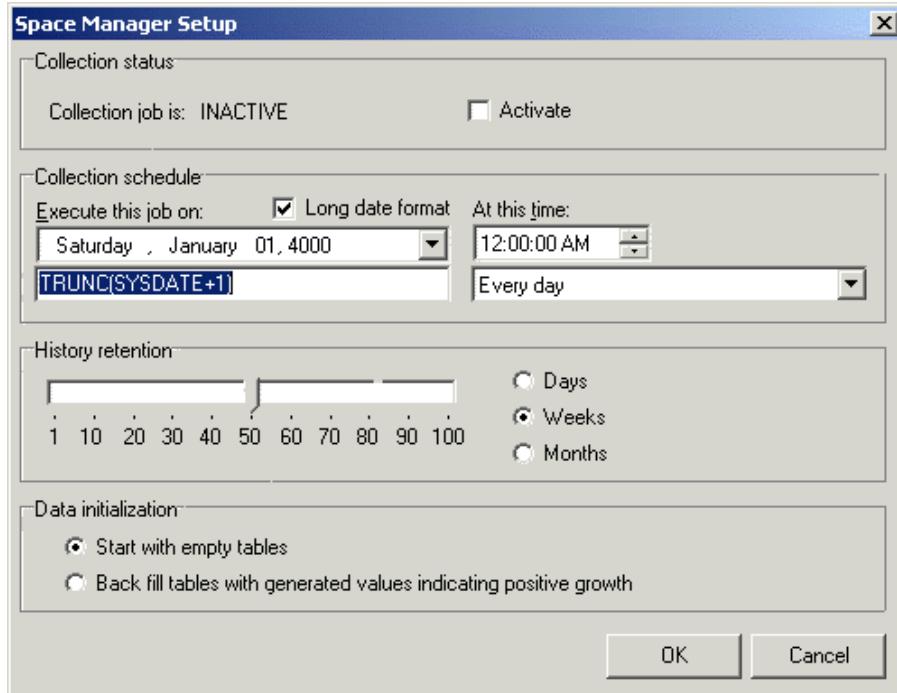


2. Click **OK** and then log in under the Toad schema.

Note: The Toad schema must have the privileges to create and alter jobs, create and drop its own tables and procedures, and must have SELECT access on: DBA_TABLESPACES, DBA_DATA_FILES, DBA_FREE_SPACE, and V_\$FILESTAT.

3. From the Toad schema, View **Tablespaces**, click the **Create/Recreate Toad Space Manager Tables** button . If there are already Space Manager tables present, a confirmation dialog box appears. Selecting yes will lose all existing data.

Click Yes.



4. The Collection Status area shows the status of the existing Space Manager job: Active, Inactive, or Not Present. When the Space Manager tables are recreated, the job will be created or activated if necessary.
5. Set **collection schedule information**:

Field	Additional Information
Execute	<p>Enter the starting date to the job. Click the drop down to display a calendar, or edit the day and year directly in the edit box.</p> <ul style="list-style-type: none">If the collection job is not present, then the default is a few minutes in the future.If the collection job is active, then the default is the Next Execution date of the existing collection job. If the collection job is inactive, then the default is many years in the future (this is what Oracle stores as the Next Execution date of the existing job)

Field	Additional Information
At this time	<ul style="list-style-type: none">• Select a choice from the drop down menu below the At this time: field,• Or you can enter the formula by hand in the field beneath the Execute this job on: field. Each time after the job is executed, Toad will use this formula to calculate the next date of execution. <p>Note: Whatever formula is entered in these fields, Space Manager cannot collect information more frequently than once daily.</p>

6. Set the **History Retention** information.

7. Set the **Data initialization** information:

Start with empty tables	Data is presented from the first collection only. No attempt is made to back-fill history.
Back fill tables with generated values indicating positive growth	Data is presented with a generated history: this history is created by Toad, and indicates an increase in space usage over time.
Toad creates the necessary tables to maintain the Space Manager history. The information in these tables provides the basis for the graphs displayed on the Space Manager tabs.	

To edit Space Manager setup information

You can edit Space Manager information in a similar manner to setting it up. If the collection job has been dropped, Collection Status will display as Not Present. Altering the Space Manager settings will recreate the job.

1. You must be logged in under the Toad schema. From the Database | Administer menu, select **Tablespaces**. The Tablespace window appears.
2. Click either the **Space History** or **IO History** tab.
3. Click . Change the information as described in [Setting Up Space Manager](#) and then click **OK**.

Using Space Manager

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Toad Space Manager is a part of the View Tablespaces window. In order to use Space Manager, you must have certain tables created in the TOAD Schema. Space Manager can add these tables automatically. See "Setting up Space Manager" (page 362) for more information about how to add these tables to the TOAD Schema.

Space Manager tracks and forecasts database usage over time, displaying the results in an easy to read, and easily configured graph format.

To access Space Manager

You must have DBA privileges to view the Space Manager windows.

1. From the Database menu, select **Administer | Tablespaces**.
2. Space Manager consists of the final two tabs on the View Tablespace window: Space History and IO History. Click one of these tabs to access Space Manager.

Space History Tab

Note: This Toad feature is only available in the commercial version of Toad with the optional **DB Admin Module**.

The Space History area of the Space Manager graphs usage in several different ways. In addition, you can print the graphs, and forecast future usage. See "Using Space Manager" (page 364) for more information.

Graph Usage

The graph on the Space History tab displays the tablespace usage.

To change the display configuration

- » Do one of the following:

View all the Tablespaces	Uncheck the By datafile box and select <All> from the Tablespaces dropdown.
Select a specific tablespace	Uncheck the By datafile box and select a tablespace from the dropdown Tablespaces: menu.
View tablespaces by Datafile	Check the By datafile box and select a datafile from the dropdown Datafile menu.

View all the Datafiles

Check the **By datafile** box and select **ALL** from both dropdowns.

To find a single line

1. Click the tablespace in the legend and highlight the line you want to see.
2. Click the line and highlight it.

Move your mouse over a line. The status bar displays the tablespace name, the date and # mb for that date. For example:

SYSTEM (12/11/2002, 123 mb)

Forecast Usage

You can forecast usage of tablespaces and datafiles using the Forecasting tool. You can set the number of days in the future and Toad uses linear regression (continuation of a line based on its slope or trend) to extrapolate the tablespace and datafile space usage at the specified time.

To forecast usage

1. Create your graph as described above in Graph Usage to create the graph you want to forecast.
2. On the **Space Manager** toolbar, click 
3. At the bottom of the forecast window, you can select the **number of days** (the default is 30) in the future you want to forecast. The estimated number of MB appears, and the graph changes as you change the number of days.
4. Click **Print** to print the forecast.
5. Click **OK** to close the forecast window.

Zoom

To zoom a graph

- » Zoom in on a specific area by dragging a rectangle from left to right, around the area you want to zoom.

To restore a graph

- » Drag a rectangle from the right to left, and the chart will zoom back to 100%.

Print Graph

When you have selected the graph view you want, you can print it from the toolbar above the graphs.

To print a graph

- » Click  and the graph is sent directly to the default printer.

IO History Tab

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The IO History portion of the Space Manager tracks datafile I/O history.

To select datafiles

- » Select the datafile to view by clicking the dropdown menu at the top of the tab, and selecting the datafile (or All Datafiles) from the list. The graph changes immediately to display the information for the new datafile.

To print a graph

- » Click  and the graph is sent directly to the default printer.

Zoom

To zoom a graph

- » Zoom in on a specific area by dragging a rectangle from left to right, around the area you want to zoom.

To restore a graph

- » Drag a rectangle from the right to left, and the chart will zoom back to 100%.

Redo Log Manager

Redo Log Manager

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Oracle background process log writer (LGWR) stores information about database changes in redo log files. These files can be used to recover the database in case of failure by reapplying the changes. The redo records are stored in the redo log buffer in the SGA and then written to the redo log files when either the buffer is full or the associated transaction is committed.

To access the Redo Log Manager

- » From the Database menu, select **Administer | Redo Log Manager**.

The DBA defines "groups" of identical (same size) redo logs, so that LGWR simultaneously writes identical information in parallel to each member of a group and switches between groups in a circular fashion. Each redo log within a group is called a "member". An Oracle database must have at least two groups, so that one group can be active while the other group can be archived (if in ARCHIVELOG mode).

The lower pane displays the members of the selected group.

Upper pane

The upper pane displays groups and information pertaining to them at a glance.

Tip: The current Group is highlighted in blue.

If a log group is unbalanced, then the Members column will display in red and a suggestion for fixing it displays above the grid. In addition, you can use the toolbar to:



Button	Command
	Change sessions
	Refresh the screen
	Add log group
	Drop selected log group
	Clear selected log group
	Switch logs
	Alter system archive log

Lower Panel

The lower panel contains the details for the members of each log group. From the toolbar you can access each member, make changes to it or drop it.



Button	Command
	Refresh grid

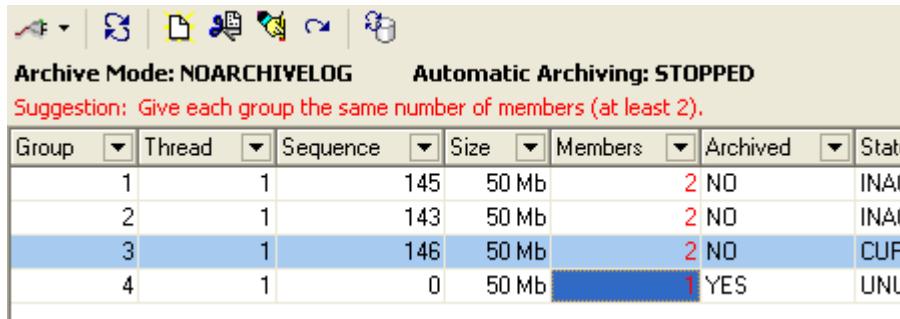
Button	Command
	Add log group member
	Drop log group member

Balancing Redo Log Groups

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Redo Log groups can be managed from the Redo Log Manager. Each redo log group must have an equal number of members (redo log files), and each redo log file must be the same size as all others.

If either of the above conditions is not met, the entry is considered out of balance and displayed in red. For example:

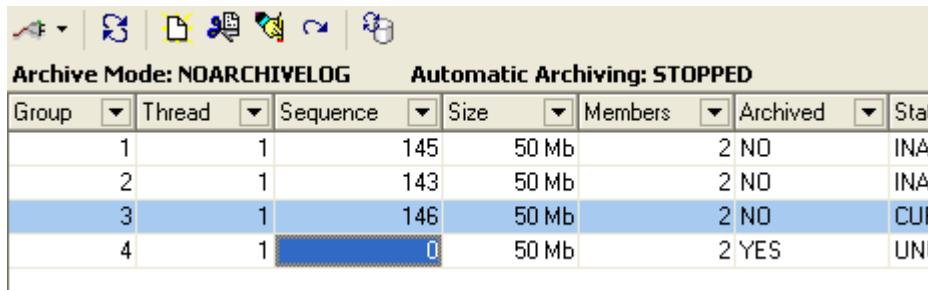


Group	Thread	Sequence	Size	Members	Archived	Status
1	1	145	50 Mb	2	NO	INAC
2	1	143	50 Mb	2	NO	INAC
3	1	146	50 Mb	2	NO	CUR
4	1	0	50 Mb	1	YES	UNU

In this example, Group 4 does not meet the member condition: there is only one member contained in it, rather than the 2 members of each of the other groups.

Add another member using the **Add** button below the grid in the lower panel.

The Members grid will now appear as follows, entirely in black:



Group	Thread	Sequence	Size	Members	Archived	Status
1	1	145	50 Mb	2	NO	INA
2	1	143	50 Mb	2	NO	INA
3	1	146	50 Mb	2	NO	CUR
4	1	0	50 Mb	2	YES	UNI

Importing and Exporting Data

Data Pump

Data Pump Overview

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

The Oracle data pump is an import/export utility added in Oracle 10g. It is significantly faster and more efficient at loading large volumes of data than the standard import/export utilities.

Note: The data pump can only handle parameter files with ANSI encoding. In order to use the data pump in a Unicode environment, your character set must be the same as that of the data in the file.

Key differences between the two import/export engines are as follows:

Import/Export	Data Pump
Runs on the client machine	Runs on the database server
Accesses files on client machine	Accesses files on the database server
Transfers data across SQL*Net	No data transfers across network
Modal utilities (cannot initiate a process and then detach)	Non-modal utilities (can initiate a process and then detach)
Works with any version of Oracle client	Works only with Oracle clients version 10g and up

Because data pump client processes can detach from a session running on a server, you can close the import/export execution window without killing the job. The import/export will continue.

Note: The data pump engine generates files that are incompatible with the old import/export utilities. This also means that the Toad Export File Browser cannot be used to open or review data pump generated export files.

To access the data pump

» Please see:

- Import Wizard (page 375)
- Export Wizard (page 385)

Data Pump Requirements

You must have read/write permissions to the export directory to use the data pump. Local directories must be shared, have read/write permissions and be indicated by the network path.

In addition, you must have the import/export utilities in your client Oracle bin directory. Some 10g installations may not automatically install these utilities. The utilities required are:

- IMPDP.EXE is the Data Pump client import utility
- EXPDP.EXE is the Data Pump client utility

Note: These utilities are not the same as the old import/export utilities. If you need to import data from an older version of Oracle, you will need the old utilities. (See Import Utility Wizard (page 419) or Export Utility Wizard (page 410) for more information.)

The paths for these utilities are stored in the Toad.ini file. You can view and change them from **View | Toad Options | Executables**. If the Import/Export Utility Wizard is opened and no path has been specified for the export utility, Toad will search for the path and enter it automatically, if it exists.

Data Pump Job Manager Overview

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

The Data Pump Job Manager provides a way of tracking your data pump jobs. Because the Data Pump is not limited to a connection, the windows can be closed after starting a job. The job manager gives you the ability to manage these jobs and start, stop and kill them after the Data Pump wizard window has been closed.

To open the Data Pump Job Manager

» From the **Database | Import** menu, select **Data Pump Job Manager**.

Data Pump Job Manager Toolbar



Button	Command
	Change active session. In the drop down list, the active session is denoted by a
	Start selected jobs
	Stop selected jobs
	Kill selected jobs

Button	Command
	Refresh grid

Setting up an Import/Export Directory

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

You must have an import/export directory set up in order to use the Data Pump.

To use the Data Pump, you must have Read/Write permissions to the import/export directory. Local directories must be shared, have read/write permissions, and be indicated by the network path. See "Data Pump Overview" (page 370) for more information.

Create a directory, on the network or locally, being sure that the users you want to use the data pump have read/write permissions, and that the directory is shared. See [Setting up an Import/Export Directory](#) for more information.

Remapping Schemas, Tablespaces, and Datafiles

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

You can remap schemas, tablespaces, and datafiles depending on the mode and choices you have made. The tabs for these will usually all appear. However, if you choose one that is inappropriate to the choices made, it will fail when run by Oracle.

The remapping grid requires the following:

- A source can only appear once in each remapping grid.
- A row must contain both a source and a target.

To remap

1. From the remapping screen of the Data Pump Import wizard, click the tab of the type of object you want to remap (Remapped Schemas, Remapped Tablespaces, or Remapped Datafiles).
2. Click in the **Source** column and enter the name of the schema, tablespace or datafile you want to remap.
3. Do one of the following:
 - Press **TAB**
 - Click in the **Target** column.
4. Enter the name of the schema, tablespace or datafile where you want the data in the **Source** column to be placed.
5. Click the **+** button to add additional remappings.

To remove a remap from the grid

- » Select an item in the grid and then click the - button to remove it.

Filtering Data with Queries

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

When importing or exporting data using the data pump, you can use queries to filter the data you import or export. See "Data Pump Overview" (page 370) for more information about the various features of the data pump.

The format of these queries is important and will have an effect on the data you import or export.

The query statement must be in the following format:

```
[[schema_name.]table_name:] "query_clause"
```

The schema name and table name are optional. The query_clause is a WHERE statement.

If the table name is not specified, the query will be applied to all tables.

Some sample query statements are as follows:

Statement	Definition
DEPT:"WHERE DName='ACCOUNTING'"	Limits the import for the DEPT table to just those rows where the column DName='Accounting'.
SCOTT.EMP:"WHERE EName='SMITH'"	Limits the SCOTT.EMP table.
"WHERE Col1=10"	Limits ALL table sin the dump file. Each table will have to have a "Col1" for this query to work.

Effect of remapping on queries

Remapping a schema to a different schema when importing can affect the results of queries. For example, in the second query above, that limits the SCOTT table, if you remap the SCOTT schema to JSMITH, then the query will fail, and all data will be imported. See "Remapping Schemas, Tablespaces, and Datafiles" (page 372) for more information.

In this scenario, the first and third queries will still function.

Failure versus no Results

A query fails when it cannot be resolved.

For example:

- When you remap a schema to a new schema and then look for the old schema, all data will be imported.
- If, in the third query example above, some tables did not have a Col1, all data would be imported/exported.

If the query is valid, but results in no matches, no data will be imported/exported.

For example:

- In the first query example, there is a column DName, however there are no entries where DName=Accounting. No data will be imported/exported from the DEPT table.
- In the third query example above, all tables have a Col1, but none of them have an entry of 10. No data will be imported/exported from any table.

Using the Metadata Filter Grid

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

One of the distinct advantages to the Data Pump is that you can filter data using a metadata filter: you can filter by object type. See "Data Pump Overview" (page 370) for more information.

Using the metadata filter page of the import/export wizards, you can choose to include or exclude entire categories of objects. You can further filter those categories by adding a name qualifier to the grid in the Clause box. (For more information, please see your Oracle documentation).

To use the metadata filter grid

1. Select the check boxes beside the types you want to filter.
2. In the Clause box, enter any further selection criteria you want to use. (See "Example" (page 374) for more information.)
3. Select whether you want to:
 - Include - include only selected data types.
 - Exclude - exclude only selected data types.
4. No metadata filter (this is the default).

Example

You want to import Table metadata from only tables that match a specific criteria.

1. Select TABLE in the grid, by clicking in the check box.
2. Click INCLUDE. This limits the import to table metadata only.

Note: If you clicked EXCLUDE, then only table metadata would be excluded from the export, and all other types would be included.

3. To filter the metadata further, enter a filter criteria. This is optional, and is a further refinement of how you can control what gets put into the import or export.

The criteria must be a SQL expression, and operates on the metadata. In this example, enter “**LIKE ‘SCRIPT%’**.”

Note: In the dumpfile, there are only two tables in the JSMITH schema whose names match this criteria and none in the SCOTT schema so Oracle returns only the metadata for the two JSMITH tables imported.

Import Wizard

Data Pump Import Wizard

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

The Data Pump Import wizard lets you use easily use Oracle's Data Pump to import data into the database on a large scale.

There are five import modes to the Data Pump:

- Full Import
- Schema
- Table
- Tablespace
- Transportable Tablespace

The Toad wizard supports all of these, and adds support for loading and running an existing parameter file.

To access the data pump import wizard

1. From the **Database** menu, select **Import**.
2. Select **Data Pump Import Wizard**.

Performing a Full Import

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

The default mode for importing is "Full." This means that Oracle will import the entire dumpfile in whatever export mode was used to create it. So if you have exported as "tablespaces" doing a full import will import it in its entirety, in "tablespace" mode.

Note: Most parameters in the following procedure are defined by Oracle. Please see your Oracle documentation for more detailed information about them.

To perform a full import

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Import | Data Pump Import Wizard**.
2. Select **Import**, and select **Entire Dumpfile** from the drop down menu.

Refer the following for additional information:

Queries	Information
Enter Queries	See "Filtering Data with Queries" (page 373) for more information about queries.
Schemas	Information
Remap Schemas	See "Remapping Schemas, Tablespaces, and Datafiles" (page 372) for more information.
Specify Additional Parameters	Information
Provide status every <i>n</i> seconds	Enter the number of seconds you want between display of status reports. Enter 0 to update only on completion of each object type.
Object types to INCLUDE OR EXCLUDE	Information
Specify object types to INCLUDE or EXCLUDE	See "Using the Metadata Filter Grid" (page 374) for more information.
Source Directory & Input file name	Information
Directory	See "Setting up an Import/Export Directory" (page 372) for more information. Directories must be set up in this manner.
Input file	Must exist in the selected directory.
Log file	Will be created in the selected

	directory.
SQL file	If provided, the import will not occur: the DDL necessary to perform the import will be generated and stored in a file of the given name, and the file will be created in the directory specified by the Directory selection.

3. Complete the wizard.

Entering Table Names

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

When importing tables using the Data Pump Import wizard, you must enter the table names into the grid. The format of these table names is very important to the import.

The format for table names is as follows:

```
[SCHEMA] .TABLENAME : [partition name]
```

The schema and partition name is optional; however, if no schema is designated in the entry, the current *user* is assumed. Therefore, if you are logged in as JSMITH, and importing tables from the SCOTT schema, you must prefix the table name with SCOTT, as follows:

```
SCOTT . SCOTTSTABLE
```

You can also import partitions using this feature. An example of a partition syntax is as follows:

```
SCOTT . SCOTTSTABLE : scotts_partition
```

Importing Tables

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

You can use the Data Pump Import wizard to import tables. If you are importing all the tables from a dumpfile, you may prefer to do a "full import" and just specify Tables - Include at Step 14. See "Import Wizard" (page 375) for more information.

Using the Import tables mode gives you the opportunity to specify which tables you want to import.

Note: Most parameters in the following procedure are defined by Oracle. Please see your Oracle documentation for more detailed information about them.

To import tables

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Import | Data Pump Import Wizard**.
2. Select **Import**, and select **Tables**.

Refer to the following for additional information:

Add Table Names	Information
Add table names	See "Entering Table Names" (page 377) for more information about formatting.
Enter queries	Information
Add queries	See "Filtering Data with Queries" (page 373) for more information about queries.
Remapping	Information
Remapping to different areas	See "Remapping Schemas, Tablespaces, and Datafiles" (page 372) for more information.
Additional Parameters	Information
If a table exists:	Select the appropriate action. This is equivalent to the TABLE_EXISTS_ACTION parameter.
Provide status every <i>n</i> seconds	Enter the number of seconds you want between status reports. Status reports are displayed in the Data Pump watch window. Enter 0 to only update upon completion of each object type.
Object Types to INCLUDE or EXCLUDE	Information
Object types to include or exclude	See "Using the Metadata Filter Grid" (page 374) for more information.

Source Directory and File Information	Information
Directory	See "Setting up an Import/Export Directory" (page 372) for more information. Directories must be set up in this manner.
Input File	Must exist in the selected directory.
Log File	Will be created in the selected directory.
SQL File	If provided, the import will not occur: the DDL necessary to perform the import will be generated and stored in a file of the given name, and the file will be created in the directory specified by the directory selection.

3. Complete the wizard.

Importing Users

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

You can use the Data Pump Import wizard to import users. If you are importing all the users from a dumpfile, you may prefer to do a "full import" and just specify Users - Include at Step 14. See "Import Wizard" (page 375) for more information.

Using the Import Users mode gives you the opportunity to specify which users you want to import.

Note: Most parameters in the following procedure are defined by Oracle. Please see your Oracle documentation for more detailed information about them.

To import users

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Import | Data Pump Import Wizard**.
2. Select **Import**, and select **Users** from the drop down menu.

Refer to the following for additional information:

Add Users	Information
Add users	Users not currently in the database can be manually entered by typing the user name and pressing ENTER.
Enter queries	Information
Add queries	See "Filtering Data with Queries" (page 373) for more information about queries.
Remapping	Information
Remapping to different areas	See "Remapping Schemas, Tablespaces, and Datafiles" (page 372) for more information.
Additional Parameters	Information
If a table exists:	Select the appropriate action. This is equivalent to the TABLE_EXISTS_ACTION parameter.
Provide status every <i>n</i> seconds	Enter the number of seconds you want between status reports. Status reports are displayed in the Data Pump watch window. Enter 0 to only update upon completion of each object type.
Object Types to INCLUDE or EXCLUDE	Information
Object types to include or exclude	See "Using the Metadata Filter Grid" (page 374) for more information.
Source Directory and File Information	Information
Directory	See "Setting up an

	Import/Export Directory" (page 372) for more information. Directories must be set up in this manner.
Input File	Must exist in the selected directory.
Log File	Will be created in the selected directory.
SQL File	If provided, the import will not occur: the DDL necessary to perform the import will be generated and stored in a file of the given name, and the file will be created in the directory specified by the directory selection.

3. Complete the wizard.

Importing Tablespaces

You can use the Data Pump Import wizard to import tablespaces. If you are importing all the tablespaces from a dumpfile, you may prefer to do a "full import" and just specify Tablespaces - Include at Step 14. See "Import Wizard" (page 375) for more information.

Using the Import Tablespaces mode gives you the opportunity to specify which tablespaces you want to import.

Note: Most parameters in the following procedure are defined by Oracle. Please see your Oracle documentation for more detailed information about them.

To import tablespaces

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Import | Data Pump Import Wizard**.

Select **Import**, and select **Tablespaces** from the drop down menu.

Enter queries	Information
Add queries	See "Filtering Data with Queries" (page 373) for more information about queries.
Remapping	Information

Remapping to different areas	See "Remapping Schemas, Tablespaces, and Datafiles" (page 372) for more information.
Additional Parameters	Information
If a table exists:	Select the appropriate action. This is equivalent to the TABLE_EXISTS_ACTION parameter.
Provide status every <i>n</i> seconds	Enter the number of seconds you want between status reports. Status reports are displayed in the Data Pump watch window. Enter 0 to only update upon completion of each object type.
Object Types to INCLUDE or EXCLUDE	Information
Object types to include or exclude	See "Remapping Schemas, Tablespaces, and Datafiles" (page 372) for more information.
Source Directory and File Information	Information
Directory	See "Setting up an Import/Export Directory" (page 372) for more information. Directories must be set up in this manner.
Input File	Must exist in the selected directory.
Log File	Will be created in the selected directory.
SQL File	If provided, the import will not occur: the DDL necessary to perform the import will be generated and stored in a file of the given name, and the file will be created in the directory

	specified by the directory selection.
--	---------------------------------------

2. Complete the wizard.

Importing Transportable Tablespaces

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

The transportable tablespace allows you to quickly move a subset of an Oracle database from one Oracle database to another.

You can create a transportable tablespace through the Data Pump Import wizard.

To import a transportable tablespace

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Import | Data Pump Import Wizard**.

Select **Import a transportable tablespace**.

Datafile Path and filenames	Information
Directory path and filename for each datafile.	Enter a fully qualified directory path and filename for each datafile. Note: An Oracle DIRECTORY object cannot be used for this step.
Enter queries	Information
Add queries	See "Filtering Data with Queries" (page 373) for more information about queries.
Remapping	Information
Remapping to different areas	See "Remapping Schemas, Tablespaces, and Datafiles" (page 372) for more information.
Additional Parameters	Information
If a table exists:	Select the appropriate action. This is equivalent to the TABLE_EXISTS_ACTION

	parameter.
Provide status every <i>n</i> seconds	Enter the number of seconds you want between status reports. Status reports are displayed in the Data Pump watch window. Enter 0 to only update upon completion of each object type.
Source Directory and File Information	Information
Directory	See "Setting up an Import/Export Directory" (page 372) for more information. Directories must be set up in this manner.
Input File	Must exist in the selected directory.
Log File	Will be created in the selected directory.
SQL File	If provided, the import will not occur: the DDL necessary to perform the import will be generated and stored in a file of the given name, and the file will be created in the directory specified by the directory selection.

2. Complete the wizard.

Importing from an Existing Parameter File

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

You can load any existing parameter file that you have created from a previous import. This lets you prepare your import in advance, load the parameter file later and import your data.

To load an existing parameter file

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Import | Data Pump Import Wizard**.
2. Select **Load Existing Parameter File**.

-
3. Complete the wizard.

Related Topics

- [Data Pump Overview \(page 370\)](#)
[Import Wizard \(page 375\)](#)
[Export Wizard \(page 385\)](#)
[Performing a Full Import \(page 375\)](#)
[Importing Tables \(page 377\)](#)
[Importing Users \(page 379\)](#)
[Importing Tablespaces \(page 381\)](#)
[Importing Transportable Tablespaces \(page 383\)](#)

Export Wizard

Data Pump Export Wizard

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

There are five export modes to the Data Pump:

- Full Export
- Schema
- Table
- Tablespaces
- Transportable Tablespaces

The Toad wizard supports these modes, and adds support for loading and running an existing parameter file.

To open the data pump export wizard

- » From the Database menu, select **Export** and then **Data Pump Export Wizard**.

Exporting Tables

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

See "Export Wizard" (page 385) for more information.

Note: Most parameters in the following procedure are defined by Oracle. Please see your Oracle documentation for more detailed information about them.

To export tables

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Export | Data Pump Export Wizard**.

Select **Export**, and select **Tables** from the drop down menu.

Tables	Information
Selections tab	Lists the tables you have selected.
Queries	Information
Enter any queries you want to use to limit the data exported	See "Filtering Data with Queries" (page 373) for more information about queries.
Destination Directory and Output file names	Information
Directory	See "Setting up an Import/Export Directory" (page 372) for more information. Directories must be set up in this manner.

2. Complete the wizard.

Exporting Users

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

You can export users with the [Data Pump Export wizard](#).

Note: Most parameters in the following procedure are defined by Oracle. Please see your Oracle documentation for more detailed information about them.

To export users

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Export | Data Pump Export Wizard**.
2. Select **Export**, and select **Users** from the drop down menu.

You can choose to display in the available users panel only those users that own objects.

Refer to the following for additional information:

Queries	Information
Enter any queries you want to use to limit the data exported	See "Filtering Data with Queries" (page 373) for more information about queries.
Object Types to INCLUDE or EXCLUDE	Information
Select any object types to include or exclude in the dumpfile.	See "Using the Metadata Filter Grid" (page 374) for more information.
Destination Directory and Output file names	Information
Directory	See "Setting up an Import/Export Directory" (page 372) for more information. Directories must be set up in this manner.

3. Complete the wizard.

Exporting Databases

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

See "Export Wizard" (page 385) for more information.

Note: Most parameters in the following procedure are defined by Oracle. Please see your Oracle documentation for more detailed information about them.

To export the current database

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Export | Data Pump Export Wizard**.
2. Select **Export**, and select **Database** from the drop down menu.

Refer to the following for additional information:

Queries	Information
---------	-------------

Enter any queries you want to use to limit the data exported	See "Filtering Data with Queries" (page 373) for more information about queries.
Object Types to INCLUDE or EXCLUDE	Information
Select any object types to include or exclude in the dumpfile.	See "Using the Metadata Filter Grid" (page 374) for more information.
Destination Directory and Output file names	Information
Directory	See "Setting up an Import/Export Directory" (page 372) for more information. Directories must be set up in this manner.

3. Complete the wizard.

Exporting Tablespaces

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

You can export tablespaces with the [Data Pump Export wizard](#).

Note: Most parameters in the following procedure are defined by Oracle. Please see your Oracle documentation for more detailed information about them.

To export tablespaces

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Export | Data Pump Export Wizard**.

Select **Export**, and select **Tablespaces** from the drop down menu.

Queries	Information
Enter any queries you want to use to limit the data exported	See "Filtering Data with Queries" (page 373) for more information about queries.
Object Types to INCLUDE or EXCLUDE	Information
Select any object types to	See "Using the Metadata Filter Grid" (page 374) for more information.

include or exclude in the dumpfile.	"Grid" (page 374) for more information.
Destination Directory and Output file names	Information
Directory	See "Setting up an Import/Export Directory" (page 372) for more information. Directories must be set up in this manner.

2. Complete the wizard.

Generating a Transportable Database

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

The transportable tablespace allows you to quickly move a subset of an Oracle database from one Oracle database to another.

You can generate a transportable tablespace through the Data Pump Export wizard. See "Export Wizard" (page 385) for more information.

Note: Most parameters in the following procedure are defined by Oracle. Please see your Oracle documentation for more detailed information about them.

To generate a transportable database

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Export | Data Pump Export Wizard**.

Select **Generate a Transportable Database**.

Queries	Information
Enter any queries you want to use to limit the data exported	See "Filtering Data with Queries" (page 373) for more information about queries..
Destination Directory and Output file names	Information
Directory	See "Setting up an Import/Export Directory" (page 372) for more information. Directories must be set up in this manner.

2. Complete the wizard.

Loading an Existing Parameter File (page 390)

Loading an Existing Parameter File

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

You can load any existing parameter file that you have created from a previous export. This lets you prepare your export in advance, load the parameter file later and export your data.

To load an existing parameter file

1. From the Database menu, select **Export | Data Pump Export Wizard**.
2. Select **Load Existing Parameter File**.
3. Complete the wizard.

Export Dataset

Export Dataset

Use this dialog box to export the current SQL results panel to the clipboard or a file. In addition, you can set your choices here and then run the actual export of the results from the command line later. See "Export Tables, Views, SQL Queries from the Command Line" (page 828) for more information.

To save grid contents

- » Right-click over a data grid and select **Export Dataset**.

Note: Save As includes CLOBs and BLOBs automatically. LONG columns are not saved using this method. See "Editing LONG and LONG RAW columns" (page 957) for more information.

When you have opened the Export Dataset window, you can customize how you save your data. You can customize the Format, and the file path. See "File Formats and Options" (page 391) for more information.

To customize the file path

1. Enter the correct file path in the **Save to file** box at the bottom of the **Save Grid Contents** window.
2. Dynamic filenames are supported using variables. You can embed a date or a timestamp within a filename.

Sorted Grids

If you have chosen to sort a grid dataset (by clicking the column header, rearranging column order, and so on), the exported data remains in the sorted order (as shown in the grid).

File Formats and Options

Saving Formats

When exporting a dataset from a grid, you have the choice of several different formats. Each format provides different options to customize your file. These formats include:

Some of these formats let you copy to the clipboard; for others you are required to save the document to a file. The options vary depending on which format you choose.

- Access Database File (page 391)
- Text Options (page 392) (delimited text)
- Fixed Field Spacing (page 393)
- HTML Options (page 393)
- Insert Statements Options (page 394)
- Commit Intervals (page 394)
- SQL*Loader Options (page 395)
- XLS File Options (page 392)
- XLS Instance Options (page 393)
- XML (Plain) Options (page 395)
- XML (With XSL) Options (page 396)

Note: There may be problems with your export in the following formats if your table contains columns containing XML data:

- SQL Loader
- XML (with XSL)
- XML (Plain)

Access Database File

Select this option in the Export Dataset window to save your data as an MDB (Access Database) file. See "Export Dataset" (page 390) for more information.

You can also set the following options:

- Change file where doc is saved
- Compress file in zip format
- Launch File after Creation

- Data Substitutions (for columns)
- Display all exported results in grid
- Export selected rows
- If MDB file exists..
- Create table in MDB file
- Prompt for overwrite/abort
- Automatically detect table name
- Name
- If Table exists...
- Append rows (if columns match)
- Overwrite
- Abort

Text Options

When you select text from the Export Dataset window, you can set the delimiter to your choice. The default is a pipe (|). See "Export Dataset" (page 390) for more information.

To change to a common delimiter

- » Right click in the delimiter box and then select the delimiter you want to use, or type the delimiter in using the keyboard.

When you change this delimiter, Toad will remember your choice.

XLS File Options

If, from the Export Dataset window, you choose to export to an XLS file, you can choose from a long list of options. You can:

- Display all exported results in grid
- Export selected rows
- Include null text
- Include column headers
- Lowercase
- Quoted
- Include SQL statement
- Include cell borders
- Use only "General" cell formatting
- Match cell fonts to grid
- Hide time portion of date if zero

- Write wide strings (This feature can help Unicode export correctly. It is unchecked by default because it can slow the XLS writer down dramatically.)
- Auto column width
- Click the Data Substitutions button (See [Substitutions](#) for more information.)
- Set date or number formats
- Set papersize
- Name worksheet

XLS Instance Options

Selecting Instance options from the Export Dataset window creates an Excel file within the current Excel instance running on your machine. The following options are available:

- Include NULL text
- Export selected rows
- Start at active cell - if selected, this places the exported data (the top left corner) in the active cell in MS Excel. Using this option you can place the data anywhere you want, vertically or horizontally on any sheet. When unchecked, the data will start in the A1 cell of a new sheet.
- Treat string fields as strings - if selected, Toad sends a single quote before a string field making Excel treat it as a string. Leading zeros are preserved.
- Include column headers -if selected, lowercase column headers become available.
- Specify a Sheet name
- Click the Data Substitutions button (See [Substitutions](#) for more information.)

Fixed Field Spacing

You can export your grid from the Export Dataset window with a fixed field width. See "Export Dataset" (page 390) for more information.

Widths are derived from the column definitions.

Note: Widths come from the definition of the table in the database, not the way it looks in the grid.

- Click the [Substitutions](#) button

HTML Options

You can choose to export your results from the Export Dataset window as an HTML table.

If you choose this format, you can choose from the following options:

- Export selected rows
- Include null text

- Include column headers - Lowercase or quoted
- Include cell borders
- Word wrap
- Substitute column values

Insert Statements Options

If you choose to export your results from the Export Dataset window as INSERT statements, column headers will automatically be included. See "Export Dataset" (page 390) for more information. You can also set the following options:

- Display all exported results in grid
- Export selected rows
- Include null text
- Include schema name
- Include SQL Statement
- Include "set define off"
- Lowercase column names
- Column names in values clause
- Set commit interval

Note: A commit interval of 0 (zero) will produce one insert statement after all of the SQL statements. A commit interval of -1 will leave off the commit entirely.

- Automatically detect schema and name
- Set Schema and name
- Set Data Substitutions. (See [Substitutions](#) for more information.)

Merge Statements

Select this option to save the grid from the Export Dataset window as a series of MERGE statements. This merge is created based on the table's primary key. If no primary key is found, you can select columns to merge on. Invisible grid columns are excluded from the merge statement. See "Export Dataset" (page 390) for more information about exporting grid contents.

Commit Intervals

A commit interval of 0 (zero) will produce one insert statement after all of the SQL statements.

A commit interval of -1 will leave off the commit entirely.

Note: You can generate these statements from any version of Oracle, but can run them only in Oracle 9i and newer.

SQL*Loader Options

Choosing SQL Loader from the Export Dataset window creates a SQL Loader file. See "Export Dataset" (page 390) for more information.

Select from the following options:

- Display all exported results in grid
- Export selected rows
- Parallel load
- Include schema name
- Include SQL Statement
- Operation
- Insert
- Truncate
- Append
- Replace
- Allowable Discards
- All
- Set Maximum
- Direct path load
- Recoverable
- Unrecoverable
- Field separator (default ;)
- Enclose string fields in (default ")
- Table
- Automatically detect schema and name
- Set schema and name
- Click the Substitutions button. See [Substitutions](#) for more information.

XML (Plain) Options

This format option from the Export Dataset window exports the results to a plain XML file.

You can also set other options such as:

- Display all exported results in grid
- Export selected rows

- Include null fields
- Click Data Substitution (See [Substitutions](#) for more information.)

XML (With XSL) Options

This formatting option from the Export Dataset window exports the results to an XML file with XSL. You can choose to zip the resulting file. You can also click the Substitutions button and specify substitutions for data. See [Substitutions](#) for more information.

Export DDL

Export DDL

Use this dialog box to export selected DDL to a file, the clipboard, or the editor.

To export DDL

1. Select the **Database | Export | DDL** menu item.
2. Click the **Objects & Output** tab and select objects to export. See "Select Objects to Export as DDL" (page 396) for more information.
3. Set your Output choices. See "Export as DDL Output" (page 396) for more information.
4. Click the **Options** tab and set your options. See "Export DDL Script Options" (page 397) for more information.
5. Click  to export.

Select Objects to Export as DDL

You can easily find and select objects to export as DDL. See "Export DDL" (page 396) for more information.

To select objects to export

1. From the Export DDL window, Objects and Output panel, click **Add**.
2. Use the **Object Search** window to search for the objects you want to export. See "Object Search" (page 967) for more information.
3. From the Results tab on the Object search window, multi-select the objects you want to export.
4. Click **OK**.

Export as DDL Output

You can [export DDL](#) as different types of output.

- » Select how you want to output your DDL in the Output area. You can output your DDL in several different ways:
 - Single file
 - One file per schema
 - One file per object type
 - One file per object
 - To screen
 - To clipboard
 - To Editor - as a script
 - To Editor - one object per tab
 - If you are sending the output to a file, enter the directory where you want the files saved in the **Directory** box.
 - Include "Build All" script
 - Use relative paths

Export DDL Script Options

Export DDL Script Options

You can select from many options when exporting DDL. See "Export DDL" (page 396) for more information.

These are organized on tabs, including:

- Create and Drop (page 398)
- DDL - Options - Storage Objects (page 398)
- Tables (page 399)
- Online (page 399)
- No parse (page 399)
- Indexes (page 400)
- Extract both spec and body when only one is selected in objects grid (page 400)
- Queues (page 400)
- Grants to the role (page 401)
- Start with minval (page 401)
- General options (page 401)
- Parse triggers for schema name (page 402)
- DDL - Options - Users tab (page 402)
- DDL - Options - Views tab (page 403)

DDL - Options - Common tab

The Common tab is found on the Export DDL window, on the Script Options tab. See "Export DDL" (page 396) for more information.

The options on the common tab are common to any DDL created.

Create and Drop

Schema name

When selected, Toad will include the schema name in the DDL.

Drop statement

When selected, Toad will include a drop statement as well as the create statement.

Use purge option for tables

When checked, Toad will include the Oracle purge option when dropping tables in Oracle version 10g and newer.

Related Objects

Select the related objects you want to include:

- Audit statements
- Grants
- Public synonyms
- Private synonyms

Formatting

Use the formatting area to specify special formatting options for the DDL to include.

- Script comments
- List dependencies
- Row counts for tables
- Always use "/" to end SQL statements
- One line per statement
- SQL*Plus "Prompt" comments
- Format PL/SQL objects
- "Show Errors" commands

DDL - Options - Storage Objects

The Storage Objects tab is found on the Export DDL window, on the Script Options tab.

Select the storage objects you want to include:

- Storage clauses
 - Tablespace only
- LOB storage
- Monitoring
- Cache
- Parallel
- Logging
- Compression

DDL - Options - Clusters tab

The Clusters tab is found on the Export DDL window, on the Script Options tab.

Tables

Selected, Toad will include associated Tables.

Indexes

Selected, Toad will include associated Indexes.

DDL - Options - Indexes tab

The Indexes tab is found on the Export DDL window, on the Script Options tab.

Online

When selected, Toad includes the ONLINE Option in the index statement.

Compute Statistics

When selected, Toad includes the COMPUTE STATISTICS in the index statement.

DDL - Options - Jobs tab

The Jobs tab is found on the Export DDL window, on the Script Options tab.

No parse

When selected, Toad includes the NO PARSE option in the call to dbms_job.

Force

When selected, Toad includes the FORCE Option in the call to dbms_job (RAC only).

Use interval expression for next date

When selected, Toad uses the value for INTERVAL as the parameter for NEXT_DATE in the call to dbms_job (otherwise, uses the literal date value in dba_jobs.next_date).

DDL - Options - Materialized Views tab

The Materialized Views tab is found on the Export DDL window, on the Script Options tab.

Indexes

When selected, Toad includes indexes.

Format

When selected, Toad formats the SQL statement part of the materialized view statement.

Materialized view comments

When selected, Toad includes object level comments.

Column Comments

When selected, Toad includes column level comments.

DDL - Options - Packages tab

The Packages tab is found on the Export DDL window, on the Script Options tab.

Extract both spec and body when only one is selected in objects grid

If the objects grid has only a package spec or package body listed, and the option is checked, then Toad extracts DDL for both spec and body.

Always keep spec and body in the same file or editor tab

When checked, the package spec and package body will never be separated into different files or editor tabs.

DDL - Options - Queue Tables tab

The Queue Tables tab is found on the Export DDL window, on the Script Options tab.

Queues

When selected, Toad creates the queues relating to the selected queue table.

DDL - Options - Roles tab

The Roles tab is found on the Export DDL window, on the Script Options tab.

Grants to the role

When selected, Toad includes grants made to the role. To include grants of the role to other users or roles, use the Grants checkbox on the “Common” tab.

DDL - Options - Sequences tab

The Sequences tab is found on the Export DDL window, on the Script Options tab.

Start with minval

When selected, Toad uses the MINVAL value as for START WITH in the CREATE SEQUENCE statement. When unchecked, the value for START WITH will be the value in dba_sequences.last_value.

DDL - Options - Tables tab

The Tables tab is found on the Export DDL window, on the Script Options tab.

General options

Explicitly specify NULL in table DDL

When selected, Toad will explicitly specify NULL for columns that can have nulled values.

Rebuild FK's referencing selected tables

When selected, foreign keys that reference the selected tables will be rebuilt.

Insert statements

When selected, Toad includes table data in the form of insert statements.

Table comments

When selected, Toad includes comments on the table.

Column comments

When selected, Toad includes comments on the columns of the table.

Constraints

The constraints area contains options that specifically relate to constraints on the objects selected.

Choose to include any or all of the following:

- Check constraints
- Foreign key constraints
- Primary key constraints
- Unique key constraints

List constraints after columns

When selected, constraints will be listed immediately after columns in the DDLs.

Individual "Alter Table" commands

When selected, each constraint will be created by an individual ALTER TABLE command.

Single "Alter Table" command

When selected all constraints will be created by a single ALTER TABLE COMMAND.

Other Related Objects

When any of these are selected, the object in question will be included in the DDL. Additional options limit these selections.

- Policies
- Policy Groups
- Indexes
- No constraint indexes
- Triggers
- Parse triggers for schema name

DDL - Options - Triggers tab

The Triggers tab is found on the Export DDL window, on the Script Options tab.

Parse triggers for schema name

When selected, Toad will parse selected triggers for the associated schema name. When unchecked, Toad will include the schema name in the DDL for the selected triggers. The default is checked.

DDL - Options - Users tab

The Users tab is found on the Export DDL window, on the Script Options tab.

The users tab provides options related to creating DDL from a selected user. Select options to include the listed parameters, uncheck to exclude.

- Grants on the user's objects to other users/roles
- Limited to grants by the user
- Grants to the user
- System privileges
- Tablespace quotas
- Roles
- Proxies

DDL - Options - Views tab

The Views tab is found on the Export DDL window, on the Script Options tab and provides options related to creating DDL from a selected view. Select the parameters to include, clear the parameters to exclude.

- Query only - extracts only the view's query. When this option is checked, Format is the only other option.
- Format - Format the query or "create view" statement.

Select the parameters to include, clear the parameters to exclude.

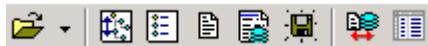
- Force
- Columns
- Comments
- Triggers
- Constraints
- Policies
- Policy groups

Export File Browser

Export File Browser Toolbar

Note: The Export File Browser is only available in Toad Professional Editions, or with the optional DB Admin module.

Caution: While the scripts produced by the Export File Browser are very good for giving you a glimpse into the objects contained in the export file, Oracle meant for these scripts to run only in the context of Oracle's IMP utility. Many extracted DDLs will run as standard SQL, and some will not. Please examine scripts produced by the Export File Browser very carefully before running them.



Button	Command
	Open Export File
	Expand all nodes
	Collapse all nodes

Button	Command
	Create script from entire export file
	Extract DDL for selected nodes and subnodes
	Save tree info as XML
	Toggle database compare mode
	Adjust dataset row limit

Viewing an Export File

Note: The Export File Browser is only available in Toad Professional Editions, or with the optional DB Admin module.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

Use the Export File browser to view the contents of an export file before you import it.

To open an export file

1. From the Database menu, select **Export | Export File Browser**.
2. On the Export File Browser toolbar, click .
3. Select a file from the Open Export File window. See "Open Export File Window" (page 405) for more information.
4. Click **OK**.

Note: If the file has not been parsed before, it may take a few minutes to process it. Processing progress will be displayed in the status area at the bottom of the window.

Finding Information in an Export File

Note: The Export File Browser is only available in Toad Professional Editions, or with the optional DB Admin module.

Use the right hand side tree view of the Export File Browser to select a portion of the export file to view. Nodes are organized by:

- Schema
- Storage
- Security

- Code
- Tuning and Configuration

Object nodes are displayed with the number of objects of that type in parentheses beside it. For example, Schemas (6). If you expand the Schemas node, you will find six schemas beneath it.

In the left hand side, you can click the DDL tab to view the code. If the selected object has data, such as a table, click the Data tab to view the data within that object.

Filtering Data

You can use the Quickfilter in the same way as it works in the Schema Browser. See "Using the QuickFilter Box" (page 993) for more information. However , it will display results in the tree view slightly differently.

Reading the Treeview

With NO filter applied (* in the Quickfilter box), you will see a node like Tables (42) if there are 42 tables in a certain schema, for example.

If a filter is applied that only makes 10 of these tables visible, that node displays one of the following: Tables (? of 42) or Tables (10 of 42).

- ? indicates that the you have not expanded the node yet, so how many pass the filter is not known.
- (10 of 42) indicates that the node has been expanded (or is currently expanded)

You will never see Tables (0 of 42) because if all tables are filtered out, then the Tables node is hidden too. Schema-level nodes are never hidden, even if everything under them is hidden.

To find something quickly

1. Open the export file in the Export File Browser.
2. Type its name or an appropriate filter in the **Quickfilter** box.
3. Click the **Expand All**  button.

Open Export File Window

Note: The Export File Browser is only available in Toad Professional Editions, or with the optional DB Admin module.

The Export File Browser window is more than just a file selection screen. It provides you with information about the export files, including basic file information, who created them, and whether or not they have been parsed. See "Viewing an Export File" (page 404) for more information about the Export File Browser.

To open an export file

- » Click  on the Export File Browser toolbar.

Window Layout

The left hand side of the Open Export File window is the directory tree. Use this to find the file you want to open. It works in the same manner as the Windows Explorer.

When you have selected a directory the files are listed on the right hand side. By default Toad displays only the .dmp files in a directory.

To see all files in a directory

- » Select **All Files** from the File Type box.

If you have selected all files, the info grid will be more sparsely populated for the files that are not export (extension .dmp) files. Non-export files display only File Name, File Size, and File Date.

Parsed File color

Toad keeps track of files you have previously parsed by changing their color.

By default, all unparsed files are displayed in black. Parsed files are displayed in Green.

To change the color of parsed files

1. Click the **Settings** button in the lower left of the screen.
2. Select **Set pre-parsed color**.
3. Select the color you want to use and click **OK**.

To remove parsing information for the selected file

1. Click the **Settings** button in the lower left of the screen.
2. Select **Remove pre-parsed information**.

To remove parsing information entirely

- » In the Toad Directory | ParsedExportFiles directory, remove all files.

DB Compare Mode

DB Compare Mode Overview

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can use the Export File Browser to compare an export file with the objects in a database. This is a cursory compare and will not indicate deep, data-level differences.

For any selected nodes and databases, check boxes will indicate whether the object is in the file, the database, or both.

To compare a file to a database

1. Open a data export file in the browser. See "Viewing an Export File" (page 404) for more information.
2. Click .
3. In the right hand side compare screen, select a connection from the connection drop down to compare to the file.

Note: If the connection you want to use is not listed in the dropdown, you can either:

 - Click the connection drill down and then click **New** and open a new connection.
 - From the Session menu | New Connection, open a new connection.
4. In the left hand side, select one or more nodes to compare to the selected database.

Reading the Compare Grid

Note: The Export File Browser is only available in Toad Professional Editions, or with the optional DB Admin module.

The compare mode grid in the Export File Browser provides basic information for both the database and the selected nodes.

You can print or export the compare grid from the Export Dataset menu item.

Troubleshooting

Because of the way Toad parses .dmp files, some items will be listed as in the database but not in the file. These include:

- Constraints that were created inline with the table DDL, as follows:

```
CREATE TABLE WK$DOC_RELEVANCE
(
    URL_ID NUMBER NOT NULL ENABLE,
    TERM VARCHAR2(500) NOT NULL ENABLE,
    SCORE NUMBER NOT NULL ENABLE,
    CONSTRAINT WK$DOC_RELEVANCE_PK PRIMARY KEY ("TERM", "URL_ID") ENABLE
);
```

- System named constraints.
- Indexes created by Oracle when a user created a constraint.

- Many objects in the SYS, MDSYS, etc, schemas. Certain objects are created automatically when you create a database do not go into export files even when you do a "full database export."
- System named hash partitions and subpartitions.

Freezing the Compare Grid

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can freeze the compare grid in the Export File browser so that you can view other items without losing the data from the compare you are doing. See "Viewing an Export File" (page 404) for more information.

This will hold the Compare Grid steady while you toggle Compare mode off, and view DDL or data in Browser mode. When you return to Compare DB mode, the last compare you performed will be active in the grid regardless of what is selected in the left hand side.

To freeze the compare grid

1. In the Export File Browser, compare a node or nodes to a database connection. See "DB Compare Mode" (page 406) for more information
2. Select the **Freeze Grid** checkbox to freeze the grid.

DDL Operations

Copying DDL to Clipboard

Note: The Export File Browser is only available in Toad Professional Editions, or with the optional DB Admin module.

You can copy DDL from the right hand side of the Export File Browser to the clipboard and then paste it wherever you need it, including other editors. See "Viewing an Export File" (page 404) for more information.

To copy DDL from the right hand side to the clipboard

1. Select an object from the left hand tree view and click the DDL tab on the right hand side.
2. Select any or all of the DDL.

Press **CTRL+C**.

Note: Scripts for a few objects will look wrong. The reason for this is that the export files we are browsing were meant only to be used by Oracle's IMP utility. Things that may look wrong in script form because of this include:

- Materialized views and materialized view logs.
- Queue tables

- Any object that has storage (tables, indexes, etc) when the export was done in "Transportable tablespace" mode.

Saving DDL as a File

Note: The Export File Browser is only available in Toad Professional Editions, or with the optional DB Admin module.

From the Export File Browser, you can save the DDL in the right hand side to a file for later use.

To save DDL from the right hand side to a file

1. Select an object from the left hand tree view of the [Export File browser](#) and click the DDL tab on the right hand side.
2. Right-click and select "**Save to File**."
3. Name the file and click **Save**.

Note: This method saves all of the DDL for an object to a file. You cannot be selective as you can with the copy method.

Extracting DDL from Multiple Nodes

Note: The Export File Browser is only available in Toad Professional Editions, or with the optional DB Admin module.

You can extract DDL from multiple nodes of the [Export File browser](#) to the clipboard and then paste it wherever you need it, including other editors.

To extract DDL from multiple nodes

1. Select one or more nodes from the left hand tree view. These can be objects, or groups of objects.
2. Right click on the tree and select "**Extract DDL For Selected Nodes and SubNodes**."
3. Select your options.
4. Click **OK**.

General Export

Export Table as Flat File

Use this function to create a flat file, which is a file that does not contain **TAB** characters or "," (comma) characters between values.

Note: The SQL*Loader tab in this feature is only available in the commercial version of Toad with the optional DB Admin Module.

To export a table

1. From the Database | Export | menu, select **Table as Flat File**.
2. On the **options** tab, select the table to export.

You need to set up the Specifications File, which will define the table name, table owner, how many lines in the output file will be covered by a single record of data, the columns of data, what line they will appear on, the starting column, and the length of each column of data.

Example Specifications File

```
TABLENAME=EMPLOYEE
TABLEOWNER=DEMO
LINESPERRECORD=1
COL1=EMPLOYEE_ID,1,1,5
COL2=LAST_NAME,1,6,15
COL3=FIRST_NAME,1,21,15
COL4=MIDDLE_INITIAL,1,36,1
COL5=JOB_ID,1,37,4
COL6=MANAGER_ID,1,41,5
COL7=HIRE_DATE,1,46,22
COL8=SALARY,1,68,10
COL9=COMMISSION,1,78,10
COL10=DEPARTMENT_ID,1,88,3
```

Sample flat file as exported

```
7369 SMITH JOHN Q667 7902 12/17/1984 800 20
7499 ALLEN KEVIN J670 7698 2/20/1985 1600 300 30
7505 DOYLE JEAN K671 7839 4/4/1985 2850 13
7506 DENNIS LYNN S671 7839 5/15/1985 2750 23
7507 BAKER LESLIE D671 7839 6/10/1985 2200 14
```

Export Utility Wizard

Note: This extended Toad Feature is only available in Toad Professional Editions, or with the optional DB Admin module.

This wizard lets you easily transfer data objects between Oracle databases using Oracle's export utility. The path to the Oracle utility is configured under View | Toad Options | Executables.

To export data objects

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Export | Export Utility Wizard**.

Refer to the following for additional information:

For all Exports	Information
Objects to export	Triggers are only available if you have Oracle 8.1 or above.
Watch Progress	If you select Watch Progress (Feedback = 1000) on the last screen of the wizard, the Export Watch window displays and you can immediately view the results of the export. In addition, the Log tab on the Watches window, will let you send the log directly to the printer.

2. Complete the wizard.

Troubleshooting

The Export Utility wizard is an interface to Oracle's utility, usually named Exp.exe, Exp73.exe, or Exp80.exe and located in your Oracle home's bin folder.

If Toad cannot find this executable, the error "The Oracle Export Utility executable must be specified" appears.

To specify the location of the Oracle Export Utility

1. Select **View | Toad Options | Executables**.

Enter the path in the **Export** box.

Note: If you do not know where this executable resides, or it is not on your computer, you may need to install the **Database Utilities** from the Oracle CD.

Data Subset Wizard

This window lets you copy a portion of data from one schema to another while maintaining referential integrity, so that you can work with a smaller set of data.

To access the data subset wizard

- » From the **Database** menu, select **Export | Data Subset Wizard**.

The wizard creates a script that will copy a specified percentage of data beginning with all parent tables or from all tables with no constraints. You can specify a minimum number of rows. The wizard then continues with tables that have foreign key constraints, the rows copied are those whose parent rows have been copied into the parent tables.

The data is then inserted into the destination tables with INSERT SELECT statements. Because of this, tables containing columns of datatype LONG will not be inserted.

Note: For Oracle 7.3, an Oracle bug sometimes prevents the INSERT SELECT statement from inserting rows.

If the destination schema is in a different database, the script is designed to run in the destination database. A database link must exist to the source schema, and there must be select privileges on the source data through that link.

To use the Data Subset wizard

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Export | Data Subset Wizard**.
2. Refer to the following for more information:

Define Source and Target Databases	Information
Target Connection	The target schema name will be included in the object DDL and data inserts. The target connection will add a connection string at the beginning of the script if the Include a Connect Command option is checked on .
Select Objects to Create in the Script	Information
Note: Right-click to select or unselect all objects.	
Create these objects and copy the data	Note: This Data Subset option is only available in the commercial version of Toad with the optional DB Admin

	<p>Module. The DBA module is required because this creates a schema script with embedded insert statements. See "Generate Schema Script" (page 429) for more information on alternate methods of generating a schema script.</p> <p>This option assumes the objects are not in the target schema, and the script creates the selected objects and insert data.</p> <p>In the Create Objects mode, clusters are excluded. If you want to subset a schema containing clusters, you will have to create the objects first, and then run the wizard with the Do not create any objects, Just truncate tables and copy data option selected.</p>
How much data do you want to copy?	Information
Percentage of Data to move to target	The percentage or minimum number of rows will be accurate on the parent tables and tables with no foreign key relationships (except for situations with long columns and for the Oracle 7.3 bug mentioned in the Overview). Data integrity is preserved

	in the child tables of foreign key relationships based on the rows which were inserted in the parent tables. So, the percentage of rows copied in the child tables will vary based on the data distribution of the individual tables.
Min # of Rows in Lookup Tables	Specify a minimum number of rows that you want moved to your target in case the percentage selected yields a lower number than the minimum desired.
Control Options	Information
No Logging	If checked, this option adds an ALTER TABLE statement before the data inserts for each object, to specify No Logging. If checked, the wizard will run faster, but the actions of the script (the insert statements) will be unrecoverable.
Use Parallel DML	If checked, this option adds optimizer hints to the insert statements. It also adds an ALTER SESSION statement before the data inserts for each object to enable Parallel DML. If checked, the script produced by the

	wizard will run faster, but you may end up with a few more extents.
Script Options	Information
Include a Spool command	If checked, the script includes a SPOOL command. A SET ECHO ON command is issued after the SPOOL command. At the end of the script a SPOOL OFF command is included.
Include a Connect command	If checked, adds a CONNECT command to the beginning of the script and uses a connection string that is based on the target connection specified on the first wizard screen.
Make individual Constraint commands	This option appears only if you have chosen to create Constraints on the Create Objects page. If checked, constraints are created as individual alter table commands. This serves to circumvent an Oracle bug that can create the following error when constraints are not created individually: "ORA-01948 Identifiers name length exceeds max."
Adjustments to Extents and Tablespaces	Information

Note: The options in the Extents/Tablespaces tabs are enabled when the wizard is set to create objects (when you select the **Create these objects and copy the data** option in the **Select Objects to create in the script** of the wizard).

Extents tab	The Extents tab lets you specify extents for objects created by the generated script. You can specify PCTINCREASE parameters, make Next Extent=Initial Extent, and scale extent sizes to apply to all objects created that allow storage parameters. The lower part of the screen lets you change extent sizes using IF-THEN statements.
Tablespaces tab	The Tablespaces tab lets you specify the tablespaces to create indexes, tables, and their partitions. You can place all of an object type (tables, table partitions, indexes, index partitions) into one tablespace or distribute them across different tablespaces based on their size.

3. Complete the wizard.

General Import

Import Table Data

You can import table data without importing table structure. This must be imported into an existing table, although you can use the Create Table feature to create a new table for the import. See "Altering Tables" (page 1074) for more information.

Note: Datasets to be loaded must be small enough to fit in memory. For large datasets, convert your data to a text file (if it is not already a text file) and use the SQL Loader wizard. See "Troubleshooting" (page 420) for more information.

In addition, you can import table data directly into a data grid from the clipboard. To do this the datagrid must be editable. See "Viewing and Editing Data" (page 955) for more information.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

To import table data

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the **Database** menu, select **Import** and then **Table Data**.
2. Refer to the following for additional information:

Select Destination	Information
Show Data	View existing data in the grid before truncating or importing.
	Truncate table before importing.
	Disable or Enable constraints before importing.
	Disable or Enable triggers before importing.
Select Source	Information
Import from	In addition to the obvious choices, you can also import an old .SMI file from Toad 9.5 or prior. Right-click and select Import settings from SMI file.
Text File Details	Information
Importing from Clipboard?	At the Text File Details window, if the clipboard contains cells from an MS Excel spreadsheet, choose tab-delimited. Otherwise, select the appropriate delimiter.
Text qualifier	The character you place around text to specify that it should stay in the same field. Choose between double, single quotes, or none.

Select Destination	Information
Source Data Details	Information
Apply format to timestamp fields	Apply format to timestamp fields, when clear, timestamp format should be the same as it is in your data grids. If selected, the expected format is the same as the date fields, and also customizable.
Preview File and Define Files	Information
Automap	Data is displayed in the grid, as it will be entered in the Oracle table.
Mapping Manually	You can also map columns manually. <ul style="list-style-type: none">• Click on a column header and then select the column where you want to map the column of data to go.• Continue in this way until all the columns are mapped.
Field Mapping Dialog	If you are importing an xml file, and have elected to begin on row 2 in the previous screen, then Toad will display the Field Mapping dialog. Select one of the following options: <ul style="list-style-type: none">• Map fields by matching field names - The default. Toad looks in the first row of the spreadsheet to find the column names, and uses those for the field names.• Map fields sequentially - The columns of the spreadsheet are imported into the Stable in the same order as they appear. Column 1 maps to the first table column and so on.
Sizing the grid columns	In addition to the sizing buttons, you can manually resize the columns by clicking between the headers and dragging them to the size you want.

3. Complete the wizard.

Import Utility Wizard

Note: This extended Toad Feature is only available in Toad Professional Editions, or with the optional DB Admin module.

This window design is similar to the Export Utility Wizard. This wizard helps you to transfer data objects between Oracle databases using Oracle's Import utility. You can configure this wizard from View | Toad Options | Executables.

You can also automatically unzip files before importing them.

To import data

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Import | Import Utility** wizard.

Refer to the following for additional information:

Import Tables	Information
Select Show only users who own objects to limit your schema selection to schemas that have objects.	This will limit selections for both the from and to user areas.
File Record Length	If left blank this value defaults to use the platform's BUFSIZ value.
Import Users	Information
Select Show only users who own objects to limit your schema selection to schemas that have objects.	This will limit selections for both the from and to user areas.
File Record Length	If left blank this value defaults to use the platform's BUFSIZ value.
Watching Progress	If you select Watch Progress (Feedback = 1000) on the last screen of the wizard, the Import Watch window displays and you can immediately view the results of the import. In addition, the Log tab on the Watches window, will let you send the log directly to

Import Tables	Information
	the printer.

2. Complete the wizard.

SQL*Loader Wizard

SQL*Loader Wizard Overview

You get to this window from the Database | Import | SQL*Loader Wizard menu item.

With the Toad SQL*Loader wizard you can:

- graphically build a control file for use with the SQL*Loader, a database server application.
- schedule the SQL*Loader execution as a Windows job for later execution.
- run the SQL*Loader with the control file running in either the foreground or the background.

You can configure the location of the utility from **View | Options | Executables**. See "Executables" (page 654) for more information.

Troubleshooting

If you have difficulty running SQL*Loader, make sure that you have the correct version installed. You can do this by running the executable with no parameters in a command prompt window. The executable on the server can only be run from the server.

Using the SQL*Loader wizard

The best way to learn to use the SQL*Loader wizard is to actually use it. The SQL*Loader Wizard tutorial lets you do this in a step by step method, starting with the most common uses and moving into the more advanced features. See "Basic SQL*LoaderTutorial" (page 220) for more information.

At any time during the process you can load settings from a file or save the current settings.

To use SQL*Loader wizard

1. From the Database menu, select **Import | SQL*Loader Wizard**.

Note: Using "Watch Progress" with an 8.0.x version of SQL*Loader on Windows 2000 causes a 100% CPU usage. It is recommended that you uncheck "Watch Progress" on the last screen of the SQL*Loader Wizard, so that the SQL*Loader is launched outside of Toad.

2. Complete the wizard.

Save Settings for SQL*Loader

At any time during your use of the SQL*Loader Wizard you can save your settings or load previously saved settings. See "Troubleshooting" (page 420) for more information.

To save settings

1. Click the **Save settings** button at the bottom of the window to save your settings.
2. You are prompted for a **name** for your settings file. You can either add a new name or select one from the dropdown menu. If you select one from the dropdown menu, the new file will overwrite the old one.

The SQL*Loader wizard will keep track of your settings files for you.

To load settings

1. Click the **Load settings** button at the bottom of the SQL*Loader wizard to Load a set of previously saved settings.
2. Select the settings file you want to load.
3. If the file is complete, leave **Proceed to finish after loading** checked and click **OK**. You will be taken directly to the last screen of the SQL*Loader wizard.
4. If the file is not complete, uncheck **Proceed to finish after Loading** and click **OK**. You will remain on current screen of the SQL*Loader wizard and Toad will let you make changes to your settings.

Note: When you load settings, input file and destination table files are cumulative. Rather than overwriting previous settings, Toad appends the new information to the wizard settings.

Scheduling SQL*Loader Tasks

Included in SQL*Loader Wizard is a scheduler that provides the ability to schedule the load as a Windows task. See "Troubleshooting" (page 420) for more information.

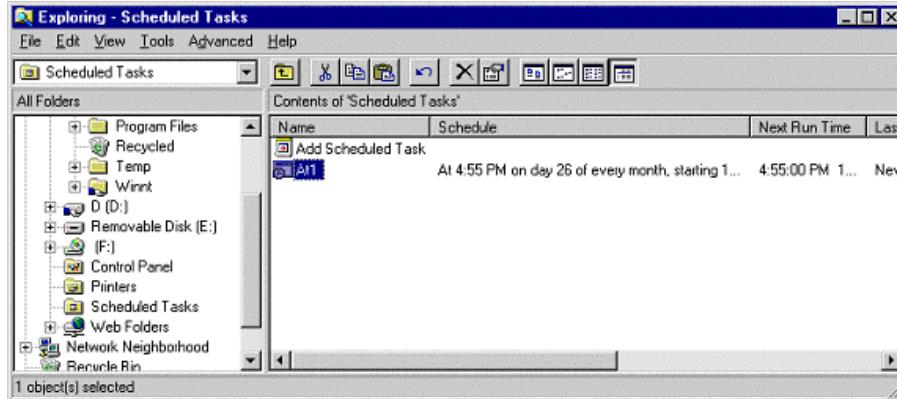
*To schedule a SQL*Loader task*

1. From the last step of the SQL*Loader wizard, select **Schedule** and then click **Finish**. This opens the Scheduler wizard.
2. Select the time and frequency you want SQL*Loader to run.
3. Click **OK** and you are informed that a job has been added.

To see that the task has been added

1. Open **Windows Explorer**. On the left side, after your hard drive and CD ROM letters, you will see Control Panel, Printers and Scheduled Tasks (and maybe other things, depending on your system). The screenshot below shows NT 4.0. In Windows 2000, "Scheduled Tasks" appears under "Control Panel" in the tree view.

Click **Scheduled Tasks**. On the right side you will see the newly added job, as in the image below.



Right-click and then select **Properties** and look in the **Run** field to see just what is going to happen at that time. It should contain something similar to the following:

```
D:\ORACLE\ORA81\BIN\SQLLDR.EXE userid=MLERCH/MLERCH@ORA8I  
control=d:\confiile.ctl log=d:\confiile.log
```

SQLLoader Global Options

The Global options and default values screen of the SQL*Loader Wizard lets you enter command line options and some default values. These will be overridden by anything you enter in the Destination Table or Columns fields. See "Troubleshooting" (page 420) for more information.

Any of these options may be left blank. Oracle will then use the default values for them.

"Command Line" options

Skip

Enter the number of logical records to skip at the beginning of your input file, or leave blank to load all of them.

Load

Enter the number of logical records to load. Any records beyond this point will not be entered.

Errors

Enter the number of errors to allow. The default is 50. If there are more than this number of errors when loading your data, the SQL*Loader will stop.

Rows

Enter the number of rows in conventional path bind array or between direct path data saves.

Read size

Enter the size (in bytes) you want to use for the read buffer.

Bind size

Enter the size of conventional path bind array in bytes. The default is dependent on your system. This size, if specified, overrides the default size and any size determined by ROWS.

Stream Size

Enter the size of direct path stream buffer in bytes (Oracle's Default is 256000)

Resumable timeout

If this load will be designated Resumable, enter the wait time (in seconds). The default is 7200.

Resumable name

Enter a text string to help identify a resumable statement.

Column array rows

Enter the number of rows for direct path column array. The default is 5000.

Direct

Check this box to assign this load as a direct path load.

Parallel

Check this box to assign this load as a parallel direct path load. This is more restrictive than a direct path load.

Resumable

Check this box to enable resumable for this load.

Multithreading

Check this box to use multithreading in direct path.

Skip index maintenance

Check this box to specify: do not maintain indexes, and to mark affected indexes as unusable.

Silent

Use the silent options to suppress error messages in the output and log tabs of the Watch dialog as follows:

Header

Hide the SQL*Loader header message that displays in the Output tab. Header messages will still appear in the Log file and on the Log tab.

Discards

Hide the message in the log file that corresponds to each record written in the discard file.

Feedback

Hide the messages relating to "commit point reached".

Partitions

Disable writing the per-partition statistics to the log file. This is an Oracle 8i option.

Errors

Hide the data error messages in the log file. These occur when a record generates an Oracle error that writes it to the bad file. Rejected record count still displays, even if the individual error messages are suppressed.

All

Implements all of the keywords. Skip unusable indexes

Check this box to disallow unusable indexes or index partitions. Unchecked (the default) unusable indexes will be allowed.

Load Statement

Database redo Log

Specify whether the load is recorded or not recorded.

Load Type

Select LOAD or CONTINUE_LOAD.

Load Method

Select INSERT, APPEND, REPLACE or TRUNCATE as your load method.

Length

Specify the length type: CHAR, BYTE, CHARACTER.

Byte order

Specify the byte order: Little Endian or Big Endian.

Byte order mark

Specify the byte order mark: check or nocheck.

Character set

Specify a datafile character set other than the default: for example, AL16UTF16 or JA16EUCFIXED.

Read buffers

Specify the number of buffers to be used during a direct path load.

Preserve blanks

Select this checkbox to preserve leading and trailing whitespace if necessary.

Combine Physical Records Area

Use this option to combine physical records. Fill in the various boxes to create the option statement.

- Concatenate every ____ records to form logical record
- Continue if:
- this record = ____ in cols ____
- next record = ____ in cols ____
- last non-blank character = ____

SQL Loader Field Mapping

You can automatically map your fields as you specify your destination tables in the SQL*Loader Wizard. See "Troubleshooting" (page 420) for more information.

This provides a graphic display of how your data will map to the columns in your table.

Field Delimiters

Field mapping is done based on the delimiters you set in the field delimiter screen.

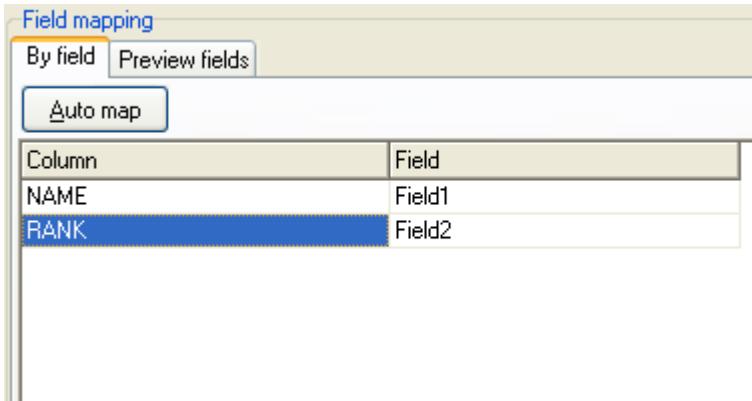
To set up field mapping

1. From the first screen of the wizard, select **Build Control File**, and make sure that **Specify Fields** is checked. Click **Next**.
2. Enter your input file name and click **Next**.
3. Select the method of delimiting you want to use.
4. At the bottom of the window, specify how many rows of data you want to display in the **Number of lines displayed** box. This number also defines the number of lines displayed in the Preview Fields tab.

By Field

On the table destination screen, the Field Mapping grid defines the columns in the table, and includes a column for Field. The field column begins without entries. Click **Auto Map** to fill this column.

When filled, the Field mapping grid appears as follows:



Note that the Field column says "field1" and "field2" rather than defining any data.

Preview Fields

To preview the data and see how it will be included in the columns you have selected, click the **Preview fields** tab. The results displayed will be similar to the following:

Field mapping	
By field Preview fields	
Column	Field
NAME	Field1
RANK	Field2

NAME	RANK
Salmon	2
Broccoli	3
Asparagus	4
Bell peppers	5
Chicken	6
Yogurt	7
Brown rice	8
Carrots	9
Lean ground beef	10

Of course, you may have more columns or more data. The amount of data displayed in the Preview fields screen is set in the Field Delimiters screen as described above.

Filler Columns

When mapping columns to your datafile in the SQL*Loader Wizard, there may be reasons not to include all of the data available in the load. See "Troubleshooting" (page 420) for more information.

You can use Filler columns to skip some of the data in the input file; you also can use a filler column to read data from the input file without mapping it to an actual column in the table (to "hold" a file name).

To use a filler column to skip data

1. From the **Columns** area of the **Select the destination columns and specify the load parameters for each screen**, click **Filler**.
2. Select the appropriate filler type:
 - Filler
 - Bound Filler
3. Enter a column name.
4. Set any properties or position.

Click **OK**.

Note: The filler column is added to the columns grid and designated as **FILLER**.

Generate Database Script

Generate Database Script

Note: This Toad feature is only available in the commercial version of Toad with the optional **DB Admin Module**.

The Generate Database Script window lets you create a script to create a new database similar to an original. You can create the script by extracting the definition information from the original database or from a previously saved database definition file.

Caution: This script simply reverse-engineers the DDL for individual objects in the database. This lets you add pieces of this DDL to your own database script. This window does not create a full script to reproduce the selected database, and should NOT be used for backup purposes.

To generate a database script

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Export | Generate Database Script**.

Specify Source and Output for the script.

DDL Filename	You can use variables in the filename. For example, you can include the %DATEFILE% and %TIMEFILE% variables, which inserts the current date and time into the filename when the file is created when you create the schema script.
Definition filename	When you create a definition file, you can use

	variables in the filename. By default, Toad includes the %DATEFILE% and %TIMEFILE% variables, which inserts the current date and time into the filename when the def file is created. (This ensures that the date and time are inserted accurately if you are creating the def file from an Action .)
Create Individual Object DDL Files	If you choose this option, you must enter the top-level directory for your new files. This is not a filename. Toad will create an individual DDL file for each object in the database.

2. Click the **Objects and Options** tab.

Inc UndocParms	Stands for "Include Undocumented Initialization Parameters". These are the parameters whose names start with "_" and do not appear in Oracle's documentation. You must be connected as SYS in order to retrieve these parameters. It is not advisable to alter these parameters unless directed to do so by Oracle support.
Options	Notes
Sort for Creation	Selecting this ensures that objects are created in an order that avoids problems with dependencies.

3. Click the **Object Set** tab. To specify an object set, select the **Specify Object Set** box.

	You must have one or more object types selected in the Objects and Options tab before you do this.
---	--

4. Click .

Scheduling a Database Script as a Windows task

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To generate a database script

1. Set up your script options and settings as in Generate Database Script, but don't click Create Script. See "Generate Database Script" (page 427) for more information.

2. Click .
3. Select or create a filename for a settings file.
4. Enter the information as required for the Add Task wizard. See "Add Task Wizard" (page 763) for more information.

Generate Schema Script

Generate Schema Script

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

This window lets you select one or more schemas and builds DDL for all objects you select.

To generate a schema script

1. From the Database menu, select **Export | Generate Schema Script**.
2. Select the appropriate options from the following tabs:

Note: This topic only covers unfamiliar information. It does not include all step and field descriptions.

Source and Output tab	Notes
DDL Filename box	You can use variables in the filename. For example, you can include the %DATEFILE% and %TIMEFILE% variables, which inserts the current date and time into the filename when the file is created when you create the schema script. You can also insert a user variable.
Create Individual Object DDL Files	If this option is selected, Toad will create individual DDL files for each object. You will need to set the following options as well: <ul style="list-style-type: none">• Use SQL extension for all files - if selected, .sql will be used as the extension for all created files.• Use extension as configured in TOAD options - if selected, Toad will check

	<p>Toad Options Files General and use the extension specified for SQL.</p> <ul style="list-style-type: none">• Use relative path in "build all" script - when selected, Toad will use the relative path. When this option is not selected, Toad will hard code the path names into the script.• Top Level Directory box - Specify the top level directory for the saved files.
File will be used for HTML schema doc generation	<p>Def files are not compatible between different versions of Toad.</p> <p>If this check box is selected, the .def file that is produced will include the queries necessary to create a complete HTML schema document.</p> <p>If this check box is clear, on large databases the generation may go faster, and the .def file can still be used to generate the HTML schema document; however, the resulting HTML file will leave the following items blank:</p> <ul style="list-style-type: none">• Size and Number of Extents columns in the Table summary, Index summary, and Snapshot summary• # of Objects in the Package Summary• # of Arguments in the Procedure Summary and Function Summary
Objects Tab	Notes
	<p>Specify the user information and object types that you want to extract. You can extract multiple objects, or just one (for example, Grants) depending on your selections.</p> <p>Note: To select or unselect all</p>

	checkboxes, right-click and select the appropriate option.
Object Set Tab	Notes
 Add objects to grid	You must have only one source schema selected before adding objects.

3. Click the **Create Script**  button.
4. View the script or objects from the Objects Listing tab. See "Object Listing Tab" (page 431) for more information.

Object Listing Tab

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

In the Generate Schema Script window, the Object Listing tab appears after the script has been generated and provides a tree view of the objects included in the Schema Script. See "Generate Schema Script" (page 429) for more information.

You can use Object listing toolbar to manipulate and view the objects.

Object Listing toolbar



Icon	Meaning
	Expand all
	Collapse all
	Show Sync Script for selected items.
	Show DDL for all objects.
	Save your script to a file. You can choose text, html, or rtf file from the Save As window.
	Send to Excel.
	Print results.

Icon	Meaning
Group by Object Type	Items within groups can be grouped according to type. Each type of item has an icon assigned to it.

Scheduling a Schema Script as a Windows Task

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To generate a schema script

1. Set up your script options and settings as in Generate Schema Script, but don't click Create Script. See "Generate Schema Script" (page 429) for more information.
2. Click .
3. Select or create a filename for a settings file.
4. Enter the information as required for the Add Task wizard. See "Add Task Wizard" (page 763) for more information.

Managing Projects

Using Automation Designer to Control Toad

About the Automation Designer

Automation Designer Overview

You can use Automation Designer to automate and control processes you perform regularly. Connection information, window settings, and queries can be saved, shared, scheduled, and run from the command line or batch files to simplify repetitive tasks.

The Automation Designer makes use of several categories to control Toad. These include:

- Action -The basic unit of a ToadApp. It consists of the settings used to control one command, such as import table data, FTP a file, or Ping a server.
- App -One or more actions designed to work together as a mini -Toad application. See "ToadApps" (page 469) for more information.
- Scheduled Item -An app or action that has been scheduled using the Windows Task Manager. See "Using the Automation Designer to Schedule Actions and Apps." (page 435) for more information.
- Execution Log - A log file containing the execution status of recently-run apps. It is automatically generated as you run actions, and contains data up to 7MB. When it reaches 7MB, old data is trimmed back to 5MB, and then it continues accruing. In this way it remains a current log of the most recent action execution. See [Execution Log](#) for more information.

To access the Automation Designer

The Automation Designer is the central location for running and creating Actions and Apps. While actions can be created from and loaded to many of the other windows within Toad, the power of actions is located in the Apps Designer.

Within the Apps Designer you can:

- Create new actions
- Organize actions into sets (apps)
- Run actions and apps
- Store actions and apps
- Schedule actions and apps
- Copy actions and apps to and from the clipboard

To access save/load window snapshot from a Toad window

1. In the status bar of the window, click .
2. Select Save as Action or Load Toad Action.

In addition, as with SQL Recall, actions are saved automatically when you perform a task that is action-enabled. See "Setting the number of actions saved in the vault " (page 438) for more information.

Recalling an app gives you the ability to perform a distinct operation or sequence of operations in Toad on demand. Actions that can be used in the Automation Designer are listed in the Action Catalog.

Automation Designer Toolbar

Button	Command
	Run selected apps
	Run selected actions
	Run from selected action
	Create New app
	Schedule active app
	Delete selected app
	Refresh selected app
	Import app from file
	Export app to file
	Refresh window

Running Actions from the Automation Designer

You can run actions from the Automation Designer.

Using this method, you can run one or more actions from the same ToadApp. Multiple actions are run in the order they appear in list view. See "Ordering an App" (page 472) for more information.)

To run actions

1. Do one of the following:
 - Right-click on the action you want to run
 - Multi-select several actions within the same ToadApp and then right-click.
2. Select **Run Selected Actions**.

To run a series of actions (partial App)

1. Open the **ToadApp** containing the series.
2. Select the first action you want to run.
3. On the toolbar, click .

To run an entire App

- » Do one of the following:
- Select the app you want to run and then click .
 - Right-click on the app you want to run and select **Run**.

To run actions with connections

Note: In this case, the connection you assigned to the action will not be used. The action will be executed once, for each connection you select, using that connection.

1. Select the actions you want to run.
2. Right-click and select **Run with Connections**.
3. Select the connections you want to use. These can be multi-selected using **SHIFT** or **CTRL**.
4. Click **OK**.

Scheduling Actions and Apps

Use the Automation Designer to schedule actions using Toad's Task Scheduler. You can schedule actions or apps. In addition, you can use the scheduler button directly from the Toad window of some functionality.

Using the Automation Designer to Schedule Actions and Apps.

To schedule actions

1. In the Automation Designer, select the **actions** you want to schedule.
2. Right-click and select .

3. Complete the Task Scheduler wizard. See "Task Scheduler" (page 762) for more information.

To schedule a ToadApp

1. In the Automation Designer, select the **App** you want to schedule.
2. Click .
3. Complete the Task Scheduler wizard. See "Task Scheduler" (page 762) for more information.

Scheduling from a Toad Window

When you have finished scheduling an action in this way, you can view them from the Task Scheduler window, or the Scheduled Items area of the Automation Designer.

To schedule an action

1. In the status bar of the feature you want to make an action, click .
2. Complete the **Schedule Action** wizard.

Apps and Actions on the Toolbar

You can add ToadApps and actions to your toolbar so you can execute them with one click.

To add actions to the toolbar

1. Right-click on the main toolbar and select **Customize**.
2. Click the **Actions** tab.
3. Click on an app in the left hand side to display the actions contained in it.
4. Drag and drop the action on the toolbar.

To add apps to the toolbar

1. Right-click on the main toolbar and select **Customize**.
2. Click the **Actions** tab.
3. Click **[All Apps]** in the left hand side.
4. Drag and drop the appropriate app onto the toolbar.

Searching the Automation Designer

You can search the [Automation Designer](#) to find apps or actions that you have created. This panel supports both standard searches and regular expressions

To search the Automation Designer

1. In the Automation Designer's left hand panel, click **Search** panel.
2. In the Text to find box, enter the text you want to find.

3. If you want to use regular expressions, select the [Regular expressions](#) box.
4. Select or clear the **Search for apps** box as desired.
 - Choose a filter from the **Look In** dropdown if you want to limit the search to a specific folder.
5. Select or clear the **Search for actions** box as desired.
 - Choose a filter from the Look In dropdown if you want to limit the search to a specific app.
6. Click **Search**.

Using Actions

Creating New Actions

You can create new actions from many locations within Toad. You can create them directly from the feature you are using, or from the Automation Designer.

Creating a new action from a Toad window

Toad windows that support actions include a camera button in the status bar of the window. Simply using these features will create an action automatically for you and store it in the action recall area (See "Setting the number of actions saved in the vault" (page 438) for more information.).

To create or load an action

1. In the status bar of the feature you want to make an action, click .
2. Select the appropriate option.

Creating a new action from the Automation Designer

You can also create a new action directly from the Automation Designer. At the top of the right pane are tabs containing actions you can create.

To create a new action from the designer

1. From the Utilities menu, select **Automation Designer**.
2. In the Navigation Tree, select **Apps** and then click the **ToadApp** node where you want to create the action.
3. Click the tab that contains the action button and then click the button for the action you want to create. (See "Import Export" (page 441) for more information on the various available actions.)

Click in the app where you want the action to reside.

For example, click the **Import/Export** tab, and then click  and then click in the app where you want the import table data action (this includes as a child node). A new action is created at the location where you click.

4. Double-click the new action and set up required.
5. Click one of the following:
 - Run - apply changes to properties and run the action
 - Apply - apply changes to properties
 - Cancel - cancel the changes to properties, but leave action in Automation Designer
6. Right-click the new action, select **Rename**, and enter a name for the action in the **Name** box.

Using Action Recall

Toad automatically creates an action for you when you use a window that supports them. Toad stores these actions for you in the vault, so that when you need them they can be retrieved.

You can use the Action Recall node the same way you would use the other apps, except that it cannot be deleted. You can, however, clear it.

Setting the number of actions saved in the vault

By default, Toad stores 10 actions per action type (for example, 10 export DDLs, 10 export dataset actions, and so on. However, this number can be changed easily.

To change the default number of actions automatically created per action type

- » Select **Toad Options | General** and change the number in the Toad Actions per action type box.

Clearing the Action Recall Node

You can easily clear out all the actions that have been saved in the vault so that it is easier to navigate.

To clear the action recall node

1. Click the **Action Recall** node.
2. Select the actions you want to remove. (**CTRL+A** to select all.)
3. Right-click and select **Delete**.
4. Click **Yes**.

Action Parameter Files

Some actions can accept parameter files. These parameter files are saved in an INI format.

You can use the parameter file to override some settings in an action so that you can run various permutations without creating multiple actions.

An action parameter INI file contains property=value pairs for the settings that can be overridden. When originally created, these will correspond to the properties saved within the actions.

To create an action parameter file

1. In the **Automation Designer**, right-click on an Action or an App and select **Create Parameter file**.

Note: If an action does not support a parameter file, then this option will not be available on the popup menu.

2. Name the parameter file and save it to a folder. You do not need to save it in the default folder.
3. Modify the parameter file if necessary. You can save multiple versions of the same file with slightly different names.

Example

The Execute Script action is enabled for parameter files. An ExecuteScript.ini file created as a parameter file might look like the following:

Content of ini File Line	Meaning
[47]	Internal identifier. There will be one of these identifiers for each action within a selected App.
Name=Execute Script1	This is the name you have given the action so you can find it within a longer App file.
Type=Execute Script	This is the type of action.
ItemCount=2	Number of items to execute.
Item0=c:\try1.sql	First item to execute.
Item1=c:\try2.sql	Second item to execute.
Output=1{1=SingleFile, 2=SeparateFile, 3=Clipboard, 4=Discard}	Output type. Note: In some cases, explanatory information will be included in braces within the line itself.
Output Location=C:\somefolder\output.txt	Output destination.
Connection=user@database	Connection associated with this

Content of ini File Line	Meaning
	action. When a connection is specified in the parameters file, it will override the bound connection of the Action. If this line is not included, then the bound connection is used.

Parameter files for ToadApps will contain multiple [Key] sections: one for each action within the app. These can be removed as needed to use a particular action's default properties.

Running Actions with Parameter Files

Parameter files can be used from within the Automation Designer or from the command line.

If connections are included in a parameter file and/or the command line, Toad will use connections in the following order:

1. Connections specified on the command-line always override everything else.
2. If a connection is not present on the command line, then those specified in a parameter (ini) file are used.
3. If there are no connections on the command-line or defined from the Automation Designer's **Run with connections** option, then the connection bound to the action is used.

To run an action/parameter file set from the Automation Designer

1. In the Automation Designer, right-click on the action you want to run and select **Run with parameter file**.
2. Select the parameter file you want to use and click **OK**.

To run an action/parameter file set from the command line

- » Enter the command line as you would normally, and then use a pipe to separate the Action/App name from the parameter filename. For example:

```
toad.exe -a "App->Export Dataset1 | c:\data  
files\ExportDataset1.ini"
```

Sharing Actions

One of the advantages to using actions and apps to manage your processes is that they can be shared easily with others.

Sending Actions by email

Sending an action from the clipboard

1. From the window you want to share (such as Export Dataset) click  in the status bar.
2. Select **Save to Clipboard**.

3. In your email, select **Paste**.
4. Send your email.

Sending actions from the Automation Designer

1. In the [Automation Designer](#), select the actions you want to send.

Note: If you want to send the entire ToadApp, select all the actions in that App tab.

2. Right-click and select **Copy** (CTRL+C).
3. In the email body, press **CTRL+V**.
4. Complete and send the email.

Receiving Actions by email

Receiving actions - clipboard to Toad feature window

1. From the email you receive, copy the action code to your clipboard.
2. Open the window where the settings reside (such as Export Dataset, or other)
3. Click the camera button in the status bar.
4. Select **Load from Clipboard** and click **OK**.
5. Settings are now loaded in your window and you can complete the action as you would normally.

Receiving an action - clipboard to Automation Designer

1. From the email you receive, copy the action code to your clipboard.
2. If it is not already open, open the Automation Designer. See "Managing Projects" (page 433) for more information.
3. Create a **ToadApp** or click the tab for the App where you want the actions to reside. See "Creating Apps" (page 471) for more information.
4. Right-click in the Automation Designer and select **Paste** (CTRL+V).
5. Rename the pasted action to something descriptive.
6. Run the action at will.

Action Catalog

Action Catalog

Toad Features that can be used in the Automation Designer are included in the tabs at the top of the Automation Designer right hand side Designer pane. These include:

Import Export

- Export Dataset Action (page 443)
- Export DDL (page 396)

- Import Table Data (page 416)

DB Misc

- ANSI Join Syntax (page 444)
- Actionable Query (page 444)
- Compare Schemas Action (page 447)
- DB Health Check Action (page 446)
- Execute Script (page 445)
- HTML Schema Doc Generator Action (page 446)
- Object Search Action (page 447)

Utilities

- Archive Action (page 449)
- Email Action (page 447)
- Format Files Action (page 451)
- FTP Action (page 449)
- Ping Action (page 450)
- Service Action (page 451)
- Execute Shell Action (page 448)
- TNS Ping Action (page 450)

File Management

These actions control your file structure. You can use them to create and move files and directory structures, check to see if files exist, and delete files and directories.

- Copy File Action (page 455)
- Create Directory Action (page 451)
- Create File Action (page 453)
- Delete Directory Action (page 452)
- Delete File Action (page 454)
- File Exists Action (page 456)
- Move Directory Action (page 453)
- Move File Action (page 455)

Control

These items are used only within the Automation Designer. They can be used to control how an app behaves.

- File Iterator Action (page 463)
- Folder Iterator Action (page 465)

- If...Then...Else Action (page 457)
- List Iterator Action (page 467)
- Log Comment (page 469)
- Message Action (page 462)
- Pause Action (page 463)
- Repeat...Until Action (page 457)
- Set Variable Action (page 461)
- Test Variable Action (page 461)
- Variable Prompt Action (page 462)
- While...Do Action (page 459)

Import/Export tab

Import Table Data Action

The Import Table Data  action lets you import table data without importing table structure. This must be imported into an existing table, although you can use the Create Table feature to create a new table for the import. See "Altering Tables" (page 1074) for more information.

Set Import Table Data properties. See "Import Table Data" (page 416) for more information.

Export DDL Action

The Export DDL () action lets you run a query and export the dataset to a file at any time. When setting properties for the Export DDL action, you can run the action by clicking Run at the bottom of the window. Clicking Apply will apply your changes.

The Export DDL properties window options are equivalent to the Export DDL window. To set Export DDL options, please see the Export DDL topic.

Export Dataset Action

The Export Dataset  action lets you run a query and export the dataset to a file at any time.

The Export Dataset properties window options are equivalent to the Save As (Export Dataset) window.

See "Export Dataset" (page 390) for more information about setting options.

Dataset

When you are selecting Save As from the data grid, Toad automatically includes the query that was used to create the dataset.

Note: If you load a previously created action into this window all settings EXCEPT the dataset will be loaded. In this way, you can use the export dataset action to export different datasets without setting options each time.

When setting properties for the Export Dataset action, you will need to insert the query or objects you want to export manually.

To set dataset specifications

1. Select either **Export query** or **Export objects**.
2. Do one of the following:
 - Enter the query in the box.
 - Click **Add** and select the objects you want to export.

DB Misc tab

ANSI Join Syntax

You can convert one or multiple SQL files to ANSI Join syntax using the ANSI Join action, or using the ANSI button in the Query Builder.

Note: SQL files to be converted must consist of *only one* query per file.

To convert a query using the ANSI converter action

1. In the Automation Designer, click the **Misc** action tab.
2. Click  and then click in the app.
3. Double-click the new action.
4. Click **Add** and select the saved SQL files you want to convert.
5. Specify the output directory for the converted statements.
6. Do one of the following:
 - Click **Apply** to apply property changes
 - Click **Run** to apply property changes and run the action.

To convert a SQL statement in the Query Builder

- » In the Generated Query tab, select the query to convert and click .

Note: You can set the Query Builder to create ANSI syntax automatically from Toad Options | Query Builder. See "Query Builder" (page 671) for more information.

Actionable Query

You can create a query that can be used as an action. This Actionable query produces a boolean result, which can then be used to conditionally execute any number of Actions. This is a powerful action whose possibilities are limited only by your creativity.

The actionable query can be a SQL query or an anonymous PL/SQL block.

- If you choose a SQL query, Toad enforces a boolean result by using the prefix "SELECT 1 FROM DUAL WHERE" before your query.
- If you choose an anonymous PL/SQL block, use a bind variable named :RESULT, passing it a 1 for a True condition, a non-1 for a False condition.

When you run the action, Toad will return a results message:

- Query is correct and returned TRUE
- Query is correct and returned FALSE
- an error message resulting from an incorrect query

To create an actionable query

1. From the Automation Designer navigation pane, click DB Misc.
2. Open the ToadApp tab where you want the query to reside, and then click .
3. Select either:
 - SQL
 - PL/SQL anonymous block
4. Enter the query in the text box provided.

Restrictions/Validations

The SQL must be valid. The PL/SQL block must use an integer bind variable named :RESULT.

For example:

```
begin
:RESULT:=-1;
end;
```

Execute Script

Using the execute script action () you can execute one or more scripts at a time, schedule them to run at a specified time, and so on.

Properties of the Execute Script action let you add any number of scripts to the action, and specify output type and location.

Script Source

Select the source of the script you want to run.

File list

If you select File list, scripts will be selected from a list of files and variables. Using this you can run multiple scripts. Create the list in the List File area.

In the file list area, add the scripts and variables you want this action to execute.

To enter scripts

- » Click **Add** and then select the scripts you want to add.

Use **Remove** to remove any scripts from the script grid, and **Clear** to clear the grid of all scripts.

To enter variables

- » Click **Add Var** and then select the variables you want to add. These can be system variables, or variables created by other actions.

Text

If you select text, you enter the SQL you wish to run directly in the Text box.

Output

Use the output area to specify how you want output generated by the script delivered.

- Use single file
- Use separate file for each script
- Clipboard
- Discard

Directory

If you have chosen output to be sent to a file, enter the directory where the file should be located in the Directory box.

DB Health Check Action

To create a DB Healthcheck Action from the Automation Designer

1. From the Automation Designer window, select the app you want to contain the health check.
2. Click the **DB Misc** tab, click  and then click in the app.
3. Double-click on the action icon and set properties. See "DB Health Check" (page 287) for more information.
4. Click **Apply**, then **Cancel** to save your settings and close the window.

HTML Schema Doc Generator Action

To create an HTML Schema Doc Generator action

1. From the Automation Designer window, select the app you want to contain the HTML Schema Doc generator action.
2. Click the DB Misc tab, click  and then click in the app.

3. Double-click on the action icon and set properties as described in HTML Schema Doc Generator.
4. Click **Apply**, then **Cancel** to save your settings and close the window.

Object Search Action

To create an object search action

1. From the Automation Designer, DBMisc tab, click .
2. Click in the app where you want the action.
3. Set action properties.

Compare Schemas Action

To create a compare schemas action from the Automation Designer

1. From the **Automation Designer**, open the app where you want to use Compare Schemas.
2. Click the **DB Misc** tab.
3. Click  and then click in the app.
4. Set properties. See "Compare Schemas" (page 260) for more information.
5. Click **Apply**.

Utilities tab

Email Action

You can create an action that will email specific information to the recipient of your choice. This action can then be scheduled, shared, and treated like any other action.

The email action is available only from the Automation Designer toolbar.

To create an email action

1. Open the app where you want the action to reside.
2. From the Automation Designer Utilities tab, click .
3. Enter the **Properties** for the action.
4. Rename the email action to a relevant name.
5. Schedule or run as desired.

Email properties

This topic only covers unfamiliar information. It does not include all step and field descriptions.

Recipients

Enter the email addresses of the recipients you want to receive this email. Multiple email addresses may be separated by semicolons.

From

Enter your email address. If you have already set the host under Toad Options | Email Settings, those settings are entered for you.

Append Clipboard Contents

Adds the contents of your clipboard to the bottom of the email.

Note: This appends the contents of the clipboard at *execution* of the action.

SMTP Server and Port

Enter the host and port for your email account. If you have set the host under Toad Options | Email Settings, those settings are entered for you.

Execute Shell Action

To create an execute shell action

1. Open the app where you want the action to reside.
2. From the Automation Designer Utilities tab, click .
3. Click in the app.
4. Double-click the action and enter the **Properties** for the action.
5. Rename the email action to a relevant name.
6. Schedule or run as desired.

Properties

This topic only covers unfamiliar information. It does not include all step and field descriptions.

Parameters

Enter any **Parameters**. These specify configurations of the program, and can be combined. Some standard parameters are listed in the [macro](#) box at the bottom of the window.

Macros

These variables can be added to the parameters area by selecting and clicking insert.

- \$UID - enters the current Toad User ID
- \$UPW - enters the current Toad User password

- \$SID - enters the current Toad database ID
- \$CWD - enters the current Toad working directory
- \$TMP - enters the windows temporary directory
- \$FIL - enters the file in the active editor

Archive Action

The Archive window lets you create zip files from within Toad. Use the archive action to create archives on a scheduled basis. You can choose to zip or unzip files, append to existing files and so on from this window.

To create an archive action

1. Open the app where you want the action to reside.
2. Click  on the **Automation Designer Utilities** tab.
3. Enter the **Properties** for the action.
4. Rename the action.
5. Schedule or run as desired.

Properties

This topic only covers unfamiliar information. It does not include all step and field descriptions.

Zip tab

To select files

- Click **Add Files** and then select the file or files you want to archive.

To select entire folders

- » Click **Add Folders** and then select the folder or folders you want to archive.

Unzip tab

To extract files

1. Select the location where you want to extract the files in an existing archive.
2. Enter the pathname in the **Extract to** box.
3. Select when you want to overwrite existing files:
 - Always - always overwrite with the extracted files.
 - Never - never overwrite a file.
 - Newer files - only overwrite if the extracted file is newer than the existing file.
 - Older files - only overwrite if the extracted file is older than the existing file.

FTP Action

Use FTP actions to save FTP settings and perform specific FTP actions whenever needed without entering all the information repeatedly. You can choose to upload or download from the FTP server, and specify files and directories.

To create an FTP action

1. Open the app where you want the action to reside.
2. From the Automation Designer Utilities tab, click .
3. Click in the app.
4. Double-click the action and enter the **Properties** for the action.
5. Rename the action to a relevant name.
6. Schedule or run as desired.

To set up FTP action properties

1. Click  and enter settings as described in the Server Settings topic.
2. Select **Upload** or **Download**.
3. Click **Add** and add any files you want to upload or download.
4. For upload, enter the absolute path of the remote directory.
5. For download, enter or browse to the absolute path of the local download directory.
6. Do one of the following:
 - a. Click **Run** to save and run the action
 - b. Click **Apply** to save changes.

Ping Action

To create a ping action

1. Open the app where you want the action to reside.
2. From the Automation Designer Utilities tab, click .
3. Click in the app.
4. Double-click the action and enter the Properties for the action (see [Ping](#)).
5. Rename the email action to a relevant name.
6. Schedule or run as desired.

TNS Ping Action

To create a TNS ping action

1. Open the app where you want the action to reside.
2. From the Automation Designer Utilities tab, click .

3. Click in the app.
4. Double-click the action and enter the **Properties** for the action (see [TNS Ping](#)).
5. Rename the email action to a relevant name.
6. Schedule or run as desired.

Service Action

The Service Action gives you control of services in a ToadApp. You can start, stop or toggle a selected service using this action.

To create a service action

1. From the Automation Designer, select the Utilities tab.
2. Open or create the ToadApp where you want the action to reside.
3. Click .
4. Click in the app.
5. Double-click the new action and set properties as desired.

To set service properties

1. In the ToadApp containing the service action, double-click the action.
2. To select the service you want to control, click **Select**.
3. Enter the computer name you want to control (leave blank for the local computer)
4. Click **Search**.
5. Select the service from the list of available services.
6. Click **OK**.
7. In the Action box, select one of the following:
 - Start - starts the service
 - Stop - stops the service
 - Toggle - switches a service from started to stopped or from stopped to started.

Format Files Action

To create a Format Files action

1. From the [Automation Designer](#), click the **Utilities** tab.
2. In the navigation panel, select the App where you want formatting to occur.
3. Click .
4. Click in the app.
5. Double-click the new action and set properties.

File Management tab

Create Directory Action

Use this action to create a new directory (folder) in the hard drive hierarchy. This allows you to create a new directory to store results, logs, and so on created by your ToadApp.

To create a create directory action

1. From the **Automation Designer**, select **File Management**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then click in the app.
4. Double-click the new action and set properties as desired.

To set create directory properties

1. Enter the full path of the desired new directory.
2. Click one of the following:
 - Run - Applies changes, runs the action, and closes the properties window.
 - Apply - Applies changes to the action and closes the properties window.
 - Cancel - cancels changes and closes the properties window.

Tips

- Wildcards are supported.
- Variables are supported.

Delete Directory Action

CAUTION: Using this action will delete files from the selected hard drive without prompting.

To create a delete directory action

1. From the Automation Designer, select **File Management**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then click in the app.
4. Double-click the new action and set properties as desired.

To set delete directory properties

1. Enter the full path of the directory to be deleted, or click  and select the directory.
2. Click one of the following:
 - Run - apply changes to properties and run the action
 - Apply - apply changes to properties

- Cancel - cancel the changes to properties, but leave action in Automation Designer

Tips

- Wildcards are supported.
- Variables are supported.

Move Directory Action

Use this action to move a directory within your drive hierarchy. This action can also be used to rename a directory.

CAUTION: Using this action will move files on the selected hard drive without prompting.

To create a move directory action

1. From the Automation Designer, select **File Management**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then click in the app.
4. Double-click the new action and set action properties as desired.

To set move directory properties

1. In the Current box, enter the full path of the directory to be moved, or click  and select the directory.
2. In the New box, enter the full path where you want the directory to be located.

Note: This action can also be used to rename a directory. Enter the same basic path in the New box, but with a different directory name.
3. Click one of the following:
 - Run - Applies changes, runs the action, and closes the properties window.
 - Apply - Applies changes to the action and closes the properties window.
 - Cancel - cancels changes and closes the properties window.

Tips

- Wildcards are supported.
- Variables are supported.
- The destination can be either a folder or a destination file.

Create File Action

Use this action to create a new file. You can use this to log actions as you run a ToadApp.

To create a create file action

1. From the **Automation Designer**, select **File Management**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then in the app.
4. Double-click the new action and set action properties as desired.

To set create directory properties

1. Enter the full path of the desired new file, including the filename and extension.
2. Enter any desired contents of the file.
3. Click one of the following:
 - Run - Applies changes, runs the action, and closes the properties window.
 - Apply - Applies changes to the action and closes the properties window.
 - Cancel - cancels changes and closes the properties window.

Tips

- Wildcards are supported.
- Variables are supported within content (will be expanded when the file is created.) See "Using Variables" (page 853) for more information.
- This creates a text file and can include content:

Delete File Action

Use this action to delete a file within your drive hierarchy.

CAUTION: Using this action will delete files from the selected hard drive without prompting.

To create a delete file action

1. From the Automation Designer, select **File Management**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then in the app.
4. Double-click the new action and set properties as desired.

To set delete file properties

1. In the ToadApp containing the delete file action, double-click the action.
2. Enter the full path of the file to be deleted, or click  and select the file.

3. Click one of the following:

- Run - apply changes to properties and run the action
- Apply - apply changes to properties
- Cancel - cancel the changes to properties, but leave action in Automation Designer

Tips

- Wildcards are supported.
- Variables are supported.

Move File Action

Use this action to move a file within your drive hierarchy. This action can also be used to rename a file.

CAUTION: Using this action will move files on the selected hard drive without prompting.

To create a move file action

1. From the Automation Designer, select **File Management**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then in the app.
4. Double-click the new action and set properties as desired.

To set move file properties

1. In the Current box, enter the full path of the file to be moved, or click  and select the file.
2. In the New box, enter the full path where you want the file to be located.
Note: This action can also be used to rename a file. Enter the same basic path in the New box, but with a different file name.
3. Click one of the following:
 - Run - Applies changes, runs the action, and closes the properties window.
 - Apply - Applies changes to the action and closes the properties window.
 - Cancel - cancels changes and closes the properties window.

Tips

- Wildcards are supported.
- Variables are supported.
- The destination can be either a folder or a destination file.

Copy File Action

You can use this action to log actions as you run a ToadApp.

To create a copy file action

1. From the **Automation Designer**, click the **File Management** tab.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then in the app.
4. Double-click the new action and set properties as desired.

To set copy file properties

1. In the source filesystem box, enter or select the full path of the file you want to move, including the filename and extension.
2. In the destination box, enter or select the directory path where you want to copy the file.
3. Choose whether or not to overwrite existing files of the same name.
4. Click one of the following:
 - Run - Applies changes, runs the action, and closes the properties window.
 - Apply - Applies changes to the action and closes the properties window.
 - Cancel - Cancels changes and closes the properties window.

Tips:

- Wildcards are supported.
- Variables are supported. See "Using Variables" (page 853) for more information.
- The destination can be either a folder or a destination file.

File Exists Action

Use this action to check that a file exists. When you run it, if the file exists, the run will be completed, if it does not exist, you will be given a run status of Failed execution.

To create a file exists action

1. From the Automation Designer, select **File Management**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then in the app.
4. Double-click the new action and set action properties as desired.

To set create directory properties

1. Enter or select the full path of the desired file, including the filename and extension.

Note: If there is a typo in the path of the file, the file exists action will fail.

2. Click one of the following:

- Run - apply changes, run the action, and close the properties window
- Apply - apply changes to the action and close the properties window
- Cancel - cancel changes and close the properties window

Tips

- Wildcards are supported.
- Variables are supported.

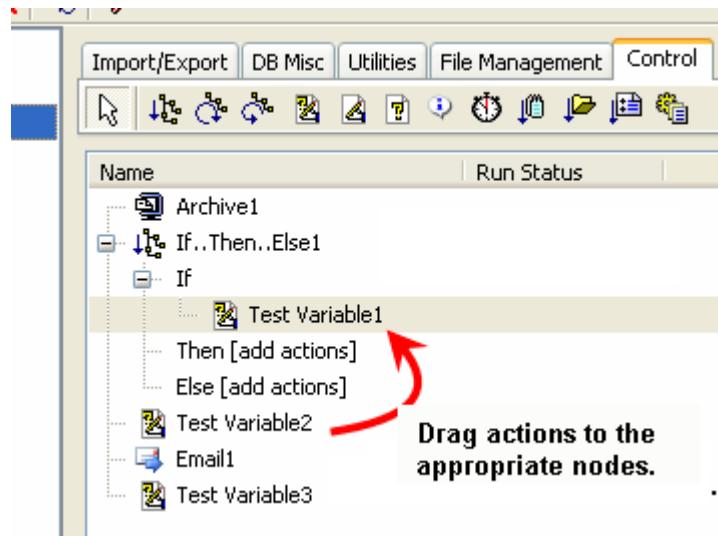
Control Tab

If...Then...Else Action

You can use the if...then...else action to control the flow of your ToadApps. Using this action, you can set up conditions and controls that utilize other actions.

To use the if...then...else action

1. From the Automation Designer, select the **Control** tab, and then click  and then in the app.
2. Create the action you want to set as the IF condition.
3. Drag it into the IF node in the app:



4. Do the same for the **Then** and **Else** nodes. Else is optional.
5. If necessary, double-click your conditional actions and adjust their properties.

Repeat...Until Action

Use the Repeat...Until action to control the flow of your ToadApps. Using this action, you can have a ToadApp repeat an action until a specified condition is met.

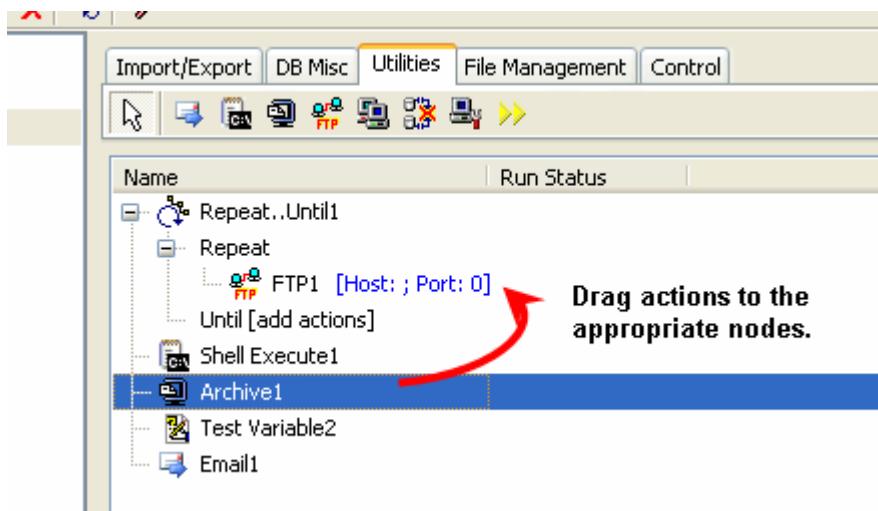
Read this action in English as “Repeat these actions Until any of these actions return False.” In other words, while all the actions under the “Until” node return True, execute all the actions under the “Repeat” node. The moment any action under the Until node returns False, stop execution of the actions under the Repeat node and continue processing the rest of the Toad App, setting the return value of the Repeat..Until action to True. Furthermore, if any of the actions under the “Repeat” node return False, set False as the return value of the main ‘Repeat..Until’ node and halt further execution of the Toad App.

You may use multiple UNTIL actions. You may need only one. It is probable that only one UNTIL action will be used though many are supported.

To use the repeat...until action

1. From the Automation Designer, select **Control**, and then double-click .
2. Create the actions you want to repeat, and the actions that you want to test.

Drag the action you want to repeat into the new **Repeat** node in the app:



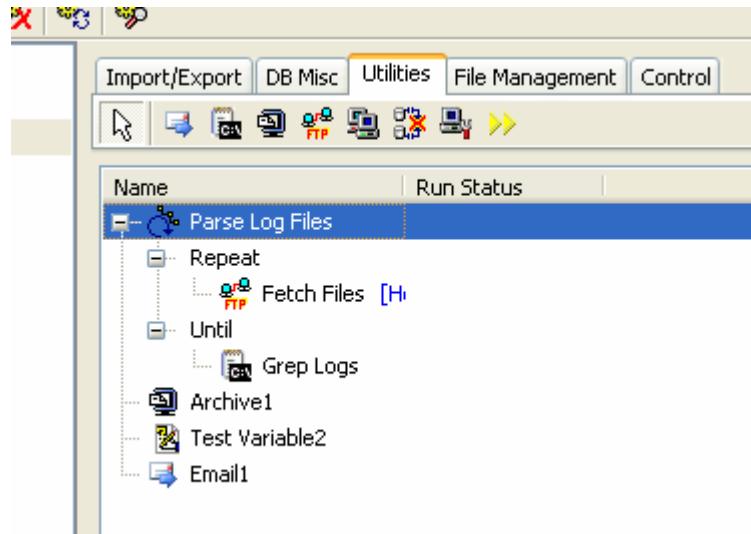
3. Do the same for the **Until** node.
4. If necessary, double-click your conditional actions and adjust their properties.

Example

This is an example of one possible use of this action.

1. Create a **Repeat..Until** action and name it “Parse Log Files”.
2. Create an **FTP** action to download files from the FTP server.
3. Create **Shell Execute** action to search for a specific string.
4. Drag the **FTP** action under the **Repeat** node and drag the **Shell Execute** action under the

Until node.



You now have a functional ToadApp which continually downloads files from an FTP server until one of them contains a particular string we are looking for. The moment the string is found execution ends.

While...Do Action

Use the While...Do action to control the flow of your ToadApps. Using this action, you can have a ToadApp repeat an action until a specified condition is met. A While action is similar to a [Repeat...Until](#) action, except that the conditional actions are executed before the statement actions are executed. Hence, if any of the conditional actions are false, the statement actions are never executed.

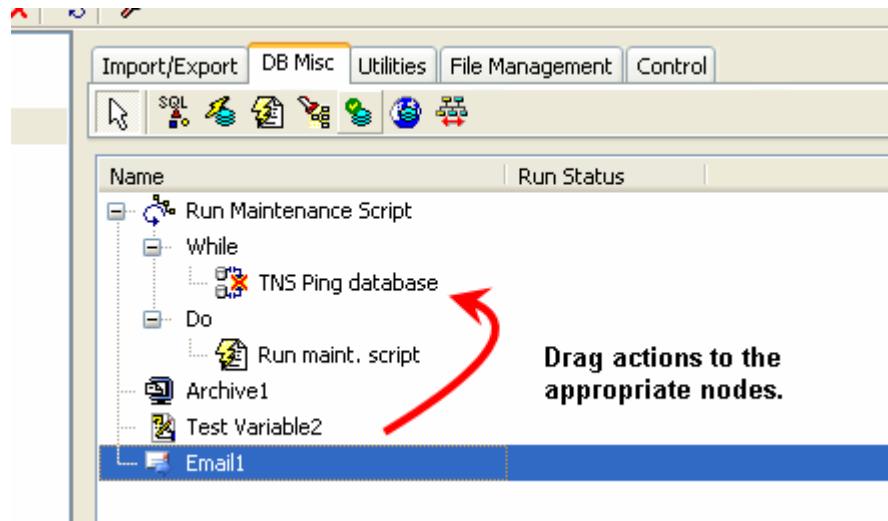
Read this action in English as “While these actions return true, execute (Do) these actions.” In other words, while all the actions under the **While** node return True, execute all the actions under the **Do** node. As soon as any action under the While node returns False, stop execution of the actions under the Do node and continue processing the rest of the ToadApp, setting the return value of the While..Do action to True. Furthermore, if any of the actions under the **Do** node return False, set False as the return value of the main While..Do action and halt further execution of the ToadApp.

You may use multiple WHILE actions. You may need only one. It is probable that only one WHILE action will be used though many are supported.

To use the While...Do action

1. From the Automation Designer, select **Control**, and then click . Click again in the app where you want to use the action.
2. Create the actions you want to test, and the actions that you want to repeat.

Drag the action you want to use as a test into the new **While** node in the app:

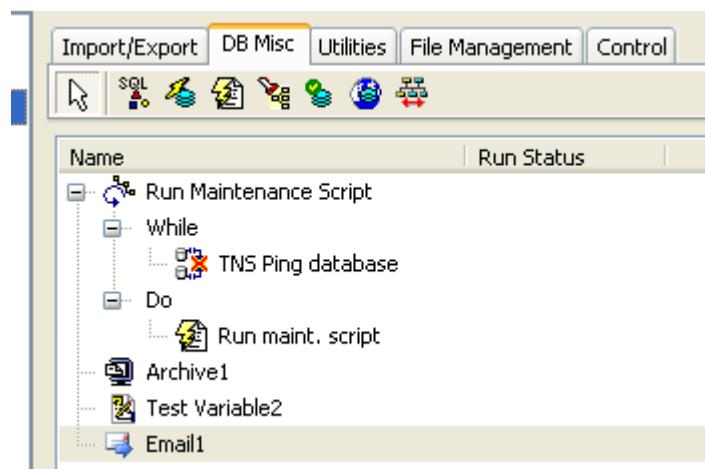


3. Drag the action you want to repeat into the Do node in the app.
4. If necessary, double-click your conditional actions and adjust their properties.

Example

This is an example of one possible use of this action.

- Create a **While...Do** action and name it **Run Maintenance Script**.
- Create a **TNS Ping** action to download files from the FTP server.
- Create an **Execute Script** action to search for a specific string.
- Drag the TNSPing action under the **While** node and drag the Execute Script action under the **Do** node.



You now have a functional ToadApp which executes a maintenance script on the database until the database listener stops.

Test Variable Action

The test variable action can test the value of a Windows, Toad or user-defined variable. Variables themselves cannot be referenced in the "value" section, as this would construe the value as formulaic, which it is not.

Test Variable supports numbers and strings as values. It does not support formulas and variables in the value section. Variables will typically be strings.

Supported operands are <, <=, =, >, > and >=.

To create a test variable action

1. From the Automation Designer, select **Control**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then click in the app.
4. Double-click the new action and set properties as desired.

Example

This is one possible use of a test variable action:

- Create a **Test Variable** action and name it **Check Session Count**.
- Enter the variable name in the Variable box. In this case, Session Creation Count.
- Enter the **Variable**. (<)
- Enter the value you want to test.

This tests the value of the user-defined variable, "Session Creation Count," and returns **True** if the value is less than 4, and **False** otherwise. This return value can then be used in subsequent actions. If the action returns false (Session Creation count value is less than four) execution of the ToadApp halts.

Set Variable Action

Set the value of a user-defined variable. Windows environment variables and internal Toad system variables cannot be set, only those variables which the user added from the **Options | Variables** window.

To create a set variable action

1. From the Automation Designer, select **Control**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then click in the app.
4. Double-click the new action and set properties as desired.

Variable Support

Existing variables cannot be used as a variable value, because variable support is not formulaic.

Only numbers and strings can be values. Neither formulas nor variables are supported as variables.

Example

This is one possible use of a Set variable action:

1. Create a **Set Variable** action and name it **Establish Session Count**.
2. Enter the variable name in the Variable box. In this case, Session Creation Count.
3. Enter the value for the variable.

This Establish Session Count action sets a value of 5 into the Session Creation Count variable. Subsequent actions can then reference this variable instead of hard-coding the value of 5.

Variable Prompt Action

Use this action to have an app prompt for a variable value before continuing. For example, you could use this action for "on-the-fly" alteration of variable values.

Acceptable variables are provided in a drop-down list in the properties window.

To create a variable prompt action

1. From the Automation Designer, select **Control**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then click in the app.
4. Double-click the new action and set properties as desired.

Message Action

Displays a text box of a particular style (Warning, Error, Information & Confirmation). The text box will contain either an OK/Cancel or a Yes/No button combination. Clicking **OK** or **Yes** resumes execution of subsequent actions, clicking **Cancel** or **No** stops execution of any remaining actions.

To create a message action

1. From the Automation Designer, select **Control**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then click in the app.
4. Double-click the new action and set properties as desired.

Variable Support

Variables are supported in the Message.

Example

This is an example of a warning message box.

1. Create a Message action.
2. In the properties dialog, select the Message Type - **Warning**.
3. Select the button combination you want to use. In this case, **OK/Cancel**.
4. Enter the message you want to display. You can use environment variables as in the following example:

```
%CURRENTUSER% is the active user. Please disconnect session before continuing.
```

Pause Action

The Pause action pauses execution of further actions by a specified amount of time.

To create a pause action

1. From the Automation Designer, select **Control**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then click in the app.
4. Double-click the new action and set properties as desired.

Example

This Wait for Server action performs a sleep for 3 minutes. It could be used in a loop which includes a Ping to wait an adequate period of time for a server to be started before continuing the execution of the rest of the ToadApp.

- » Create a Pause action with the following properties:

- Pause box: **3**
- Time dropdown: **Minutes**
- Rename the action **Wait for Server**.

File Iterator Action

In the control section of the Automation Designer, you can choose to iterate a file. This provides a means to work through the contents of the file, executing child actions for every line in the Iterate Actions file.

Child actions can reference each line in the file by means of a temporary variable which the iterator creates as it works.

To create a file iterator action

1. From the Automation Designer, select **Control**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then click in the app.
4. Double-click the new action and set properties as desired.

Variable Support

A temporary Variable is created and assigned to each line in the file the user specifies. This temporary Variable is visible only within the context of a File Iterator execution and would typically be used by child actions. Part or all of the File Iterator filename itself can be a Variable.

Example

This simple example uses a master file of script names, with each line in the file designating a different script to execute. The File Iterator action sends each line item to an Execute Script action for execution. This keeps the list of scripts to execute in an external disk file for easy updating, and prevents the need to hard-code it into the Execute Script action itself.

In the properties window for a File Iterator, enter the filename. The output variable is taken from the name you gave the action when you created it. This is the variable that Toad may use for child actions as it steps through the file. Child actions do not necessarily have to reference the file items, making the output variable optional. You can also control the number of times child actions are executed with lines in the file.

For example

1. The “ScriptCollection.txt” file contains a list of files to execute:

```
c:\runme.sql  
c:\AlsoRunMe.sql
```

2. Create a **File Iterator**  action, naming it Iterate Script Files.
3. Add an **Execute Script** action under the Iterator. See "Execute Script" (page 445) for more information.
4. Modify the **Execute Script** action properties to reference the line items from the parent action:
 - a. Open the Execute Script properties window.
 - b. In the File List area, click **Add Variable**.
 - c. Select **Use Parent Output Variable**.
 - d. Click **OK**.
5. Click **Apply** and then click **Cancel**.

Now when you run **Iterate Script Files** Toad opens the file ScriptCollection.txt, reading line by line, placing the line into a temporary variable named “Iterate Script files” then execute all child actions for each line. In this case, the Execute Script action will execute

```
c:\runme.sql
```

and then

```
c:\AlsoRunMe.sql
```

Folder Iterator Action

The folder iterator action provides a way to step through all the files in a folder, executing child actions for each file in the specified folder (and optionally, subfolder). Child Actions can reference each file in turn by means of a temporary variable created by the iterator.

To create a folder iterator action

1. From the Automation Designer, select **Control**.
2. Open or create the ToadApp where you want the action to reside.
3. Click  and then click in the app.
4. Double-click the new action and set properties as desired.

Variable Support

A temporary variable is created and assigned to each filename in the designated Folder. This temporary variable is visible only within the context of a folder iterator execution and will typically be used by child actions.

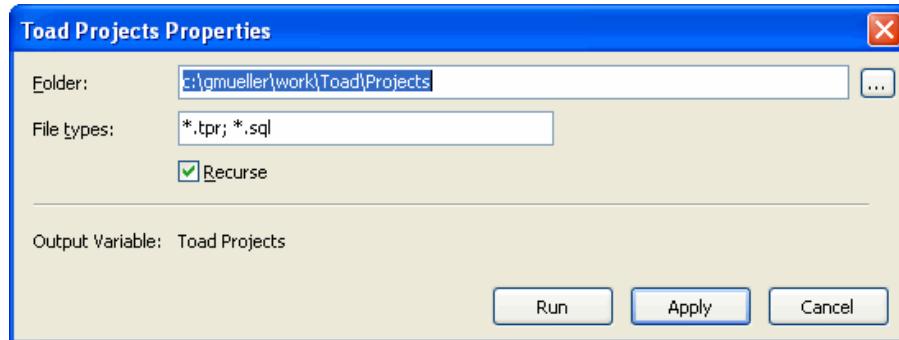
To use the folder iterator

1. In the folder iterator properties dialog, the following properties are set:
 - Folder - the directory to iterate.
 - File Types - a semicolon delimited list of file extensions to use as a filter. Iterator's child actions will execute for each file matching the list of extensions. If no file types are specified, all files (*.*) will be iterated.
 - Recurse -check to iterate all child folders as well.
 - Output Variable - this is the name of the temporary variable assigned to each filename. It is the same as the name of the action. Child actions can reference this variable.
2. Create and drag child actions to the Iterate Folder node. Any number of child actions can be added.

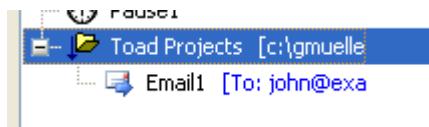
Example

The folder iterator action can be used for many things related to execution of actions for each file in a directory. This simple example will send an email with an attachment for each SQL source file.

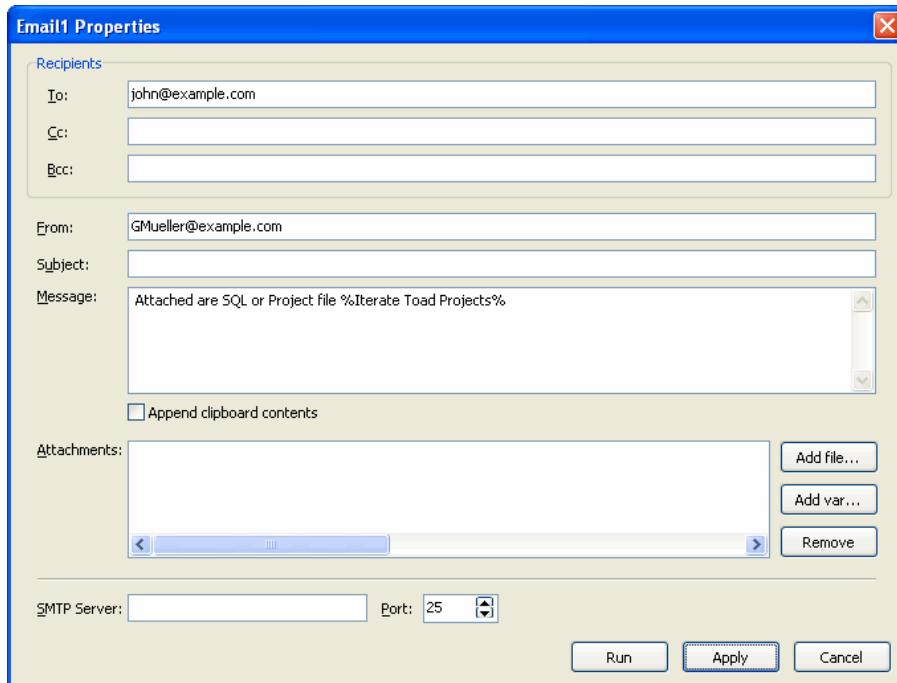
1. First set up the folder iterator action with the directory and file types desired. In this case, we used the directory where we store Toad project files and SQL code:



2. Create a single action as an iterator child. In this case, an email action (See "Email Action" (page 447) for more information):

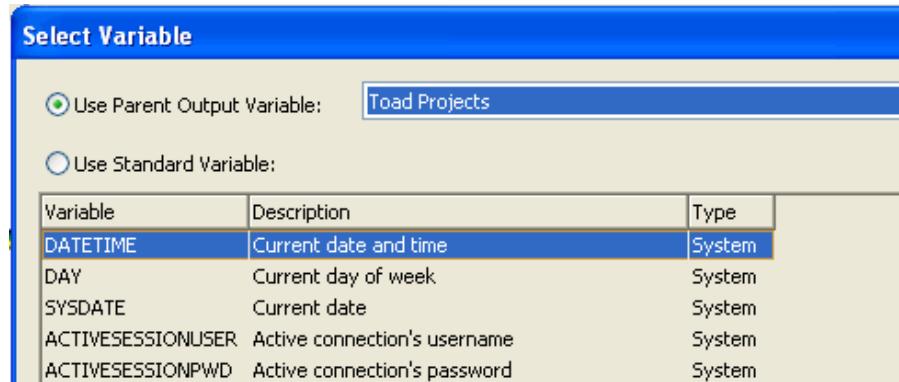


3. Set up or edit the email properties as follows:



Notice that the Message contains the temporary Variable “%Iterate Toad Projects%”. At runtime, this Variable will be replaced with the filename of each file in the folder.

4. You can also add the Variable as an attachment. Click **Add var...** to display a Select Variable form:



The Use Parent Output Variable dropdown lists the names of all temporary Variables contained by the Action's parentage.

Note: Folder Iterators can be nested. If the Email Action had multiple Folder Iterator parents above it, this dropdown would display the name of each. This allows fine control over which parent Variable to use.

5. If the “Use Standard Variable” radio button is selected, the grid becomes available and the normal list of Variables can be selected.

List Iterator Action

The list iterator action provides a means to step through a list of strings provided by the user, executing child actions for each item in the list. Child actions can reference each item by means of a temporary variable.

To create a list iterator action

1. From the Automation Designer, select **Control**.
2. Open or create the ToadApp where you want the action to reside.
3. Click and then click in the app.
4. Double-click the new action and set properties as desired.

Variables

A temporary variable is created and assigned to each item in the list. This temporary variable is visible only within the context of a List Iterator execution and would typically be used by child actions.

Further, any item in the list can itself be a variable.

To use the list iterator

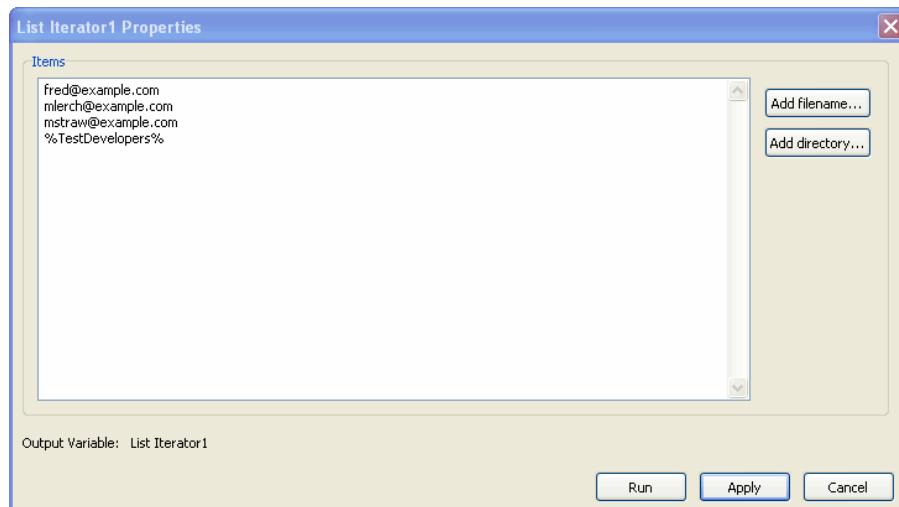
- » In the list iterator properties dialog, the following properties are set:
 - List - enter strings to act on directly in the Items box. Separate items with a carriage return.

- Filenames - enter filenames by either entering the path as above, or by clicking **Add filename** box and searching for the file.
- Directories - enter directories by either entering the path as a string, or by clicking **Add directory** and searching for the directory.

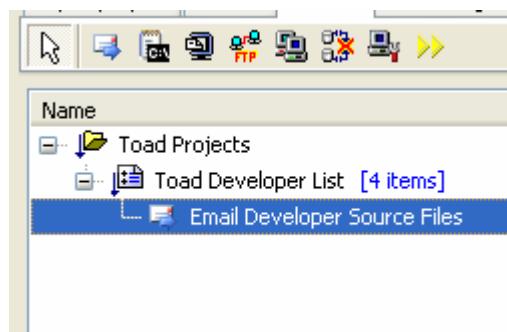
Example

A List Iterator is useful for many things related to execution of actions for each item in a user-provided list. This simple example sends an email with an attachment for each SQL file to every developer in a given list.

1. In the Properties window for a List Iterator, we built a simple list of strings, organizing it in the order wanted. If something is out of place, you can cut and paste it into the correct location. Note that there is a Variable included in the list.

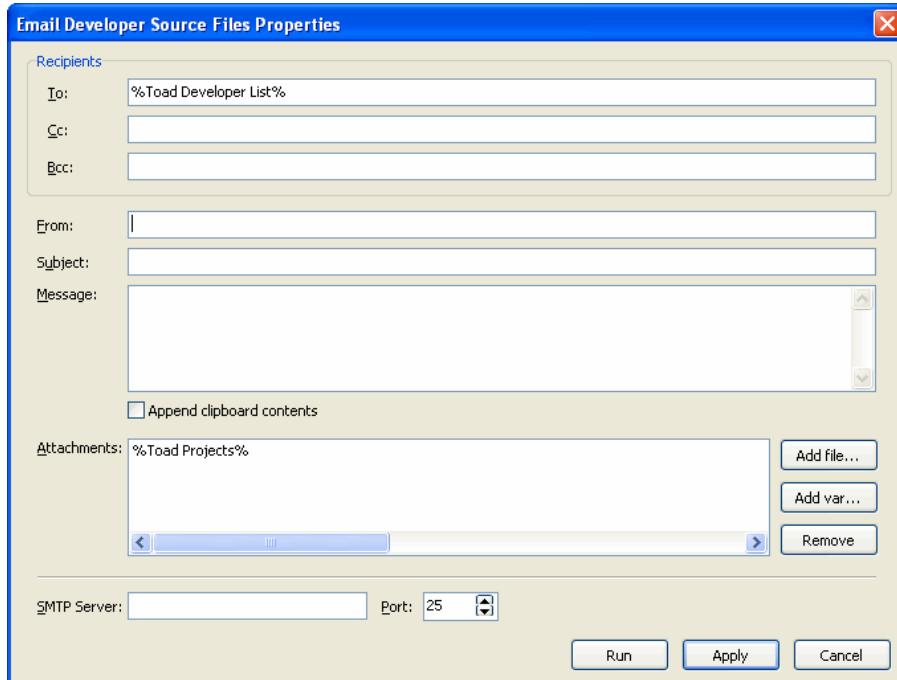


2. We added our List Iterator to the Automation Designer, making it a child of a Folder Iterator. This will cause the List Iterator to execute for each file in the specified directory.



3. In the Properties dialog for the Email Action (Email Developer Source Files) we reference each of the Output Variables from the two parents above it.
4. In the To field we reference %Toad Developer List%, the name of the direct parent. This will be substituted with each email address in our list.

The Attachments list references the Output Variable from the Folder Iterator Action two levels up. This will be substituted with every filename provided by the Folder Iterator.



Log Comment

The log comment action inserts a comment into the execution log of the ToadApp.

This can be useful when you want to note why an execution went a specific direction, as in an if...the...else statement, or note when or where something failed.

Variables are not supported within this action.

To create a log comment action

1. From the Automation Designer, select **Control**.
2. Open or create the ToadApp where you want the action to reside.
3. Click and then click in the app.
4. Double-click the new action and set properties as desired.

ToadApps

Managing ToadApps

ToadApps (apps) are central to the efficient use of actions. You can use apps to store and manage actions you have created. By ordering the actions within an app, you can run the actions in them from the command line, or use the Windows Scheduler to schedule them to run at a particular time. The order in which they are specified will be the order in which they are run.

- Creating Apps (page 471)
- Naming Apps (page 471)
- Viewing App Contents (page 472)
- Setting the number of actions saved in the vault (page 438)
- Ordering an App (page 472)

Copying or Moving Actions

Between ToadApps

To move an action

1. Cut the action from one app by pressing **CTRL+X** (or right-clicking and selecting **Cut**).
2. Paste the action into the new location by pressing **CTRL+V** (or right-clicking and selecting **Paste**).

To copy an action

1. Copy the action from one app by pressing **CTRL+C** (or right-clicking and selecting **Copy**).
2. Paste the action into the new location by pressing **CTRL+V** (or right-clicking and selecting **Paste**).

Within a ToadApp

To move an action

- » Drag and drop the action to the new location in the app.

To copy an action

Note: A copied action will always be pasted at the bottom of the action list. You will need to move it if it needs to be in a different location.

1. Copy the action from one app by pressing **CTRL+C** (or right-clicking and selecting **Copy**).
2. Paste the action into app by pressing **CTRL+V** (or right-clicking and selecting **Paste**).

Linking and Moving Apps

You can move apps from one category to another, and you can link them so that they are present in more than one category.

To move an app between categories

1. In the right hand pane, if it is not active, click **Apps**.
2. Drag and drop the app from one category to the other.

Linking apps

Linking apps does more than just copy the app into multiple categories. A change in a linked app in one category results in the same change in the app in linked categories.

To link apps in multiple categories

1. In the right hand pane, if it is not active, click **Apps**.
2. Hold down the **CTRL** key, and drag and drop the app from one category to the other.

Creating Apps

An app is a set of actions that can be run as a unit to automate tasks.

To create an app

1. If the Automation Designer is not open, select **Utilities | Automation Designer** from the menu.

Select a category node.

Note: If you do not select a category node, the app will be created in the Default node.
2. Right-click and select **New**.
3. Enter a name for the new app and then click **OK**.

Creating App Categories

You can create Categories of Applications within the Automation Designer. Use these categories to organize your ToadApps. For example, you could have a category for actions used on your Dallas server, and one for those on your Atlanta server. Alternately, you could organize them by type: apps governing import/export for example, or apps related to server control.

To create an app category

1. From the **Automation Designer (Utilities | Automation Designer)**, right-click in the navigator.
2. Select **Folder | New Folder** from the popup menu.
3. Name your new folder.
4. Click **OK**.

Naming Apps

If you aren't happy with the name you have given a category, an app or an action, you can change it.

Note: You cannot rename Action Recall or the Default category.

To rename a ToadApp

1. In the tree view, right-click on the node representing the category, app or action.
2. Do one of the following:
 - Select **Properties**.
 - Select **Rename**.
3. Enter the new name.
4. Click **OK**.

Ordering an App

You can change the order of the actions within an app. This is useful if you are planning on running actions as a set from the command line, or on a schedule. By putting them in the order you want them to run, for example, you can define emails that should be sent before, during, and after the process, and can specify actions that belong within other actions (for example, the action that relates to the If, Then, or Else statements).

To order a ToadApp

1. Activate the app you want to order.
2. In the right-hand application panel, drag and drop the actions in the list into the order you want them to run.

Viewing App Contents

You can view the actions contained in apps.

To view a different ToadApp

- In the Apps area of the navigation pane, click on the node corresponding to the app you want to view.

Project Manager

Project Manager Overview

You can use the Project Manager to easily organize your work area. The window is organized in a tree structure, with every item in the tree being a node that points to a different object. You can combine several different Oracle connections and FTP connections into one project to make it easy to upload, download, and work with your databases. You can add subproject folders to your projects to further organize your work.

If you have recently upgraded Toad and you want to view newly available Project Manager actions, such as right-click menus, select the Configuration screen. See "Reset all Defaults" (page 476) for more information.

Unless you have a highly configured Project Manager environment you may want to consider performing a **Reset all defaults** to see all the new actions within the window itself.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

To access the Project Manager

- » From the **View** menu, select **Project Manager**.

Connection Panel	The connection pane ( tab) is an area to work with various connections. You can create new connections, end connections, run scripts from a particular connection, and so on from this area. See "Connection Panel" (page 487) for more information.
Nodes	The Project Manager ( tab) uses the following types of nodes and tabs to let you arrange your work:
Project Folder	The overlaying organizational unit is the Project Folder tab. This can contain other project folders, other types of folder, or other content. Multiple project folders can be created and arranged to suit your work style. The connections tab cannot be moved. The order of tabs is preserved when you close and reopen the Project Manager. Hovering your pointer over a project tab will display the full path to the project file. See "Project Nodes" (page 489) for more information.
File Folder	Use a File Folder node to represent a folder on a local or network disk. See "Folders" (page 497) for more information.
File	Use a folder item node to represent a file on a local or network disk. These can include .sql files, .html files, .doc files, and so on. This node is located beneath a file folder node. See "Adding Folder Items" (page 497) for more information.
FTP Folder	Use an FTP folder node to represent a folder on an external FTP server. Contains FTP files. See "FTP Folder Actions" (page 499) for more information.
FTP File	Use an FTP file node to represent a file on an external FTP server. This node will always be beneath an FTP folder.

	See "Add FTP Folder Items" (page 499) for more information.
DB Schema	You can add a Database Schema node to represent a connection to a schema on a database. Can contain database objects. See "Schema Nodes" (page 491) for more information.
DB Object	Within schema nodes, you can include database object nodes. These represent objects residing on a database. Must be contained in a DB Schema node. See "Adding" (page 491) for more information.
Task	Use the Project Manager to schedule tasks using the Windows Task Scheduler. See "Task Scheduler" (page 762) for more information.
To Do List	Represents an user-created checklist. To do items are added beneath it. See "To Do Lists" (page 500) for more information.
URL	Represents an URL and can act like a shortcut to that site.

Acting on Nodes

The Project Manager is highly configurable, letting you easily work with various objects at one time. You can configure its behavior for:

- PM - Drag and Drop Operations (page 481)
- PM - Double-click Operations (page 481)
- Resetting Defaults (page 482) (right-click)
- Project Manager Sorting (page 485)

If you are just starting out with the Project Manager, reading the Working with the Project Manager book (beginning at Working with the Project Manager (page 482)) in this help file will give you an overview of the types of things you can do in this window. Then move on to Configure Project Manager, which will give you an idea of how to customize the window to work in the best way for you.

Project Manager Toolbar

The toolbar lets you perform Project Manager actions with just a click of the mouse.



Button	Command
	Select the drop down menu to choose an item to add.
	Loads a Project File.
	Creates a new Project File.
	Saves Project File as....
	Saves Current Project File.
	Print project
	Toggles Reorder Mode so you can move items around within the Project Manager. By default, items are included in the hierarchy in the order they are added.
	Remove Dead Links.
	Access Project Manager Options to configure the Project Manager.

Removing Dead Links

In the Project Manager, you can remove any dead links in your project. These can include nodes which no longer exist in the schema, windows tasks which are no longer present and so on.

When you select a type of link to remove, all dead links of that type will be removed. To remove limited numbers of them, you will need to remove the appropriate nodes manually. When you remove dead links, all subnodes are removed as well as the dead node.

To remove dead links

1. Click  on the Project Manager toolbar.
2. In the Remove Dead Links dialog, select the types of dead link you want to remove.
3. Click **OK**.

Configuring the Project Manager

Configuring the Project Manager

The Project Manager can be configured to work in the way you work. You can specify the command Toad executes when you drag a file onto another file, or onto a node.

Double-clicking is also customizable, as are the menu items that appear in the right-click (pop up) menu. See "Drag-and-Drop" (page 484) for more information.

To configure the Project Manager

1. Click  on the Project Manager toolbar.
2. Select or clear the options you want to configure.

Note: You can also choose to Reset all Defaults or Use defaults for a particular tab.

3. Click **OK**.

Reset all Defaults

Clicking Reset all Defaults at the bottom of this dialog box will reset defaults on ALL tabs.

Use Defaults

Click the Use Defaults button on an individual tab to return to the default settings for that tab only.

General Options

General options let you change the options for the entire Project Manager.

To access General options

1. Click  on the Project Manager toolbar.
2. If it is not selected, click the **General** tab.

Editor file load options

The default is **Load into new window**.

Reload into existing window

Select this option to load editor contents into the existing Editor window.

If this option is selected, you must choose to either append the new data to the data existing in the window, replace the contents of the window entirely, or create a new tab and load the SQL there.

The default is unselected.

Load into new window

Select this option to open a new Editor window in which to load your file. This is the default option for file loading.

Generate Script for Multiple check box - if checked and multiple scripts are selected for loading, Toad creates a script referencing the selected scripts as follows (assuming employees 1 through 3 are selected for loading)

```
@"c:\one\two\employees.sql"  
@"c:\one\two\employees1.sql"  
@"c:\one\two\employees2.sql"
```

The default is checked.

Navigate to previous invocation

When selected, if you choose a file to load into the Editor that is already there, TOAD will navigate to that Editor tab. In addition, this option finds the Editor in which the file was previously loaded, brings it to the top, and makes the tab in which its loaded the active tab (navigates not just to the tab but to the SE if there are multiple open).

Prompt each time

When selected, TOAD will prompt you to select one of the above options each time you choose to load a new file.

Export Options

Compress export file (.zip)

When this option is selected, Toad compresses the exported file into a .zip format. The default is unchecked.

Watch progress

When this is selected, Toad watches the progress of long exports.

The default is checked.

FTP server passwords

Save encrypted passwords

When checked, Toad saves the passwords for your FTP sites in an encrypted format.

The default is checked.

To-Do

Past due color drop down

A to do item displays in black text by default. When it is past due, the color changes as an instant reminder. Choose the color you want past due items to be from the drop down color

menu.

The default is red.

Server side compression

Utility for 'compress' action

Select the utility you want to use for server side compression from the compress drop down.

Choices are compress, zip or gzip. The default is compress.

Web Browser

You can select the web browser you want Toad to use for web based activity.

Filename

If you know the location of your web browser, you can enter the entire path in the filename box.

Browse

Click the **Browse** button to locate your web browser using a standard Windows Open dialog.

Find default

Click the **Find default** button and Toad will find your default browser and enter it in the filename box for you.

Dragging and Dropping

Prompt if multiple actions are available

If you have checked this option, and multiple actions are available, Toad will display a dialog for you to choose the action you want to perform. From this dialog, you can also make the action the default, and turn off prompting.

This is the default.

Use user setting

When checked, Toad uses the value you chose (or the default) on the "Drag and drop operations" tab in the Project Manager Options window.

Refresh folder links

Include subdirectories

When checked, a refresh includes all subdirectories of the folders in the nodes. The entire folder tree will be built in the Project Manager.

Unchecked, only files under the folder's main directory are displayed. Subfolders are not added.

The default is checked.

Refresh after changing properties

When checked, if you set a filter, or otherwise change the properties of a folder, all folder links are refreshed when you click OK. Unchecked, folder links are not refreshed.

The default is unchecked.

Prompt before rebuilding

When checked, Toad will prompt you for confirmation before rebuilding any links when you refresh a folder item. If unchecked links will be built without notifying you.

The default is checked.

Shell for remote file execution

You can select a shell for use when executing a file remotely. Select from the drop down menu. The following common shells are available:

- Bourne shell (sh)
- Korn shell (ksh)
- CSH

In addition, you can supply your own shell choice by entering the appropriate shell name in the box.

The default is no shell selected.

Tree

Font

Click the Font button for a standard Font dialog to select the font and font properties Toad uses in the Project Manager.

The default is MS Sans Serif.

SmartExpand

Select this check box to only allow one top-level project node to be expanded at one time. Expanding one node will collapse the others.

The default is unchecked.

PM - Associations

The Application Properties dialog box is accessible from the Project Manager. See "Project Manager Overview" (page 472) for more information.

To set application properties

1. On the Project Manager toolbar, click .
2. Click the **Associations** tab.

3. Click **Add**, or select an **association** and click **Edit**. The Application Properties dialog box appears.

From this dialog box you can easily create or edit associations.

Property Descriptions

Title

Enter the title you want the association to have in the Project Manager.

Program

Enter either the full path name of the program, or click  to search for it.

Working dir

Enter the full path name for the directory you want to specify as the working directory for this application, or click  to search for it.

Parameters

You can use one or more of the following parameter variables to configure your application:

- \$UID - enters the current Toad User ID
- \$UPW - enters the current Toad User password
- \$SID - enters the current Toad database ID
- \$CWD - enters the current Toad working directory
- \$TMP - enters the windows temporary directory
- \$FIL - enters the file in the active editor
- %S (or "%S") - specifies where the filename should appear (otherwise Toad uses the standard convention of "app.exe -options filename".

These parameters can be used individually, or combined. For example, if you wanted to automatically open Notepad with the current file in the active editor, you would enter the information to open Notepad as above, and enter \$FIL in the Parameters field.

You could also enter the command: `sqlplusw.exe $UID/$UPW@$SID` which starts sql plus with the current toad connection.

Extensions

Enter the extensions you want to associate with this application.

Run

Enter the parameters for how you want the application to run when accessed, as follows:

Window type	Specify the window type you want to open: Normal, Minimized or Maximized.
-------------	---

Launch new	Start a new instance of the application when the Project Manager accesses it.
Use existing if possible	If an existing instance of the application is running, Toad will try to use that instance before moving to start the application again.

Icon

Choose an icon you want to associate with files that use this application.

PM - Drag and Drop Operations

Use the drag and drop operations screen to configure the action Toad takes when an item is dragged within the Project Manager.

The grid is organized in a simple, "when source is, and destination is, then do this" format. The action performed can easily be set to other possibilities.

To change the action performed on dropping

1. Click on the action you want to change. An arrow appears in the right of the cell.
2. Click the arrow to display a menu of possible actions.
3. Click the action you want to select.

PM - Double-click Operations

Use the double-click operations screen to configure the action Toad takes when an item is double-clicked within the Project Manager.

The grid is organized in a simple, "when source is this, then do this" format. The action performed can easily be set to other possibilities.

To change the action performed on double-click

1. Click on the action you want to change. An arrow appears in the right of the cell.
2. Click the arrow to display a menu of possible actions.
3. Click the action you want to select.

PM - Popup Menus

Each different type of object in the left pane of the Project Manager has an associated pop up (right-click) menu. This means that if you have an FTP folder selected, the items selected under FTP appear on the menu, and so on. For the most part, items you add are added to the topmost area of the right-click menu, in addition to the standard items in the lower regions (Add, Remove, Rename, Copy, and Properties, for example).

Note: For database objects under a schema node with an open connection, the topmost part of the right-click menu is the Schema Browser menu for that object type. This is not customizable. Any changes you make will occur below the Schema Browser menu.

In addition, from time to time certain menu items may appear which are specific only to certain file types, such as the Run in Quest ScriptRunner item, which appears only for SQL files. These items are specific to the file type, as defined by their extension, and are not customizable.

To customize the popup menus

1. Click  on the Project Manager toolbar.
2. Click the **Popup menus** tab.
3. Select menu items you want to appear on the various menus, and clear items you do not want to appear.
4. Click **OK**.

Resetting Defaults

You can reset defaults in only the popup menu area, or throughout the Project Manager.

To reset defaults in popup menus only

- » Click **Use Defaults**.

To reset defaults throughout the Project Manager

- » Click **Restore Defaults**.

Working with the Project Manager

Using Different Types of Objects Simultaneously

One of the great advantages to using the Project Manager is that you can work with multiple types of objects at the same time. This lets you drag-and-drop them to access functions.

After you have added a variety of different types of database objects under one or more schema nodes, you can:

- Multi-select database objects, right-click and choose **DDL to clipboard**, **DDL to file**, **Load DDL into Editor** or **Describe** (Describe may not be available depending upon the object type)
- Drag objects onto one another to compare them
- Drag objects onto a local or remote file folder link to generate a DDL file which will be placed into the local or remote folder
- Drag objects onto a local or remote file to generate the DDL for the objects and overwrite the destination file with the DDL

Working with Server Directories and Files

Another of the many strengths of the [Project Manager](#) is its ability to easily work with FTP server directories and files.

After you have created an FTP folder and added server information to it you can create additional nodes and servers quickly by using the copy nodes feature. You can also right-click and select **Rename** to rename the node for a more logical representation of what the directory contains, such as **Toad UNIX Scheduler log files**.

From here you can:

- Select one or more server nodes, right-click and select **Refresh server links**. This builds shortcuts to all the files underneath the selected server directories. Whenever you want to get an updated list of the server directory contents simply select refresh to rebuild the nodes.
- Drag-and-drop server file links to local directories to download the files.
- Drag-and-drop local file links to server directories to upload the files to the server.
- Drag files into the trash can to move them to the Recycle Bin.

Loading Local or Server Files into Toad Windows or External Applications

If you frequently work with files in Toad or other applications you can add links to them in the Project Manager. You can then associate their file extensions with either Toad windows or defined external applications. (See [Configure Project Manager](#) for more detailed information about associating extensions.)

Toad windows with which you can associate files include: Editor, Offline Editor, SQL*Loader, Query Builder, TNSNames Editor, Export File Browser and the Project Manager itself. When double-clicking or right-clicking and selecting **Load**, files that match pre-defined extensions for these windows will be loaded.

Note: To be sure you see all options, click the **Add defaults** button.

You can use the Associations tab in the Project Manager options to change the default extensions for the Toad windows, or add external applications yourself. For instance, you could add Internet Explorer as an application and associate it with htm and html files.

To access the extension configuration window

1. From the Project Manager toolbar, click .
2. Click the **Associations** tab.

To restore all file types you can associate

- » In the Options | Associations tab, click **Add defaults**.

To load multiple files

1. Select the files in the Project Manager.
2. Right-click and select **Load**. If loading into the Editor, a separate tab is created for each item. Pressing the Enter key loads only one file, because the enter key is tied to the double-click event, which can only occur on one node/file at a time.

Working with Local Files and Directories

Use **Windows Explorer** to drag-and-drop folders onto Projects to create links to local folders and files in the Project Manager. You can also right-click a **Project** and select **Add | Folder** and **Add | Folder Items**.

Once you have shortcuts to local folders and files you can:

- Right-click folders and select **Refresh folder links** to automatically build a list of shortcuts to all files in that folder
- Drag files onto one another to perform Toad's file compare.
- Drag files and folders onto server directories to upload them. Dragging a folder onto a server folder will upload all the underlying files.
- Drag files into the trash can to move them to the Recycle Bin.

Changing the Default Behavior

The Project Manager is entirely user-programmable. That is, you can think of the Project Manager as having a number of pre-defined actions. These actions occur during three different types of user operations: Drag & Drop, Double-click and Right-click. You can change the behavior of the Project Manager when you perform one of these operations. This is an overview of the types of actions you can perform. See "Reset all Defaults" (page 476) for more information, and for specific instructions on changing the action for each operation.

Drag-and-Drop

When specifying the action for a drag-and-drop operation, first think of the node types you are dragging, and the type of node you are dropping onto. You can then tell the Project Manager what you want to happen when the drop occurs. For example, when you drag a file folder item onto a file folder, you can tell Project Manager whether you want the file moved or copied.

Double-Click

There are more possibilities for the double-click operations. The default for many database object types is to open the 'Describe' window. But this can be changed, per database object node type, to other actions such as 'DDL to clipboard,' 'DDL to file' and 'Load DDL into Editor'. For source code there is also 'Load into Editor.'

Right-click Menu

The right-click menu is configurable as well. You can select which items appear in the menu as well as their order. Note that the bottom portion of the menu is static. Also, for some database

object node types, the right-click menu also includes the full Schema Browser right-click menu for that object type.

Copy Nodes Between Projects

If you have more than one project going at once, and need links to the same files, FTP connections, or schemas, you can copy them from one project to another in the Project Manager.

This Copy feature applies to second-level nodes: Schemas, Folders, and FTP Folders. It copies the selected nodes and all items below them.

To copy nodes between projects

1. Select the **nodes** you want to copy. You can use **SHIFT** or **CTRL** to multi-select.
2. Right-click and select **Copy** from the menu. The Destination Projects dialog box appears. This dialog box has a list of all other Project Folders you have set up in your Project Manager, including the one where the nodes already reside.
3. Select one or more of the projects. You can use the **All** or **None** buttons to select or clear all of the projects.
4. Click **OK**. The nodes you have selected are copied to the other projects, and you are returned to the Project Manager.

Project Manager Sorting

You can easily sort the items under any node in the Project Manager.

1. Select the **node** you want to sort.

Note: Select only one node at a time. If multiple nodes are selected, none will be sorted.

2. Right-click and select **Sort**. The nodes directly beneath the selected node are now in alphabetical order.

Searching for Nodes

When you have your Project Manager configured and stocked with many files and schemas, you can still find what you have entered. Click anywhere in the left hand tree view and start typing. Toad will search for and highlight the first occurrence of what you type after the cursor.

Formatting Files

You can format your files from within the Project Manager, or as an Action in the Toad Automation Designer. This lets you more easily convert scripts, procedures, functions, and so on to fit your company's formatting requirements.

Note: In version 9.7, the Formatter component was replaced with a new component that supports Oracle 10g and 11g functionality. Some formatter options have moved or changed slightly. See "Changes in the Formatter" (page 622) for more information.

Files to be formatted must be included in the Project Manager as nodes. See "Adding Folder Items" (page 497) for more information.

Note: Formatting is not immediately accessible from the popup menu. You must add it to the menu as described in Reset all Defaults (page 476).

The files are automatically formatted and the results of the formatting process are displayed in the Output window, Formatting Results tab. If there are syntax errors within the code that prevent proper formatting, Toad will list these as well.

To format one file from the Project Manager

1. In the Project Manager, select the file you want to format.
2. Right-click and select **Format Files**.

To format multiple files from the Project Manager

1. Do one of the following:
 - In the Project Manager, select the files you want to format.
 - Select the folder or project nodes that directly contain the files you want to format.
2. Right-click and select **Format Files**.

To create a Format Files action

Note: See "Format Files Action" (page 451) for more information.

1. From the Automation Designer, click the **Utilities** tab.
2. In the navigation panel, select the App where you want formatting to occur.
3. Click  and then click in the app.

Checking Files for Syntax

You can check the syntax of your files from the Project Manager tree. You can check multiple files, or check them one at a time.

Results display in the Output window, on the Syntax Check Results tab.

To check files for syntax errors

1. Do one of the following:
 - Select one or more files from the Project Manager tree.
 - Select the folder or project nodes containing the files you want to check.
2. Right-click and select **Check Syntax**.

File to FTP

You can upload a file directly from the Editor to FTP using the Project Manager.

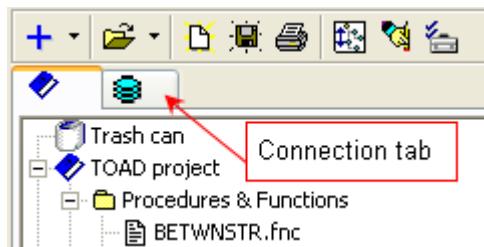
To move a file from Editor to FTP

- » From the Editor, click and drag the tab of a loaded file from the Editor to an **FTP** node in the Project Manager.

Connection Panel

Using the Connection Panel

Click the Connection tab to see the connection panel.



From the connection panel, you can easily manage your connections. You can:

- Select an active session and drag it into a project folder to create a new schema node
- Create new connections
- Execute a quickscript against the selected connections
- Execute a named sql against the selected connections
- Copy TNS Names information to the clipboard
- Create objects across multiple databases

Creating New Connections

You can use the Connection Panel of the Project Manager in several ways to create new connections.

Note: The connection panel is a two-way mirror to the Session Login window. Any connections you create here will be reflected in your connection list and the same in reverse.

To create a new connection

1. Right-click in the Connection Panel.
2. Select **New Connection**.
3. Log in as usual.

To create a quick connection

1. Right-click in the Connection Panel.
2. Select **Quick Connect**.
3. Do one of the following:

- Select **All** to list all the connections you have available
 - Select a server and then select the connection from the server menu.
4. If the password has not been saved, you will be prompted to provide login information and the Server Login window appears. Otherwise the connection will be made automatically. See "Server Login Window" (page 177) for more information.

Executing QuickScripts

From the Project Manager's Connection Panel, you can execute a any configured QuickScript against selected connections.

To execute QuickScripts

1. In the Connection Panel, select one or more connections to execute against.
2. Right-click and select **Execute QuickScript**.
3. Select the script you want to execute.

Executing Named SQLs

From the Project Manager's Connection Panel, you can execute a named SQL against selected connections. See "Project Manager Overview" (page 472) for more information.

To execute named SQLs

1. In the Connection Panel, select one or more connections.
2. Right-click and select **Execute Named SQL**.
3. Select the SQL you want to execute.

Creating Objects in Multiple Databases

You can create objects in multiple databases using the Project Manager Connection Panel. This is very useful when you need identical objects in various schemas. Create them at once and save time.

When you create an object in multiple databases, the Create window that is opened corresponds to the lowest Oracle version you have selected. Therefore, if you have selected a connection to an Oracle 8i database and another to an Oracle 10g database, the options on the Create window will be 8i compatible. All DB information loaded into the window, such as the schema list and available data types will be loaded from the lower Oracle version.

This means that the Create is owned by the lowest Oracle version and then the generated SQL is run against the other connections selected in the Connection Panel.

To create objects in multiple databases

1. In the Connection panel, select the connections where you want to create an object.
2. Right-click and select **Multi-database Create**.
3. Select the type of object you want to create:

- Policy - See "Create Policy Definition" (page 1043) for more information.
 - Policy Group - See "Create Policy Group" (page 1044) for more information.
 - Profile - See "Create and Alter Profile" (page 1047) for more information.
 - Resource Consumer Group - See "Create and Alter Resource Consumer Group" (page 1058) for more information.
 - Resource Plan - See "Create and Alter Resource Plan" (page 1060) for more information.
 - Role - See "Create and Alter Role" (page 1062) for more information.
 - Table - See "Altering Tables" (page 1074) for more information.
 - User - See "Create and Alter User" (page 1098) for more information.
4. Enter the appropriate information in the Create window that appears.
 5. Click **Create**.

You can also use the Schedule button to run the scripts against the databases at a later time.

Copying TNS Names Info to Clipboard

From the Project Manager, you can copy TNS Names information for one or more selected connections into the clipboard. From the clipboard you can paste the information wherever you need it.

To copy TNS Names information

1. Select one or more active connections in the connection panel.
2. Right-click and select **TNS Names info to clipboard**.
3. Paste where needed.

Project Nodes

Project Nodes

Project nodes are the heart of the Project Manager window. They are central to easily organizing your files.

Within each project node you can store links to FTP folders, regular folders, connection links, and database objects. Different project nodes can contain links to the same items. This lets you have, for example, one project for development and one for production, possibly containing links to the same files.

Adding a Project Node

You can add a project node to the Project Manager in two ways.

To add a project node

1. Do one of the following:
 - Right-click and choose **Add Project**.
 - Select **Project** from the **Add Item** dropdown on the toolbar.
2. Enter the **name** you want to use for the Project and press **ENTER**.

Note: When you are adding an item from the Schema Browser, you can create a new Project by typing the project name into the Name box instead of choosing from the dropdown list.

Saving a Project

You can save the organization of the Project Manager to a file. This way if you have a project that has gone into maintenance, you can save its settings to a new file, keeping your Project Manager window clear for current projects. Then you can reload it again when you need it. This helps keep your Project Manager window streamlined.

To save a project

- » Click  on the toolbar to save the contents of the Project Manager with a new filename.

Tip: If you have already saved a project, and just want to update it, you can click  on the toolbar instead. The current Project Manager file is also saved automatically when you close the Project Manager window.

Renaming a Project

When a project is first added to your Project Manager, it is called **Toad Project**, but it is created in Rename Mode. You will want to change this to something more appropriate to your work environment. Just type the new name and press **Enter**.

To change a project name

1. Do one of the following:
 - Select the **project** in the project hierarchy and press **F2**.
 - Right-click the **project** and select **Rename**.
2. Enter a new **project name** and press **ENTER**.

Removing a Project

You can also remove a project entirely from the Project Manager.

To remove a project from the Project Manager

1. Select or multi-select a project or projects, right-click and select **Remove** from the menu.
2. Click **Yes** to remove the Project Node.

This removes the node and any of the links to items beneath it from the Project Manager. It does not remove your files from your hard drive.

Schema Nodes

Schema Nodes

You may use several different schemas or users within each project. You can use the Project Manager to access your connections, see if you are connected, and to connect if the connection is not current. You can also configure the Project Manager so that when you drag a schema node into another schema node Toad will automatically run a schema compare on the two.

In addition, you can right-click a schema node for a list of possible actions, including:

- Opening a Schema Browser window
- Opening an Editor window
- Opening a Query Builder window
- Connecting to the schema
- Disconnecting from the schema

See "Reset all Defaults" (page 476) for more information and other configuration options.

Database Objects

Adding

You can add a database object within a schema node. There are several ways to do this, and they depend on the object you are adding. Some objects can be added in one way but not another. See "Database Object Functionality" (page 492) for more information and a list of database objects and how to add them to your projects.

- Right-click the **schema name** and then select **Add | Database Object...**
- Drag-and-drop the object from the Schema Browser to a project node in the Project Manager.
- In the Schema Browser, select the object you want added, right-click and select **Add to Projects window**.

For the last two options, Toad will automatically find any schema node within the selected Project node that matches the current schema in the Schema Browser. If an appropriate node is not found, Toad will create one and add the objects under that schema.

Right-click

The right-click menu displays the Schema Browser right-click menu for the database object you have selected. In addition, it adds the selections you have selected from **Pop up menus** below the Schema Browser selections. See "Resetting Defaults" (page 482) for more information.

Note Property

You can add a Note to any Database Object Node. This note can be displayed as a hint.

To add a note

1. Right-click on a database object.
2. Select **Properties**.
3. Enter the note and then click **OK**.
4. Hover over the object in the tree to see the node.

Database Object Functionality

The Project Manager lets you easily add database objects to your projects. However, some objects can be added only from the Object Browser. See "Project Manager Overview" (page 472) for more information.

The table below describes the possible database objects, how to add them, and what functionality is associated with them at this time.

For Schema Browser accessibility, unless otherwise noted, you can either drag-and-drop the object into the Project Manager, or right-click and select **Add to Project Manager**.

Object Type	How to Add to Project Manager	Drag & Drop Operations	Double-click Operations	Popup Menu Operation
Clusters	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y
Constraint	Object Search/Drag-and-Drop	Y	Y	Y
Columns (table)	Cannot Add	N	N	N
DB Link	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y
Dimension	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y

Object Type	How to Add to Project Manager	Drag & Drop Operations	Double-click Operations	Popup Menu Operation
Directory	Object Search/Drag-and-Drop	Y	Y	Y
Function	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y
Index	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y
Java Class	Object Search/Drag-and-Drop	Y	Y	Y
Java Resource	Object Search/Drag-and-Drop	Y	Y	Y
Java Source	Object Search/Drag-and-Drop Schema Browser/Drag-and-Drop	Y	Y	Y
Job	Schema Browser/Drag-and-Drop	Y	Y	Y
Library	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y
Package	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y
Package Body	Object Search/Schema	Y	Y	Y

Object Type	How to Add to Project Manager	Drag & Drop Operations	Double-click Operations	Popup Menu Operation
	Browser			
Policy	Object Search/Schema Browser/Drag-and-Drop	N	N	N
Policy Groups	Cannot Add	N	N	N
Procedure	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y
Profile	Drag-and-Drop	Y	Y	Y
Queue	Object Search	Y	Y	Y
Queue Table	Object Search	N	N	N
Recycle Bin	Cannot Add	N	N	N
Refresh Groups	Cannot Add	N	N	N
Resource Groups	Cannot Add	N	N	N
Resource Plans	Cannot Add	N	N	N
Role	Schema Browser/Drag-and-Drop	N	Y	Y
Rollback Segment	Object Search/Drag-and-Drop	Y	Y	Y
Scheduler Job Classes	Object Search/Schema Browser/Drag-and-Drop	N	N	N

Object Type	How to Add to Project Manager	Drag & Drop Operations	Double-click Operations	Popup Menu Operation
Scheduler Jobs	Object Search/Schema Browser/Drag-and-Drop	N	N	N
Scheduler Window Groups	Object Search/Schema Browser/Drag-and-Drop	N	N	N
Scheduler Windows	Object Search/Schema Browser/Drag-and-Drop	N	N	N
Scheduler Schedules	Object Search/Schema Browser/Drag-and-Drop	N	N	N
Scheduler Programs	Object Search/Schema Browser/Drag-and-Drop	N	N	N
Scheduler Chains	Object Search/Schema Browser/Drag-and-Drop	N	N	N
Sequence	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y
Snapshot	Schema Browser/Drag-and-Drop	Y	Y	Y
Snapshot Log	Schema Browser/Drag-and-Drop	Y	Y	Y
Synonym	Object	Y	Y	Y

Object Type	How to Add to Project Manager	Drag & Drop Operations	Double-click Operations	Popup Menu Operation
	Search/Schema Browser/Drag-and-Drop			
System Privilege	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y
Table	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y
Tablespace	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y
Trigger	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y
User	Schema Browser/Drag-and-Drop	Y	Y	Y
User Type	Object Search	Y	Y	Y
User Type Body	Object Search	Y	Y	Y
User Collection	Object Search	N	N	N
View	Object Search/Schema Browser/Drag-and-Drop	Y	Y	Y

Folders

Adding Folders

You can add as many folders as you like to a project. Each folder must already exist on your hard drive or the network drive. Adding a folder to the Project Manager maps the folder path.

Note: Refresh folder list functionality is limited for a network folder node. Only the parent directory of the network folder node will be refreshed, but its subfolders and their contents will not be refreshed.

To add a folder

1. Right-click on a **project node** in the left pane of the Project Manager.
2. Select **New | Folder**.
3. Do one of the following:
 - Enter the path to the folder in the path box.
 - Click  and browse to the folder you want to add.
4. Add any filters in the Filter box. See "Filtering Folder Items" (page 498) for more information.

By default, double-clicking on the folder will open the Windows Explorer to that folder, so you can easily browse through the contents.

You can also add items contained in the folder to the Project Manager window so they are accessible directly. See "Adding Folder Items" (page 497) for more information.

Removing Folders

You can remove folders from the Project Manager just as easily as you can add them.

To remove a folder

- » Select one or more folders, right-click and select **Remove**.

Note: The folders are removed from the Project Manager listing. They are not deleted from your hard drive.

Caution: Be sure you select **Remove** from the right-click menu and not **Delete**. Delete will delete your folder entirely.

Adding Folder Items

Adding folder items to folders you have mapped in the Project Manager makes it easier to open them. You no longer have to open the Windows Explorer, but can open them directly from the Project Manager.

Project Manager automatically names these folders with their entire path name. You can also rename these folders to something more easily remembered within the Project Manager.

To rename a folder

1. Do one of the following:
 - Right-click the **folder** and select **Rename**.
 - Select the **folder** and press **F2**.
2. Enter a new **name** for the folder and click **OK**.

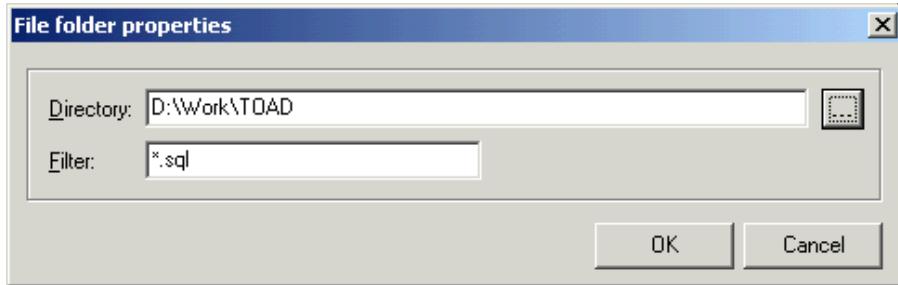
The pathname is retained, but the folder name is now more manageable in the Project Manager.

Filtering Folder Items

In the Project Manager, when adding or viewing the properties of a file folder you can filter the file list appearing in the folder. This can be useful if you have many file folder items displayed, and you need to easily find a specific file.

To change file folder properties

1. Right-click the file folder and select **Properties**.



2. Change the directory information by browsing for it using ..., or by entering a path directly.
3. Enter filter information in the Filter box using standard DOS wildcard characters.

For example, *.txt will display only .txt files, fill* will find only files beginning with the letters "fill" and so on.

4. Right-click and select **Refresh folder links** from the menu.

Note: After a confirmation, all current links will be removed, and only those files that match the provided filter will be created as links under the folder. This does not create new links, but only filters existing links.

5. Returning to the properties dialog box and restoring it to all files (*.*), and again refreshing it, will restore all your links.

Removing Folder Items

You can remove folder items from the Project Manager.

To remove a folder item

- » Select one or more items, right-click and select **Remove**.

Note: The folders are removed from the Project Manager listing. However, they are not deleted entirely.

Caution: Be sure you select **Remove** from the right-click menu and not **Delete**. Delete will delete the item entirely.

FTP Folders

FTP folders represent connections to a remote server. These are located as sub-nodes to a Project Folder you create. See "Project Nodes" (page 489) for more information. You can add a separate folder for each server directory you want mapped.

To add FTP folders

1. Select the project where you want the FTP Folder to reside.
2. Right-click and select **Add | FTP Folder**.
3. Set up an FTP connection as described in FTP Logon.
4. Click **OK**.

To remove FTP folders

1. Select the **folder** or **folders** you want to remove.
2. Right-click and select **Remove** from the menu.
3. Confirm by clicking **OK**.

FTP Folder Actions

When an FTP folder has been added, you can perform several actions from the right-click menu. Right-click the FTP folder and select from:

- Browse - This opens an FTP connection and lets you browse the contents of the FTP connection. It uses the client dir as the local directory.
- Refresh Server Links
- Add Folder item (See below)

Add FTP Folder Items

FTP Folder items represent files on the remote server. Adding them to your FTP folder tells Toad where they are located, and what they are called. When you act on them, you are connecting to

the server, downloading the item and editing it. You can then use FTP to send them back to the server.

To add FTP folder items

1. Select the **FTP Folder** where the files are located.
2. Right-click and select **Add | FTP Items** from the menu.
3. Select the files you want to add to your folder. You can easily select all or none by clicking the corresponding buttons.
4. Click **OK**. The files are added to the FTP Folder node you had selected.

To remove FTP folder items

1. Select the folder or folders you want to remove.
2. Right-click and select **Remove** from the menu.

Caution: Be sure to select **Remove** and not **Delete Server File**. Delete Server File will remove the file from your server directory.

To Do Lists

To Do Lists

You can create a "To Do" list in the Project Manager to keep track of your projects and what needs to be completed.

To Do items can be listed under a node, or under another To Do item. So if you need to break a task into its component parts, you can create multiple sub-items.

To create a To Do node

- » Over a **Project Node**, right-click and select **Add | To Do List**. The new list appears with the name selected so you can immediately change it.

To create a To Do item

1. Right-click on a **To Do List** or a **To Do Item** and select **Add | To Do Item**.
2. Name the item.
3. Right-click on the item and select **Properties**. From here you can:
 - mark the item completed
 - add notes about the item
 - change the due date (the default is three days from the current date)
4. Click **OK** to accept the changes to the properties.

Query Viewer

Query Viewer

The Query Viewer displays currently running background queries, the database where they are running, their current execution time and the SQL. Queries are automatically displayed in their order of execution. From this window you can cancel queries, or display the Editor page where they are running and view them in detail.

The Query Viewer is available as an individual window within Toad, or you can access it from the dockable panel in the Editor.

To access the Query Viewer

» Do one of the following:

- From the View menu, select **Query Viewer**.
- From the Editor, right click, select **Desktop Panels** and select **Query Viewer**.

Query Toolbar

Button	Command
	Cancel Query
	Find Query in Context. See "Finding Queries in Context" (page 501) for more information.
	Apply Query Viewer Filter. See "Query Viewer Filters" (page 502) for more information.
	Clear inactive queries (those queries that do not have active datasets)

Finding Queries in Context

Finding queries in context lets you move from the Query Viewer to the Editor tab where the query is running and view it there.

To find a query in context

1. In the query viewer grid, select the query you want to find.
2. Click .

Query Viewer Filters

You can easily filter the Query Viewer grid in order to find specific queries. See "Query Viewer" (page 501) for more information.

To filter the viewer grid

1. From the Query Viewer toolbar, click the **Filter**  button.
2. Select the method you want to use to filter the grid:
 - SQL contains.
 - Runtimes longer than n minutes.
 - Started in last n hours.
3. Click **OK**.

Using the Query Viewer

The Query Viewer displays queries that have run or are currently running, in grid format. See "Query Viewer" (page 501) for more information.

The grid view includes columns that display:

- Database
- Status
- Start Time
- Stop Time
- Execution Time
- Type
- SQL

The panel below the grid includes two tabs. One displays the SQL that is selected in the grid. The other displays any errors that were encountered while running that SQL.

To view SQL

1. In the grid area of the **Query Viewer**, click on the SQL entry you want to view.
2. In the lower pane of the **Query Viewer**, click the **SQL** tab.

To view Errors

1. In the grid area of the **Query Viewer**, click on the SQL entry you want to view.
2. In the lower pane of the **Query Viewer**, click the **Errors** tab.

SQL Command Recall

SQL Statement Recall (History - F8)

This command opens the SQL Statement Recall window and activates the History tab.

To recall SQL History

- » Select the **View | SQL Command Recall | History** menu item, or press **F8**.

Toad saves all statements in this list between sessions of Toad, in a file named PERSSQLS.DAT.

SQL Statement Recall (Personal)

This command opens the SQL Statement Recall window and activates the Personal SQL tab.

To recall a personal SQL

- » Select the **View | SQL Command Recall | Recall Personal SQL** menu item

Note: You can add a statement to this list from the **Editor | Add to Personal SQLs**.

Toad saves all statements in this list between sessions of Toad, in a file named PERSSQLS.DAT.

SQL Statement Recall (Named)

Use this dialog box to pick a SQL statement from your named list of SQLs, then copy it back to the Editor window for execution.

To recall a named SQL

- » From the **View** menu, select **SQL Command Recall | Named SQL**.

SQL statements are stored in the NAMEDSQL.DAT file in the Users Files folder.

Script Manager

Script Manager Overview

The Script Manager is a centralized location in Toad where you can manage your frequently used scripts. Using the Script Manager you can:

- Organize your scripts into various categories
- Access scripts easily
- Execute scripts against multiple connections at once

- Execute multiple scripts at once
- Execute multiple scripts against multiple connections

By default, the active connection when you open Script Manager is used as the default connection for executions, unless you specify a different connection in the connections grid. This is also used to check any Toad Security settings you may have active. Therefore, Script Manager cannot be used without an active connection.

Main Script Manager Areas

The Script Manager is divided into a connections grid and three tabs: scripts, output and messages.

Connections grid

The connections grid is tied to the Server Login window. If you execute a script against a connection in the Script Manager, the connection will also become active on your main connections.

Scripts

Use the script area to sort, categorize, load and run your scripts. See "Reorder Grid" (page 508) for more information.

Output

The output area displays the output of the selected scripts. Tabs at the bottom let you navigate between outputs. One tab is created for each script run. In addition, additional sub-tabs are added within the script tabs for each select statement contained in that script.

Messages

The messages area displays any system messages regarding the scripts you run. Messages are separated by a dashed divider line, and contain the script path and the message.

Opening Script Manager

From File Menu

- » From the Utilities menu, select **Script Manager**.

Open Script Manager at Startup

To set Script Manager to open at startup

1. From the View menu, select **Toad Options**.
2. In the left panel, select **Windows**.
3. In the Script Manager row, select the **Auto open** checkbox.

Scripts Provided with Toad

Several scripts for use with Script Manager are provided with Toad. Toad installs a folder called ScriptMgr in the main install directory for easy access to scripts. Script datafile (.sdf) files are generally saved in the user files directory; however, you can save them wherever you wish.

DBA Scripts

The scripts that relate to DBA work are listed in an .sdf (category) file called **DBA.sdf**. This file is installed in the User Files subdirectory. A folder called "DBA" will be placed in the ScriptMgr folder. The DBA related scripts provided by Toad are installed in this folder. See "Properties Files" (page 163) for more information about exact locations.

By default, DBA.sdf expects Toad to be installed in "C:\Program Files\Quest Software\Toad for Oracle", which is the default directory for the installation. If this is your location for Toad, you can load DBA.sdf and proceed to use the scripts.

To set script location if Toad is installed elsewhere

1. First load DBA.sdf into the Script Manager.
2. Right-click and select **Batch Directory Change** to change the directory for the scripts.
See "Changing Script Directories" (page 510) for more information.

Oracle 8i Data Dictionary scripts

The .sdf (category) file **Oracle 8i Data Dictionary.sdf** will be installed into the same directory as Toad.exe.

By default "Oracle 8i Data Dictionary" expects Oracle 8i and its associated scripts to be installed in "D:\ORACLE\ORA817", which is a reasonable location for an Oracle 8i installation. If this is your location for Oracle 8i, you can load the Oracle 8i Data Dictionary and proceed to use the scripts.

However, if Oracle 8i is installed elsewhere:

1. First load **Oracle 8i Data Dictionary.sdf** into the Script Manager
2. Click **Move** and change the directory for the scripts. See "Changing Script Directories" (page 510) for more information.

Script Manager Toolbar

The Script Manager toolbar lets you perform several actions with just a click of the mouse.



Button	Command
	Runs the selected scripts. Click the drop down list to run with another application, such as Quest ScriptRunner.

Button	Command
	Load a datafile. Use the dropdown menu to select from most recently used files.
	Create new Datafile. See "Appropriate Script Datafile names" (page 506) for more information.
	Save Datafile.
	Open the script options window. See "Script Manager Options" (page 513) for more information.
	Select the connections to use when running scripts. You can select multiple connections from the drop down list. See "Using Connections with Scripts" (page 507) for more information.

Managing Script Datafiles

Create New Script Datafile

Script datafiles let you store your scripts for later retrieval. Each datafile can contain multiple scripts. You can use these datafiles to organize your scripts into categories, making it easier for you to find the script you need at any time.

Datafiles are ASCII text files, with one line per script. Datafiles are, by default, stored with an extension of *.sdf*.

To create a datafile

1. Open **Script Manager**. See "Opening Script Manager" (page 504) for more information.
2. In the Script Manager toolbar, click .
3. In the box, navigate to the appropriate directory and then enter the **name** you want to use for the datafile: for example, "Toad Setup Scripts".

Click **Save**.

Note: You are immediately taken to the Add Script Entry window. You do not need to add scripts at this time, you can wait and add them later. See "Adding Script Entries" (page 509) for more information.

Appropriate Script Datafile names

All characters used in the name must be acceptable Windows filename characters. For example, you could not name a category **SQL*Plus Scripts**, because the * is not a recognized character. If you attempt to name a datafile using one of these characters, the file will not be created.

Save Datafile As

You can save the current datafile with a new name.

To save a datafile with a new name

1. In the Script Manager, open the datafile you wish to rename.
2. In the Script Manager toolbar, click .
3. Enter the **new name** for the datafile.

Note: This does not delete the original datafile.

Deleting a Script Datafile

You can delete script datafiles from the Windows Explorer, as you would any other file.

Using Connections with Scripts

In the Script Manager, you can use different connections with scripts. These can be saved with each datafile, or as a global value for use with all scripts. If the directory contains the path to Toad, it is stored as a relative directory.

Connections you use for execution can be stored as defaults and saved in the datafile.

To use the datafile defaults

1. Click .
2. Select **Set to datafile defaults**.

To save a datafile default

1. Load the datafile to which you want to add connection defaults.
2. Click the Script Manager options button.
3. In the Default Execution Connections area, click **Add** and add the connections you want these scripts to execute against.
4. Click **OK**.
5. Click .
6. Name the datafile and click **Save**.

Manage Script Entries

Using the Script Grid

The script grid in the Script Manager works in much the same way as many of the other data grids in Toad. See "Editing Script Entries" (page 509) for more information about editing entries in the grid.

To access the script grid

- » Click the **Scripts** tab.

Reorder Grid

You can reorder the script entries using the arrows above the grid. While clicking in the column header will temporarily sort the grid, using these buttons will **permanently** change the order. This allows you to specify the order scripts will execute. Selected scripts execute from the top of the permanent grid order to the bottom.

To reorder scripts in the grid

1. Select the **script** you want to move.
2. Click to move the script up in the list.
3. Click to move the script down in the list.

Print Grid

To print the script grid for a datafile

1. Open the datafile you want to print.
2. From the Grid menu, select **Print Grid**.
3. Select the options you want and click **OK**. The grid prints.

Script Grid Toolbar

The script grid toolbar is located on the Scripts tab of the Script Manager. From this toolbar, you can act on any of the scripts listed within the grid.



Button	Command
	Add Script to datafile - See "Adding Script Entries" (page 509) for more information.
	Edit scripts - See "Editing Script Entries" (page 509) for more information.
	Delete selected scripts - See "Removing Script Entries" (page 510) for more information.

	Combine selected scripts - See "Combining Script Entries" (page 512) for more information.
	Schedule scripts to run - See "Scheduling Scripts" (page 510) for more information.
	Print the script grid - See "Reorder Grid" (page 508) for more information.
	Move row up
	Move row down
	Group by
	Size Columns

Adding Script Entries

After you have created script datafiles in the Script Manager, you can add scripts to the categories.

To add a script entry

1. Open the datafile where you want to file the script.
2. Click the **Scripts** tab, and then
3. The Save As dialog box appears. This allows you to browse for the scripts you want to add with this Description and Use. Select the scripts you want (you can multi-select by holding down <Ctrl> as you click them) and then click **Save**.

Enter a group in the **Group box**. For example, if you use this script for quality assurance, you can create a QA group: enter "QA".

Note: More than one script can share the same description. Press **Tab** or click in the **Description** box.

4. Enter a **Description** of the script. More than one script can share the same Description.

Click **Add** to continue adding scripts.

Note: The scripts you have selected are listed in the filenames area of the Add Script Entry dialog box.

5. Click **OK**. The scripts are now added to the grid. The Use and Description are the same for all the scripts you added.

Editing Script Entries

Once scripts have been entered into categories in the Script Manager, you can edit the entries.

To edit entries

1. From a datafile that contains scripts, click in a **script name** and click (right-click and select **Edit**).

2. Change the **description**, **use**, or **pathname** for the script.

Note: The script must exist in the new location before you change the pathname.

Removing Script Entries

To remove script entries

1. From a datafile that contains scripts, select and highlight the scripts you want to remove.
2. Click  on the Scripts tab toolbar (right-click and select **Remove Scripts**).

Confirm that you want to permanently remove the scripts from the datafile by clicking **Yes**.

Note: This does NOT remove scripts from your hard drive. Only from the datafile you have selected.

Changing Script Directories

You can change the directory for all the scripts in a selected Script Manager category.

To change all script directories

1. In the script column of the script grid, select a g(top) node.
2. Right-click and select **Batch Directory Change**.
3. Do one of the following:
 - Enter the new pathname of the directory.
 - Click the drill down button and select the correct directory.
4. Click **OK**. The directory for all the scripts in this category is changed.

Note: Using this command does not actually move scripts from one directory to another. If the directory column is pointing to the wrong directory, this procedure allows you to easily point to the correct directory to access your scripts.

Scheduling Scripts

You can use Script Manager to schedule scripts to be run at a later time or date.

Note: Scripts scheduled for execution will execute using Quest ScriptRunner.

To schedule scripts

1. In the Script Manager, select the scripts you want to schedule.
2. Click  on the Scripts tab toolbar.
3. If you have selected multiple scripts, you are asked to decide to combine or not. Click **Yes** or **No**.

4. Complete the scheduling process using the **Add Task wizard** that appears. See "Add Task Wizard" (page 763) for more information.

Grouping Scripts

To group scripts

1. In the Scripts tab toolbar, click the **Group by**  button.
2. Choose one of the following:

- Group by <none>

Choosing None does not group your scripts at all. They are simply listed in the order you have chosen to display them (this order is, by default, the order they were added to the datafile, but you can change it by using the move up and move down buttons in the script grid toolbar).

- Group by Use

Choosing Use groups all of your scripts by the Use field that you have designated. Each use field is displayed as a node, with scripts listed below it. This is one of the most powerful selection options.

- Group by Extension

Choosing Extension groups all your scripts by extension. Each extension (.sql, .prc, etc) becomes the top node and all scripts are grouped under it.

- Group by Directory

Choosing Directory groups all your scripts by their directory. The directory becomes the top node and all scripts are grouped under it.

Viewing Scripts

Once you have scripts entered in your Script Manager, you can view your scripts easily.

To view a script

1. From the Script Manager, Scripts tab, open the datafile where your script is located.
2. If necessary, expand the top-level node to display your scripts.
3. Select the scripts you want to view.
4. Right-click and select **View** from the menu.

Note: A copy of Notepad opens for each script you have checked.

Loading Datafiles

You can load a datafile of a Script Manager category. This can be useful if someone sends you a category and the scripts used in it.

To load the datafile (category)

1. In the main Script Manager toolbar, click the **Open Datafile**  button.
2. Select the **datafile** you want to load. The extension for datafile is **.sdf**.

The loaded file appears in the Script Manager. Check the pathnames in the Directory column of the new scripts. If these pathnames do not correspond to how your computer is organized, you will have to either change the pathnames or move the scripts, or the scripts will be inaccessible. See "Editing Script Entries" (page 509) for more information.

Combining Script Entries

You can use the Script Manager to combine two or more scripts into one. The scripts must reside in the same datafile to combine them.

Once combined, the new script is automatically added to the active datafile.

To combine scripts into a single script

1. From the Script Manager, select the datafile where your scripts reside.
2. In the script grid, select the scripts you want to combine.

Click  on the Scripts tab toolbar.

Note: the default pathname is the same as that of the scripts you have combined. If you want to put the scripts in a different directory, you can enter a full pathname here.

Execute Scripts

Execute Scripts using Options

When you execute a script from the Script Manager you can set various options that define how the script is run.

To select scripts to execute

1. From the Script Manager, select the **datafile** you want to work with.
2. Select the scripts you want to run.

To set options

1. In the Script Manager toolbar, click .
2. Set options and click **OK**.

Execute the Scripts

You can execute scripts from the Script Manager within Toad or by using Quest ScriptRunner.

You can execute scripts against any of your databases. If you do not have a live connection, Toad will open a connection and close it when the script has completed running.

To execute the scripts

1. Select the scripts you want to run.
2. Do one of the following:
 - Right-click and select **Run**.
 - Right-click and select **Run in Quest Scriptrunner**.

Script Manager Options

This topic only covers unfamiliar information. It does not include all step and field descriptions.

To set options

1. From the Script Manager toolbar, click .
2. Refer to the following for additional information:

Option	Information
Execution Options	
Use single file	Include entire path in the filename.
Use separate file for each script (autonamed)	This option creates a separate file for each script. In this case, Toad will name the files for you. You do, however still need to specify the directory where you want the files saved. Caution: Files are saved as the original script name, with a .txt extension. If your original scripts had a .txt extension and you choose the directory where they are located, they will be overwritten by the new files.
Filename	Can be global or specific to the datafile (.sdf).

Run from Grid

If you do not want to go through the options steps (See "Execute the Scripts" (page 513) for more information), you can run your scripts directly from the grid, using the Editor or Quest ScriptRunner.

To run a script from the grid

1. From the Script Manager, select the category that houses the script you want to execute.
 2. Right-click the script, and select **Run** from the menu, or click the run button on the toolbar.
- Note:** If you are running a long script and want to continue working as it executes, you may prefer to select **Run using Quest ScriptRunner**. This will allow you to run the script in the background and continue working.
3. **SQL Editor** or **Quest ScriptRunner** opens the selected script and executes it.

Execute Scripts against Multiple Connections

You can execute your scripts in multiple connections at one time.

The Connections to Use Grid contains the connections you can use when you run scripts. If a connection you want to use is not displayed in the grid, you can add it. If a connection is not active at the time you execute the script, Toad will create a new connection and then close it when the script has executed.

To Execute scripts against multiple connections

1. In the connection grid, click **Add** and add the connections you want to use for execution. (Unless you have saved specific connections with the .sdf file you are using)

Note: Connections are tied to the Server Login window; you must have connected to the server you want to use previously for it to be displayed here.

2. Click  and set the following options:
 - a. Select **Spool output to file**.
 - b. Select **Use single file**.
 - c. Enter the filename you want to use for the execution. Because the settings on this window are remembered, you can set this either as a global filename for all scripts, or as a filename specific to the datafile (.sdf) you are using.
 - d. Select the connections you want to use.
 - **Save and load from each datafile** will use the connections you have saved with the datafiles containing your scripts.
 - **Save and load from a single list** will use the list you created in step 1.
 - e. Click **OK** to apply options.
3. Click  to execute the scripts.

Output

When you have executed a script against multiple connections, output is displayed in the Script Manager window as well as saved to file.

Messages Tab

The messages tab becomes active when scripts are executed. This tab lists errors, and which scripts have been run against which databases Note that these messages are NOT saved to file automatically. If you want a record of the messages tab, you will need to save it manually by copying and pasting into another document.

Output tab

The output window includes tabs for Output and any Grid output provided, as well as environment information.

Each script instance is listed on a tab at the bottom of the window, by script name. This means, for example, if you ran the script version.sql against two databases, there will be two tabs named "version.sql". Clicking on them will provide the output for that execution.

The text file you saved will include detailed output for each execution.

Quick Scripts

Configure QuickScripts List

The QuickScripts list is a dropdown menu found on the File | Run Script menu. See "Running or Loading QuickScripts" (page 515) for more information.

Before you can run a QuickScript, you must configure the QuickScripts List.

To configure the QuickScripts list

1. Scripts can be selected from more than one datafile. From the Script Manager, select the datafile where the script resides.
2. In the script grid, click in the **On File Menu** check box for the scripts you want listed. This adds them to the QuickScript list.

Note: To list all of scripts in a Use group, select the box for that node. All scripts within it are selected.

3. Repeat steps 1 and 2 for all datafiles and scripts you want to list.

Running or Loading QuickScripts

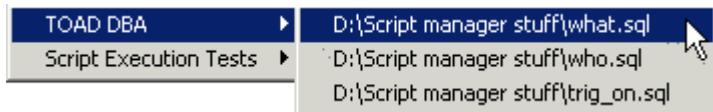
Once QuickScripts are configured from the [Script Manager](#), you can run or load them from the toolbar or the File menu.

To run a QuickScript from the toolbar

1. On the main toolbar, click (the arrow).



2. Select one of the datafiles.



3. Select the script from the list.

Note: The script is run in a new Editor tab.

To run a QuickScript from the File menu

1. Select **File | Run Script**.
2. Select a datafile from the submenu.

Select the script you want to run.

Note: The script is run in a new Editor tab.

To load a QuickScript from the toolbar or the file menu

1. In the Script Manager Options page, make sure **Load Only (no execute)** is selected. See "Script Manager Options" (page 513) for more information.
2. Follow the instructions listed above for running QuickScripts. Scripts will be loaded instead of run.

To run a QuickScript from other areas in Toad

- » In other areas of Toad (for example, Project Manager and Database Browser) right-click and select Execute Quick Scripts to run a selected script.

Monitoring

Toad Server Statistics

You get to this window by the Database | Monitor | Server Statistics menu item.

Use this window to view information about how the Oracle instance is performing. All grids can be exported, printed, sorted, and incrementally searched.

This window displays:

Analysis

Click the Analysis tab to see information analyzing the various statistics, including comments and warning lights.

See "How to create your ToadStats.ini file" (page 160) for more information about setting the warning light threshold values.

See "Toad Server Statistics | Analysis" (page 157) for more information about required permissions.

Waits

Click the Waits tab to see total waits and timeouts by event.

See "Toad Server Statistics | Waits" (page 158) for more information about required permissions.

Latches

Click the Latches tab to see gets, misses, and sleeps data for all latches.

See "Toad Server Statistics | Latches" (page 158) for more information about required permissions.

Sessions

Click the Sessions tab to display information on the sessions. More detailed information can be found by clicking one of the sessions in the top grid. Details are displayed in the lower grid.

See "Toad Server Statistics | Sessions" (page 158) for more information about required permissions.

Instance Summary

Click the Instance Summary tab to display information about the various statistics. This grid includes the statistic number, statistic name, and value.

See "Toad Server Statistics | Instance Summary" (page 158) for more information about required permissions.

Monitor

If you do NOT have the DB Admin module, the monitor tab appears here as well. This monitor tab displays several small graphs that let you monitor memory usage across time. Each refresh adds more data to the right hand portion of the graph. Data left of the vertical blue line shows what was most recently added.

These charts are an overview only. If you need consistently reliable data about the memory usage of your database, using the Database Monitor in the DB Admin Module is recommended.

SQL Monitor

You can use the SQL Monitor to monitor SQL statements that are working on your database. This is a separate utility from Toad, and you can get help for it after you open it by pressing F1, or selecting **Help | Contents**.

Toad UNIX Monitor

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To access the Toad UNIX Monitor

- » From the Database menu, select **Monitor | UNIX Monitor** menu item.

The UNIX Monitor lets you monitor database performance with three charts and a grid:

CPU Usage	Tracks CPU usage by system and user
Process Queues	Monitors runnable and blocked/waiting processes (these vary by UNIX system; they may be blocked on I/O wait or timed out of CPU usage for its timeslice)
Disk IO in Kb/Sec	For the top 10 devices.
Process list grid	Breaks information down by user. The process list displays the top 20 CPU usage processes, sorted by

%CPU as a default. Click a column header to sort that column.

You can sort, zoom and print grid columns. UNIX Monitor fully supports AIX, HP, Linux, and Solaris. UNIX Monitor supports TRU64; however, the Disk I/O Graph will remain empty for this UNIX version.

Note: The server must be running Rexecd in order to use this utility. See "RExec" (page 759) for more information about RExec; or see your UNIX administrator.

The UNIX Monitor must be launched and connected in order to work. So, you can launch it in the morning, minimize the window, and later in the day if a threshold is crossed you will be alerted.

Requirements

To use the UNIX Monitor, no special permissions are required. However, the user must be able to get through any firewall present.

The following commands are used, and need to be installed and enabled on the UNIX machine:

- RExec - Used to drive the monitor.

Note: The server must be running Rexecd in order to use this utility. In addition, some variants of UNIX may handle an rexec as an rlogin. These may automatically execute login files such as ".profile". In this case, extraneous output commands such as echoing "motel" (message of the day) may interfere with Toad's parsing of the output.

- iostat - Used to get the disk io information.
- vmstat - Used to obtain cpu information
- ps - Used to process queues and lists.

Troubleshooting

There are potential connection issues with UNIX that are beyond our control.

As part of the connection process, the rexecd daemon performs a "reverse name lookup" by default. This means the server verifies the rexec source machine's IP address against its own/etc/hosts file, and denies the connection if the source IP address is not found. For server-to-server rexecs, this makes sense because the servers often have hard coded and well known IP addresses. For network clients, this is often not the case. Few companies want to deal with placing the IP addresses of every PC in each server's/etc/hosts file. Many companies use DHCP for their network clients. The IP addresses are not well known and are not constant.

The solution is to turn off "reverse name lookup" by editing the /etc/inetd.conf file and adding the -c parameter to the rexecd command. Then either reboot the server or refresh -s inetd.

Refresh rate

To automatically refresh the data in the charts, you must do two things.

To set the automatic refresh

1. Check the **Auto refresh** check box.
2. Select a refresh interval from the **Refresh rate** dropdown menu.

You can manually refresh the data by clicking the **Refresh** button.

Zoom

To zoom a graph

- » Zoom in on a specific area by dragging a rectangle from left to right. around the area you want to zoom.

To restore a graph

- » Drag a rectangle from the right to left, and the chart will zoom back to 100%.

Connecting

In order to use the UNIX monitor, you must be connected to the UNIX server you want to monitor.

To connect to the UNIX server

1. To connect, click the **Connect** button.
2. Enter the appropriate information in the Server Settings dialog. See "Server Settings" (page 750) for more information.
3. Click **OK** to connect.

Viewing Graph History

The graphs take two or three iterations of the selected refresh cycle to initialize and then quickly fill in. After the graphs are full (one hour), the data scrolls off screen but is not cleared. You can see a two hour history using **right-click | Zoom**. (This is also true for the Database Monitor. See "Toad Database Monitor" (page 535) for more information.) Select **Zoom**.

ADDM/AWR

ADDM/AWR (OEM)

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

In Oracle versions 10g and up, the Automatic Database Diagnostic Monitor (ADDM) provides a holistic tuning solution. ADDM analysis can be performed over any time period defined by a pair of Automatic Workload Repository (AWR) snapshots taken on a particular instance, as long as the following requirements are met:

- Neither snapshots encountered any errors during creation and neither have been purged.
- There were no shutdown or startup actions between the two snapshots.

ADDM and AWR reporting can document both problem areas and areas of the database that are running smoothly. For full information about ADDM/AWR reporting, please see your Oracle documentation.

Note: By default, unless you have instructed Toad to make this window accessible, this functionality is disabled. You can restore functionality from **View|Toad Options|Windows** and clicking the Available checkbox in the appropriate row of the grid.

Toad's ADDM/AWR window in Toad lets you:

- Generate reports - For more information, see:
 - Generating an ADDM Report (page 523)
 - Generating an AWR Report (page 524)
 - Generating an AWR SQL Report (page 524)
 - Generating an AWR Diff Report (page 525)
 - Generating an ASH Report (page 526)
- Copy reports to clipboard.
- Print reports.
- Save reports to file.
- Manage Snapshots (view stats, create, delete).
- Manage Baselines (view, create, delete).

ADDM also documents the non-problem areas of the system. For example, wait event classes that are not significantly impacting the performance of the system are identified and removed from tuning consideration at an early stage, saving time and effort that would be spent on items that do not impact overall system performance.

In addition to problem diagnostics, ADDM recommends possible solutions. When appropriate, ADDM recommends multiple solutions for the DBA to choose from. ADDM considers a variety of changes to a system while generating its recommendations.

To access the ADDM/AWR window

- » From the Database menu, select **Monitor | ADDM/AWR**

AWR Browser (OEM) Overview

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Toad AWR Browser supports AWR in Oracle 10g and newer. It displays performance metrics between AWR snapshots in great detail. You can use this ability to track, compare and organize your statistics.

From the AWR Browser window, you can select snapshots; create new snapshots; select, display and print charts; program custom charts; and various other combinations. The browser window makes it easy to access the power of the data collected by Oracle's AWR feature.

For the most part, the AWR Browser works in the same way as the Statspack Browser, and all but two of the same charts are available. For more detailed information on working with snapshots and charts, please see the [Statspack Browser](#) help topics.

Note: By default, unless you have instructed Toad to make this window accessible, this functionality is disabled. You can restore functionality from **View|Toad Options|Windows** and clicking the Available checkbox in the appropriate row of the grid.

To access the AWR Browser

- » From the Database menu, select **Monitor | AWR Browser**.

The Browser Window

The AWR Browser window is divided into three areas: a list of snapshots, a list of charts, and a right hand panel where charts and advice are displayed. These areas work together to display the metrics you need to see.

Snapshot List Area

The snapshot list area lists the snapshots that have been collected by the AWR. To create charts based on these snapshots, you can select or clear the checkbox to the left of the snapshot name. By default, the AWR browser will select up to the most recent 24 hours worth of snapshots with the same database start time.

Chart List Area

Several charts and grids have been built into the window, or you can easily add your own in addition to those provided. Select or clear the checkbox to the left of the chart you want to view

or hide. Selected charts are created for the selected snapshots. Right-click to select all, none, and so on.

Chart Display

You can display up to nine charts at a time, in a three by three chart area. See "Configuring the viewing area" (page 576) for more information on configuring the viewing area.

Advice Display

Toad displays advice in the right hand panel. When two snapshots are selected (not checked, but highlighted), click the Advice tab for information about the top wait event during the selected interval. You can also double-click the top waits grid in the chart display area to display advice about that wait.

Generating an ADDM Report

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can easily generate an ADDM report from Toad.

To generate an ADDM report

1. From the Database menu, select Monitor | ADDM/AWR Reports.
2. Click the **ADDM/AWR Report** tab.
3. Select the appropriate Instance from the Instance drop down box.
4. Click  to select:
 - Starting snapshot
 - Ending snapshotBaseline range

Note: To shorten the list of snapshots in the data select dialog, you can select **Filter by ID** and use the Quickfilter box to filter the list.
5. Click **OK**.
6. Click  on the Report Generator toolbar. The report displays in the ADDM Report tab below the selection fields.

Working with ADDM Reports

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

After you have generated an ADDM report, you can read it on screen in Toad, or alternately, you may want to work with it in another format.

To copy the ADDM report to the clipboard

- » Run an ADDM report, and then click  button.

To print the ADDM report

- » Run an ADDM report, and then click  button.

To save the ADDM report to a file

- » Run an ADDM report, and then click .

Generating an AWR Report

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can easily generate an AWR report from Toad.

To generate an AWR report

1. From the Database menu, select **Monitor | ADDM/AWR**.
2. Click the **ADDM & AWR Reports** tab.
3. Select the appropriate instance from the Instance list.
4. Click  to select:
 - Starting snapshot
 - Ending snapshot

Baseline range

Note: To shorten the list of snapshots in the data select dialog, you can select **Filter by ID** and use the Quickfilter box to filter the list.
5. Click **OK**.
6. Click  on the Report Generator toolbar.
7. Select the **AWR Report - HTML Format** tab or the **AWR Report - Text Format** tab to view the report in either of those formats.

Generating an AWR SQL Report

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

If you are using Oracle 10.2 or higher, you can generate an AWR SQL report from Toad.

To generate an AWR SQL report

1. From the Database menu, select **Monitor | ADDM/AWR**.
2. Click the **AWR SQL Report** tab.
3. Select the appropriate instance from the Instance drop down box.
4. Click to select:
 - Starting snapshot
 - Ending snapshotBaseline range

Note: To shorten the list of snapshots in the data select dialog, you can select **Filter by ID** and use the Quickfilter box to filter the list.
5. Click **OK**.
6. Click and select a **SQL ID**.
7. Click **OK**.
8. Click on the AWR Report Generator toolbar.
9. Select the **HTML** tab or the **Text** tab to view the report in either of those formats.

Generating an AWR Diff Report

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

If you are using Oracle 10.2 or higher, you can generate an AWR differences report from Toad.

To generate an AWR Diff report

1. From the Database menu, select **Monitor | ADDM/AWR**.
2. Click the **AWR Diff Report** tab.
3. In the **Compare This** area, select the appropriate instance from the Instance drop down box.
4. Click to select:
 - Starting snapshot
 - Ending snapshotBaseline range

Note: To shorten the list of snapshots in the data select dialog, you can select **Filter by ID** and use the Quickfilter box to filter the list.
5. Click **OK**.
6. In the **To This** area, select the appropriate Instance from the Instance drop down box.

7. Click  to select:
 - Starting snapshot
 - Ending snapshot

Baseline range

Note: To shorten the list of snapshots, you can select **Filter by ID** and use the Quickfilter box to filter the list. See "Using the QuickFilter Box" (page 993) for more information.

8. Click **OK**.
9. Click  on the AWR Diff Report Generator toolbar.
10. Select the **HTML** tab or the **Text** tab to view the report in either of those formats.

Generating an ASH Report

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can generate an Active Session History (ASH) report from Toad.

To generate an ASH report

1. From the Database menu, select **Monitor | ADDM/AWR**.
2. Click the **ASH Report** tab.
3. Select the appropriate Instance from the Instance drop down box.
4. Select the Starting date and time from the appropriate boxes.
5. Select the Ending date and time from the appropriate boxes.
6. Click  on the ASH Report Generator toolbar.
7. Select the **HTML** tab or the **Text** tab to view the report in either of those formats.

Data Select Dialog

Use the Data select dialog to select the snapshot to use in the selected ADDM/AWR report. See "ADDM/AWR (OEM)" (page 520) for more information. You can use this dialog to select starting and ending snapshots, or a baseline snapshot.

To access data

- » In one of the ADDM/AWR report tabs, click a drill-down button to select a snapshot, SQL ID, or baseline.

Filtering the Data Grids

You can filter the data grid using the Quickfilter box at the bottom of the dialog.

To filter the grid

1. Select the **Filter by** check box.
2. Enter your filter criteria in the Quickfilter box below the check box. See "Using the QuickFilter Box" (page 993) for more information.

Selecting data

Only one row may be selected at one time.

To select data

1. Select data by clicking on a row in the data grid.
2. If desired, edit the query, or insert variables.
3. Click **OK**.

Editing the SELECT query

When you have selected a row, you can edit the query before it is sent to Oracle. You should limit yourself to editing the WHERE and ORDER BY clauses.

To edit the query

1. Select data.
2. Click the **Edit Query** button.
3. Edit the **Where** or **Order By** clause.
4. Optionally, click the **Check** button to check your query for syntax errors.
5. Click **OK**.

Snapshot Management

ADDM/AWR Snapshot Management

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The [ADDM/AWR](#) Snapshot Management tab lets you manage your snapshots. The Snapshot Management tab is divided into two areas: collection settings, and snapshot details.

Collection Settings

Collection settings are the settings that Oracle uses to define how often to take a snapshot and how long to keep it. The format is:

+dd hh:mm:ss:nnnnnnn.

Snapshot Interval

Snapshot interval specifies the interval at which Oracle will take snapshots. The default is one hour:

```
+00 01:00:00:000000
```

Retention

Retention specifies how long the snapshot will be maintained. The default is seven days: +07 00:00:00.000000

Top N SQL

For the Top SQL to flush for each SQL criteria, you can choose to use:

Default	Uses Top 30 for statistics level TYPICAL, and Top 100 for statistics level ALL.
Maximum	Captures the complete set of SQL in the cursor cache.
Specify	Uses the number you specify: Enter the value into the number box. This value is not affected by the statistics or flush level. It will override system default behavior for AWR SQL collection.

Snapshots

The Snapshots area displays snapshots information in a data grid. In addition, from the toolbar you can:

- View Snapshot Statistics
- Create a New Snapshot
- Drop a Snapshot Range

The options change with the selection you make.

View Snapshot Statistics

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

From the Snapshot Management tab you can view aggregate Snapshot statistics for snapshots on the current connection. In addition, if you are connected as SYS, you can also deallocate unused AWR space or shrink AWR objects.

To view snapshot statistics

1. From the ADDM/AWR window, click the **Snapshot Management** tab.
2. In the **Snapshots** area, statistics are displayed in a data grid. Statistics display in the columns to the right of the list of snapshot numbers.

To deallocate unused AWR space

1. From the ADDM/AWR window, click the **Snapshot Management** tab.

Note: You must be connected as SYS to perform this function.

2. In the Snapshots area, click .

To shrink AWR objects

Note: You must be connected as SYS to perform this function.

1. From the ADDM/AWR window, click the **Snapshot Management** tab.
2. In the Snapshots area, click **View Snapshot Statistics**.
3. Click .

ADDM/AWR Create New Snapshot

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can create a new snapshot from the ADDM/AWR window. See "ADDM/AWR (OEM)" (page 520) for more information about the ADDM/AWR window.

To create a new snapshot

1. From the ADDM/AWR window, click the **Snapshot Management** tab.
2. In the Snapshots area, click .
3. Select one of the following:
 - Flush Level: Typical
 - Flush Level: All
4. Click **OK** to create the snapshot.

Note: An information window displays listing the Snapshot ID of the new snapshot: for example, "Snapshot ID 6517 has been created."

5. Click **OK**.

ADDM/AWR Drop Snapshot Range

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To drop a snapshot range

1. From the ADDM/AWR window, click the **Snapshot Management** tab. See "ADDM/AWR (OEM)" (page 520) for more information about the ADDM/AWR window.
2. Select the snapshots you want to drop.
3. In the Snapshots area, click **Drop Selected Snapshots**.
4. Beside the Starting Snapshot box, click .
5. In the Data Select Dialog, select the starting snapshot and click **OK**.
6. Beside the Ending Snapshot box, click .
7. In the Data Select Dialog, select the ending snapshot and click **OK**.
8. Click **OK** to confirm.

Baseline Management

ADDM/AWR Baseline Management

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can use the Baseline Management tab to view and control various baselines for ADDM/AWR reports. See "ADDM/AWR (OEM)" (page 520) for more information.

You can view established baselines from the navigator on the left side of the window. Baselines are listed by name in the grid. Baselines are listed by Database ID, but the grid can be sorted by any column by clicking in the column header.

To view a baseline

- » In the Baselines navigator, click on a baseline name.

The baseline information displays in the right hand area, and includes:

- Baseline ID.
- Baseline Name.
- Starting Snapshot ID.
- Starting Snapshot time.
- Ending Snapshot ID.
- Ending Snapshot time.

Creating a Baseline

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can create a new baseline range of snapshots from the ADD/AWR window.

When creating a baseline, the Baseline ID, starting Snapshot Time and ending snapshot time are set automatically.

To create a new baseline

1. From the ADDM/AWR window, click the **Baseline Management** tab.
2. Click .
3. Enter a name for the baseline in the **Baseline Name** box.
4. Enter a starting **Snapshot ID**, or click  and select one from the Data Select Dialog.
5. Enter an ending **Snapshot ID**, or click  and select one from the Data Select Dialog.
6. Enter the number of days you want to leave the baseline active in the **Expiration** box. If you do not want to the baseline to expire, leave this box blank.
7. Click **OK**.

Dropping a baseline

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can easily drop a baseline from the **ADDM/AWR Reports | Baseline Management tab**.

To drop a baseline

1. In the Baselines grid select the baseline you want to drop.
2. Click .
3. Choose to either:
 - Drop Baseline only

Drop Baseline and all Associated Snapshots

Note: Dropping all associated snapshots could impact other baselines.

4. Click **OK**.

Baseline Template Management

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

If you are using Oracle 11g or higher, you can use the ADDM/AWR reports page to track your baseline templates.

Viewing Baseline Template Information

When you view the baseline template information, Toad places all templates into a data grid

To track baseline template management information.

1. From the Database | Monitor menu, select **ADDM/AWR**.
2. Click the **Baseline Template Management** tab.
3. You now can sort the template grid by any column desired: click on the column heading to do so.

Creating New Templates

You can create a new baseline template directly from this window. For details about baseline templates and how to use them, see your Oracle documentation.

To create a new template

1. From the ADDM/AWR window, click the **Baseline Template Management** tab.
2. Click .
3. In the **Create Baseline Template** window, enter a name for both the **template** and the **baseline** in the appropriate boxes.
4. Select either **Expression** or **Literal** for the start time, and select a start date and time from the drop down boxes.
5. Select either **Expression** or **Literal** for the end time, and select an end date and time from the drop down boxes.
6. In the **Expiration** box, enter the number of days until the baseline template expires, or leave it blank for no expiration.
7. If the template will be repeating, select the **Repeating** check box and enter the Day, Hour and duration the template should repeat.
8. Click **OK** to create the template.

Dropping a Baseline Template

1. From the ADDM/AWR window, click the **Baseline Template Management** tab.
2. Select the template you want to drop.
3. Click .
4. Click **Yes** to confirm.

Database Browser

Database Browser

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

This window lets you see information across multiple schemas or servers. You can select multiple schemas or servers; view a variety of summary information for them; perform pings and tnspings on them; or open common Toad windows for them.

Note: Some V\$ synonyms are required for this feature. See "V\$ Tables Required" (page 153) for more information.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

To access the Database Browser

- » From the Database menu, select **Monitor | Database Browser**.

Tree view

The left side tree view is initially created from your tnsnames file and then saved into a file called DatabaseBrowser.tdb in your Toad directory. You can add or delete server and schema nodes to make the tree more manageable. You can also check the **Connected servers only** box to display only the connected servers.

Database Nodes

You can set properties for individual nodes by selecting a node, right-clicking it and choosing **Properties**. You can also perform the following operations on nodes:

- Connect
- Disconnect
- Associate with a schema (valid only for schema nodes)
- Rename
- Remove
- Startup
- Shutdown
- Alter
- View and modify properties, including default schema and choosing to auto connect

These operations can be performed on multiple database nodes at the same time. For instance you can connect to multiple servers by selecting them and choosing **Connect**. If you choose **Connect** while on a server node, connections will be created for **all** the database nodes under that server.

Database Objects nodes

Beneath the database node is a group of object nodes for that database. Click on one of these to open an embedded Schema Browser for that object type in the right hand side of the Database Browser. See "Schema Browser Window Overview" (page 978) for more information.

In addition to the standard objects, there is also a Schema Objects node. Click this node to open an embedded schema browser in which you can limit your browsing by schema as well as object type.

Summary Information

Select a node or group of nodes from the tree view. On the right hand side of the window, summary information is displayed for the connections you have selected.

In some cases you can get "roll up" information for all of your databases or servers at once. For example

- Space Usage tab displays totals for Megs Allocated, Used and so forth
- Datafile IO tab displays the Total IO of all your selected databases.

Tabs provide access to the summary information as follows:

- Overview
- Instance
- Database
- Options
- Parameters
- Sessions
- Top Sessions
- RBS Activity
- Space Usage
- Datafile IO

The Instance and Database tabs offer two views: single record and grid view. The single record view is useful on these tabs because of the number of columns displayed.

The Top Sessions tab has a SQL tab at the bottom. This tab allows you to view the full, formatted SQL statement of the current record selected on the Grid tab.

Database Browser Toolbar

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.



Button	Command
	New Server
	New Database
	Refresh Data
	Perform Ping or TNS Ping on selected objects
	Open a Schema Browser for selected databases
	Open an Editor for selected databases
	Find Object
	Open Server Side Object Wizard
	Open DB Health Check
	Open Database Monitor

Database Monitor

Toad Database Monitor

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Database Monitor lets you track database performance with nine charts: Logical IO, Physical IO, Event Waits, Sessions, Call Rates, Miss Rates, SGA Memory Usage, Shared Pool, and Indexed Queries %. There is a horizontal scroll bar to allow you to see all the charts.

The Database Monitor must be launched in order to track performance. So you can launch it in the morning, minimize the window, and later in the day if a threshold is crossed you will be alerted.

Note: Access to some V\$ tables are required to use this option. See "Database | Monitor | Database Monitor " (page 155) for more information about these permissions.

To access the Database Monitor

- » From the Database menu, select Monitor | Database Monitor.

RAC Connection

Within the database monitor, all information is provided by single connections. However, it is summarized or aggregated for all the instances that compose the RAC cluster. For example, looking at SGA memory - if each RAC instance is 150 MB, and you have two RAC instances, this column will display 300MB.

SYS view warning

When you first log into the Database monitor, you may get a warning dialog box stating that you are missing the "SYS view, X\$_KSLLT" view. Without this view, the Latch series on the Miss rates chart will be zero.

- If this dialog box appears, you can check the "Don't show this message again" check box in the lower left corner and it will not display again. In order to obtain data for the latch series, connect as SYS and execute the following SQL:

```
CREATE OR REPLACE VIEW x$_ksllt AS SELECT * FROM x$ksllt;  
GRANT SELECT ON sys.x$_ksllt TO PUBLIC;
```

- Click **Close** to continue using the Database Monitor.

Zoom

To zoom a graph

- » Zoom in on a specific area by dragging a rectangle from left to right. around the area you want to zoom.

To restore a graph

- » Drag a rectangle from the right to left, and the chart will zoom back to 100%.

Print

To print a graph

- » Right-click the graph you want to print and select **Print**. The job is automatically sent to the printer.

Save

To save a graph

1. Right-click the graph you want to save and select Save.
2. Select the format you want the file to have:
 - XLS
 - HTML
 - Bitmap
3. Enter a filename for the graph, or use the default.
4. Click **OK**.

Database Monitor Toolbar

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Database Monitor toolbar provides access to the features of the entire database monitor.



Icon	Command
	Change Active session.
	Flush the Cache.
	Refresh Data.
	Alerts.
	Save chart
	Options
Instance	If you are connected to a RAC instance, use this drop down menu to select

Icon	Command
	the instance you want to monitor.

Database Monitor Email Alerts

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The alerts window displays all alerts that have occurred since you either opened the monitor or last cleared the window. Emails are listed at the bottom of the window.

To view email alerts

1. On the toolbar, click .
2. Click one of the following:
 - Clear to clear the alerts
 - Close to close the window

Save to save the alerts as a text file

Note: In addition, you can choose to enable or disable alerts. If you have enabled email alerts, you will need to set up your email options from the View | Options | Email window.

Flushing the SGA or Buffer Cache

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

From the Database Monitor you can flush the SGA or the buffer cache.

- » Click  and select either **Flush SGA** or **Flush Buffer Cache** (Oracle 10g and up only).

Database Monitor Options

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

These options control how the Database Monitor displays data.

Refresh rate

The graphs and the monitor refresh at an adjustable interval.

- Select the appropriate interval from the dropdown Refresh rate menu. If you have checked the **auto refresh check box**, the window will automatically refresh at the interval you select.

You can also refresh the window manually by clicking the **Refresh** button.

Window

Use the Window box to specify how much graph data to display in the graphs. Options include one, two, six, twelve and twenty-four hours.

Note: The zoom amount will be twice the selected number.

TNS Ping check box

If checked, Toad will ping the Oracle server (using TNS ping) before it runs the query to refresh the data on the charts.

Ping check box

If checked, Toad will perform a TCP/IP ping to the Oracle server before it runs the query.

Database Probe

Database Probe Overview

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Toad Database Probe is a real-time monitoring window that offers a large collection of alerts. You can also create your own alerts.

The database probe does not automatically do a full refresh upon opening. If you would like it to do so, you can change the probe Settings.

To access the database probe

» From the Database menu, select **Monitor | Database Probe**.

Troubleshooting

- Some V\$ synonyms are required for this feature. See "V\$ Tables Required" (page 153) for more information.
- This feature is only available in the commercial version of Toad with the optional DB Admin module.

Reading the probe information

The probe window is divided into five zones, or collections of display controls. These roughly correspond to the layout of the window. See "Database Probe Settings" (page 540) for more information.

The database probe has its own toolbar as well as status bar. A warning icon can appear to the left of each data control when an alert is tested and fired and you have chosen that area of the screen to show an icon.

To read an alert

1. When an alert fires, the warning icon  appears to the left of the data control.
2. Click the icon to display a dialog box revealing details about the alert.
 - The group box caption shows the name of the alert.
 - The detail window shows the alert description.
 - Below the detail window the alert expression displays.
 - A check box offers the possibility to turn the alert off.

The Database Probe alert definitions and options are stored in an INI file called "DatabaseProbe.INI".

Information gathered from the database regarding the alerts is displayed as follows:

- The information displayed reflects standard Oracle statistics. For more information about what the areas on the database probe represent, see your Oracle documentation.
- The result of *number/number* represents used/max
- For example, 2/170 is 2 total sessions out of a possible 170.
- - represents either a NULL value or "invalid for the current connection version"

Upgrading definitions and options

The Database Probe alert definitions and options are kept in an INI file called "DatabaseProbe.INI".

Future upgrades to Toad may include an updated DatabaseProbe.ini file as well. If you have made changes to your alerts, you may want to back them up in a separate file. When a new DatabaseProbe.ini is provided, you can compare the files and only add the parts of the new ini file that you want to include in your alerts. See "Compare Files and Objects" (page 256) for more information.

Database Probe Toolbar & Status Bar

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Toolbar



Icon	Command
	Select a different session.
	Refresh all five zones and reset the refresh timers. The dropdown offers a list of each zone. Selecting an individual zone will refresh just that zone.
	Flush SGA or Flush Buffer Cache (Oracle 10g only).
	Open Quest Spotlight (if you have it installed) to the active connection.
	Display the Settings dialog box.

Status bar

The status bar displays the names of queries as they are executing during zone refreshes. It also displays the connection string for the active window connection.

Database Probe Settings

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

From the Settings dialog box of the [Database Probe](#), you can change several types of settings for the Database Probe. These include refresh rates, alerts, and several miscellaneous settings.

To access settings

- » Click on the DB Probe toolbar.

Settings tab

Refreshes

The Refresh tab of the Settings window allows the user to set a refresh rate or no refresh at all. The available refresh rates are 15 seconds, 30 seconds, 1 minute, 5 minutes, and 15 minutes.

Note: The Lock check box in the SGA area is only applicable on non-Windows servers.

- DBWR, LGWR, ARCH, Phys reads/writes
- Files
- Overhead

Gauges

Use the Gauges area to set the colors used for alerts, and warning levels for the Redo logs and data files.

Active Alert Count

The Active Alerts count displays the number of *active alerts*. An alert can be active or inactive. It is only active alerts that potentially impact the performance of a zone refresh.

Alerts

The Alerts tab of the Settings dialog box displays all the alerts currently in Probe, including

- active or inactive (Only active alerts are tested during their relevant zone refresh.)
- name
- description

An alert is a user-defined event. It reads the data on the main window and issues a warning by a display icon. An alert consists of an expression representing a formula. The formula is then used to determine whether to fire the alert.

For example, you may want an alert to fire if the number of active sessions matches the number of total sessions. An Alert can be *inactive*; inactive alerts are not tested when operands are refreshed. Alerts can be tested, fired, and extinguished.

You can add alerts, edit or delete selected alerts, activate or deactivate them individually or all at once.

Activate or deactivate alerts by clicking in the check box in the Active column. Alternately, click the Activate All or Deactivate All buttons to the right of the alert grid.

Tested

When a refresh occurs on an operand that is being used by an alert, then the alert for that operand is tested. This means the alert expression is evaluated.

Evaluation consists of a process whereby the operand identifiers in the expression are replaced with their on-screen data values and any embedded queries within the expression are executed and the resulting value is substituted.

- If the resulting expression evaluates to TRUE, then the Alert is **fired**.
- If it evaluates to FALSE, the Alert is **extinguished**.

Fired

This happens when an alert is tested and evaluates to TRUE. When an alert fires, the warning display icon for it becomes visible.

Extinguished

This is what happens when an alert is tested and evaluates to FALSE. When an alert is extinguished the warning icon for it is hidden.

Alert Map

You can check the map of alerts by clicking the **Show Map** button.

The Alert Map is a convenient way to see the operands on the main window that have alerts associated with them. When the cursor is passed over alert icons, the alert expression for it is displayed as the hint text.

Adding and Editing Alerts

Note: This Toad feature is only available in the commercial version of Toad in either the Professional Edition or with the optional DB Admin Module.

See "Database Probe Overview" (page 538) for more information.

To add an alert

1. From the Database Probe window, click  on the toolbar.
2. Click the **Alerts** tab.
3. Click **Add**. Enter the information in the dialog box to create an alert as described below.

General Area

Name

Enter the alert name. This is used to identify the name of the alert for display purposes within the Alerts grid in the Settings dialog box. Alert names must be unique.

Active

This determines whether the alert is tested during relevant zone refreshes.

Alert position

This is the on-screen position of the icon, appearing when the alert fires. A dropdown list of possibilities is offered. Alternately, you can choose from a graphic display:

- Click , to access the Alert Icon Selection window. This window looks like the main probe window but with all available alert icons visible.
- Click on one of the available icon positions to use. The current one, if one has already been selected, blinks.

When an icon is clicked, this dialog box is closed and the name for that icon is chosen in the Alert position drop down.

Note: Only unused alert positions or inactive alert positions are available choices.

Description

Enter a description of the alert.

Refreshes before computing

Each alert is associated with one or more zones. The zone(s) associated with an alert is determined by the Probe operands used in the Alert Expression. When an alert is associated with more than one zone, the zone with the fastest refresh rate determines when the alert fires. This value determines how many actual refreshes of that zone must occur before the alert is tested.

For example, if the alert is associated with a zone. This zone is refreshed every 15 seconds and you may not want the alert to be tested every time (testing each time can slow down the refresh). It may be more useful to have the alert tested every 2 minutes, and you would enter an 8 here.

Expression Builder

Expressions are the driving force behind an alert; the expression tells Toad what should be tested when it tests an alert.

An alert expression consists of one or more Probe operands, one or more queries (must be enclosed in double-quotes), and operators listed. The relational operator in the center of the expression determines how the sides of the expression are compared to each other to determine if the evaluation is true.

- Each operand, query, and operator in the expression must be separated by spaces.
- Query SELECT statements must be enclosed in double-quotes and *must* return a numeric value in the first field. This value is then used as the substitution value in the expression. An example of this is the provided alert named "Mismatched Redo Log Size".

To use the expression builder

1. Drag-and-drop one or more Probe operands from the treeview into the left and/or right sides of the expression.

Note: Operands are grouped by zone. Operators can also be dragged and dropped, or typed directly.

2. Choose a relational operator.
3. Click **Test** to test the expression to see if the math expression evaluator can turn the string expression into a mathematical formula.

Index Monitoring

Index Monitoring

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Oracle versions 9i and later provide a means of monitoring indexes to determine whether or not they are being used. You can then drop unused indexes to eliminate unnecessary statement overhead.

To access Index Monitoring

- » From the Database menu, select **Monitor | Index Monitoring**.

Information such as monitoring status, start time, end time and usage are available in the Index Monitoring grid. Whenever you enable monitoring, Toad resets these statuses for the specified index.

You can always see your own indexes. To see another user's indexes you must have access to the SYS.OB\$, SYS.IND\$, SYS.USERS\$ and SYS.OBJECT_USAGE views and the ALTER ANY INDEX privilege.

Index Monitoring Toolbar



Button	Command
	Monitor Indexes - Select from monitoring all indexes or selected indexes.
	End monitoring indexes - Select from ending all indexes or selected indexes.
	Display the create script for selected indexes
	Drop selected indexes
	Refresh grid data
Indexes Owned By	Select the schema that owns the indexes you want to view

[Activating Index Monitoring \(page 545\)](#)

Activating Index Monitoring

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can monitor all indexes, or only selected indexes.

To monitor all indexes

1. From the Database menu, select **Monitor | Index Monitoring**.
2. Select a schema from the **Indexes Owned By** drop down menu.

3. Click  and select **Begin monitoring all indexes**.

To monitor selected indexes

1. From the Database menu, select **Monitor | Index Monitoring**.
2. Select a schema from the **Indexes Owned By** drop down menu.
3. Select one or more indexes in the data grid.
4. Click  and select **Begin monitoring selected indexes only**.

Deactivating Index Monitoring

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

When you have completed monitoring for a period, you can turn off Index Monitoring.

To deactivate index monitoring on all indexes

1. From the Database menu, select **Monitor | Index Monitoring**.
2. Select a schema from the Indexes Owned By drop down menu.
3. Click  and select **End monitoring all indexes**.

To deactivate index monitoring on selected indexes

1. From the DBA menu, select **Index Monitoring**.
2. Select a schema from the **Indexes Owned By** drop down menu.
3. Select one or more indexes in the data grid.
4. Click  and select **End monitoring selected indexes only**.

Instance Manager

Instance Manager

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Instance Manager is designed to allow you to check on the status of the various databases you can access. All databases in your TNS Names file are displayed.

The main window allows you to change the general options for the Instance Manager as described below.

To access the Instance Manager

- » From the Database menu, select **Monitor | Instance Manager**.

Refresh Rate

Select the time interval for automatically refreshing your data. If the Auto refresh data check box is unchecked, it doesn't matter what is selected here, as the data will not be refreshed.

Auto refresh data

Checked, this option automatically refreshes the data according to the rate you have set in the Refresh Rate dropdown. Unchecked, you will have to refresh the data manually, no matter what is set in the Refresh Rate box.

Polling Priority

The thread cycling through the database will be assigned the operating system priority you select from the dropdown. If you select Idle the thread will only execute when the system is idle; Windows will not interrupt other threads.

Start

Click this button to start monitoring the info about your databases. If you have Auto refresh cleared, you can use this button to monitor selected databases manually. When Toad is gathering , this button changes to read **Stop** so that you can stop polling.

Tabs

In addition, there are three tabs to see the status.

The Status tab displays the status of the Node, Listener and Database. See "Instance Manager - Status Tab" (page 547) for more information.

The Status change history displays any changes made to your databases in a grid format.

The Detail log displays all reports from the Server Manager or SQL.

Buttons

You can Startup or Shutdown a database using the Startup or Shutdown button at the bottom of the Status Tab.

Note: The database to be shutdown/started requires a password file and `remote_login_passwordfile=EXCLUSIVE` must be set in the pfile (typically INIT.ORA or INIT<sid>.ORA). If you have created the database with the New Database Wizard, it will already have this file built. If you created the database in another manner, you will need to be sure it has the password file set properly.

In addition, you can:

- Build init.ora... - This button builds an init.ora file for the currently selected username.
- Refresh current - This button manually refreshes the display of current connections.

Instance Manager - Status Tab

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Status tab in the [Instance Manager](#) displays the status of your databases.

Data Status

Toad pings the Listener, the Node, and the Database and displays the results as follows:

Icon	Meaning
?	Unknown. Toad can't determine the status. For example, no database connect information is specified, and Instance Manager cannot test the status of the database.
✗	Could not connect. <ul style="list-style-type: none">• Database: an Oracle test connection failed.• Listener: tns ping did not return a response.• Node: unable to ping the server.
✓	Connected. <ul style="list-style-type: none">• Database: the database is started, mounted, and open.• Listener: tns ping successfully pinged and listener is up.• Node: server successfully pinged and node up.
✓	Started. This checkmark is only seen in the Database column, when the database has been started, but not mounted or opened.
✓	Mounted. This checkmark will only be seen in the Database column, when the database has been started and mounted, but is not currently open.

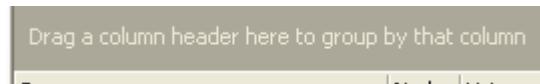
You can select one of the various database connections accessible from your machine and adjust the Startup, Shutdown, or Alter information for checking the instances.

Grouping databases

You can group your databases in the grid to more easily differentiate them. For example, you could group by whether or not you are monitoring the database so that you have a smaller grouping to watch.

To group the data grid

- » Drag the header of the column you want to group by into the **Group by** area at the top of the data grid.



Checking a Database

In order to retrieve information about a particular database, you must enter login information for that database. Toad will use this information to check that the database is up. The connection will then be immediately closed.

To enter login information

1. In the grid, click in the **logon info for database test column** and then click the dropdown arrow for the appropriate database.
2. Select one of the **previous connections** OR select **New**.
3. If you selected **New**, the New connection dialog box appears.
4. Enter the appropriate information in the Username and Password boxes and then click **OK**.
5. Click **Refresh** to force Instance Manager to check the database immediately.

Instance Manager – Startup

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can start databases from the [Instance Manager](#) in several different modes. Be aware, however, that Instance Manager uses SQL*Plus to start up and shut down databases.

Caution: Because of this, you cannot start up an Oracle 7 database from an Oracle 8i or above client. This is because SQL*Plus is used to start up and shut down databases from an Oracle 8i or above client, but SQL*Plus cannot start up or shut down Oracle 7 servers.

To start a database

1. From the Instance Manager's Status tab, select the **server/database** you want to start.
2. Click **Startup**.

Enter a **username** and **password** that can connect as SYSDBA or as SYSOPER.

Note: Passwords are only saved if [View | Toad Options | Oracle | Save passwords for Oracle connections](#) is checked.

3. Select **SYSDBA** or **SYSOPER** from the dropdown.

Select the **startup options** you want to use.

Open	Select open to open a database completely. This is the standard selection and allows all authorized users to log in and use the database.
Mount	Select Mount if you want to mount the

	database but not actually Open it. Mount allows you to do some basic Oracle alterations that you cannot perform if the database is completely opened.
Nomount	Select Nomount if you want to put the database into the started mode.
Force	If you try to Startup an instance of a database that is already running, the command will result in an error. In some cases, however, you may want to restart a database, for example during debugging or under abnormal circumstances. To do this, check the Force box. This will shut down the current Oracle instance using the Shutdown mode Abort. Then Toad will continue with its startup procedures.
Exclusive	If Exclusive is checked, the database can only be mounted and opened by the current instance. It cannot be opened simultaneously by multiple instances. Exclusive cannot be used with SHARED, PARALLEL, OR NOMOUNT. If no mounting option is specified, EXCLUSIVE will be assigned by default. Unchecked, the database can be opened simultaneously by multiple instances, making SHARED, PARALLEL and NOMOUNT possible.

Enter the **full pathname** for the parameter file you want to use, or click **Browse** and select it from the browse window.

Note: If you have shut down this database from Toad, Toad has saved the parameter file in the Toad directory. This file is the default pathname when you restart the database.

4. Click **OK**.

Instance Manager - Shutdown

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

In order to shut down a database, you must have SYSDBA or SYSOPER privileges. Be aware, however, that [Instance Manager](#) uses SQL*Plus to start up and shut down databases.

Caution: Because of this, you cannot shut down an Oracle 7 database from an Oracle 8i or above client. This is because SQL*Plus is used to start up and shut down databases from an Oracle 8i or above client, but SQL*Plus cannot start up or shut down Oracle 7 servers.

Note: Access to some V\$ tables are required to use this option. See "Instance Manager | Shutdown" (page 157) for more information about these permissions.

To shut down a database

1. From the Status tab, select the **database** you want to shut down, and then click **Shutdown**.

Enter the **Username** and **Password** in the appropriate boxes and select either **SYSDBA** or **SYSOPER** from the dropdown menu.

Note: Passwords are only saved if **View | Toad Options | Oracle | Save passwords for Oracle connections** is checked.

2. Choose the **Oracle mode** you want to use to shut down the database: **Normal**, **Immediate**, or **Abort**
3. Click **OK**. The dialog box closes and the database shuts down. This is displayed in a status line in the lower right corner of the Instance Manager window as it is occurring.

When the Database has been shut down, an entry is made in the Status change listing, and the Server Manager or SQL report is appended to the Detail Log.

When you shut down a database, Toad creates a folder called DBA in the Toad directory. In that folder, Toad stores an .ora file for the parameters that are not default parameters. In addition, a file called *startupshutdownlog.txt* is created and contains the contents of the detail tab.

When Instance Manager performs a shut down, it queries the v\$parameter table to build an INIT.ORA file for subsequent startups. This file is stored in Toad\DBA and is named pfile_SID.ora (where SID is the database alias). To perform this query, a temporary database connection is created, using the shutdown connection information provided on the "shutdown" dialog box.

Note: On 7.3.4 clients, if the database is not already open, in other words, if it is unmounted or mounted, this SYSDBA/SYSOPER temporary connection is not supported. Thus, on **7.3.4 clients you cannot shut down a database that is not open**. ALTER operations continue to work, however, because they use server manager only, and do not attempt to create this temporary database connection.

Instance Manager - Alter

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Using the Alter command from the Instance Manager allows you to alter the state of the selected database.

In order to alter the status of a database, you must have SYSDBA or SYSOPER privileges.

To use the alter command

- From the Status tab, select the **database** you want to change status, and then click **Alter**.

Enter the **Username** and **Password** in the appropriate boxes and select either **SYSDBA** or **SYSOPER** from the dropdown menu.

Note: Passwords are only saved if **View | Options | Oracle | Save passwords for Oracle connections** is selected.

Choose the **operation** you want to perform on the database. You can either **Mount** or **Open** the database.

Note: If the database is in **Start** mode, you must manually mount the database before you can open it. In order to open the database, mount it, then select it in the Status tab and select Alter again to open it.

Session Browser

Session Browser Overview

The Toad Session Browser lets you easily view and work with sessions. Information on all sessions is organized in grid form, and the session that opened the Session Browser is displayed in **red**.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

From the Session Browser you can:

- Organize session views
- View detailed information, including advice about selected waits.
- Kill sessions
- Start traces
- Stop traces
- View locks being held or acquired by sessions
- View transaction information for online rollback segments

To access the Session Browser

- From the Database | Monitor menu, select **Session Browser**.

Session Browser Toolbar

The Session Browser toolbar lets you configure your Session Browser.



Button	Command
	Change active session. In the drop down list, the active session is denoted by a check mark.
	Refresh data
Filter: <none>	Filter sessions. See "Filtering Sessions" (page 554) for more information.
Refresh (secs) <input type="button" value="30"/>	Set the refresh rate (in seconds) for Auto Refresh
<input checked="" type="checkbox"/> Refresh	Toggle auto refresh
<input checked="" type="checkbox"/> Fetch details	Toggle auto fetch of details.

Flip the Session Browser Layout

The Session Browser default is laid out in two vertical panes, the left containing the tree view and the right containing details. If this makes it too difficult to view all the provided information, you can flip the layout so that the panes are on top of each other.

If you choose to flip the form layout, references to the left pane will now refer to the top pane, and right pane to the bottom pane.

To flip the form layout

- » From the main Session Browser toolbar, click .

Viewing Sessions

There are potentially thousands of sessions in a database at any one time. It is therefore practical to organize and present them for easier management.

The left side of the Session Browser displays one or more columns queried from V\$SESSION. From this panel, you can

- Group the rows returned from V\$SESSION in seven different ways
- Filter the rows to display a smaller subset of rows

Sessions Toolbar

Use the commands on the Session Browser toolbar to control sessions.



Button	Command
--------	---------

	Disconnect Sessions
	Kill Session
	Trace ON
	Trace OFF
	Filter Sessions (Grey, no filter assigned. If a filter is selected, this icon will be red.) See "Filtering Sessions" (page 554) for more information.
	Group By
	Visible columns
	Flip layout of window. See "Flip the Session Browser Layout" (page 552) for more information.
	Refresh detail panel
	Limit a selected column to your filter

Grouping Sessions

Grouping sessions in the Session Browser is a matter of choosing which field you want to use to view sessions.

For example, you choose to view all the sessions for a given user, and the left pane tree will be organized by user.

You can group your sessions by

- program through which the session is running
- user
- session status
- server on which the session is running
- session type
- resource consumer group
- operating system user

To group sessions

» Do one of the following:

- Right-click in the top pane and choose **Group by**.
- Select the drop-down on .

The tree will refresh and group sessions according to the column you have chosen, with the caption of the first column updated to reflect the new organization.

Filtering Sessions

Filtering Sessions

You can filter the sessions shown in the top panel of the Session Browser in two ways: user defined filters or static filters.

User Defined Filters

User defined filters represent either a condition or a subquery which is performed on the result set. You define the criteria and name it. It is then saved to disk in a file called `Toad_SESSBROWFILTERS.INI` which resides in the same directory as `TOAD.INI`. See "Properties Files" (page 163) for more information about locations of these files.

Static Filters

You can also choose a static filter. A static filter is a pre-defined, read-only filter which is used in combination with a user-defined filter.

User Defined Filters

User defined filters in the Session Browser represent either a condition or a subquery which is performed on the result set. You define the criteria and name it. It is then saved to disk in a file called `Toad_SESSBROWFILTERS.INI` which resides in the same directory as `TOAD.INI`. See "Properties Files" (page 163) for more information about locations of these files.

To create and manage user defined filters

- » Click  on the **Sessions** tab.

Note: If there is a filter in effect, this button will be red.

Left Side Panel

The left side of the Filters dialog box displays a list of currently defined filters.

Minimum version

When a filter is created, the list of columns which have been included in the expression is parsed and checked against the known list of columns for the various Oracle versions.

If you choose a column which is not in an earlier version of Oracle, the expression will be evaluated and the minimum Oracle version required will be stored as part of the filter. When a user opens the Session Browser, only filters which are valid for the current Oracle connection are presented in the drop down filter list at the top of the window.

Right Side Panel

The right side shows the filter expression as it has been evaluated by the Session Browser, and in essence represents the query which will be executed to populate the top panel tree view in the Session Browser. This area is read-only.

For convenience, the name and location of the filters INI is shown in the status bar of this window.

Adding a User Defined Filter

You can define your own filters to organize your sessions in the Session Browser.

To add a filter

1. Click  on the toolbar.
2. Click **Add**.
3. Enter a name in the **Filter Name** box. This should be descriptive enough that the filter is easily identifiable.
4. Enter the expression in the Expression box.
5. When you have created the expression, click **Test** to build a query around it and show the results in the Filter Test window. This is a simple way to ensure you have built a query expression with correct syntax and that you are getting the result set you expect.
6. When you have a filter completely defined, click **OK** to save it to the `Toad_SESSBROWFILTERS.INI` file. See "Properties Files" (page 163) for more information about locations of these files.

Features of the Add Filter dialog box

Expression box

You can enter text manually or use the selection boxes beneath it to drag-and-drop or double-click elements to include in the expression.

Columns

The columns tree displays all the columns for each of the three views that can be included in the filter. When selecting columns from the tree view, an alias is prefixed onto the column name according to its originating view.

View	Prefix
V\$SESSION	.s
V\$PROCESS	.p
V\$SESS_IO	.io

Note: If you manually type columns into the expression box, this alias convention must be followed for the filter to work.

Lookup

The lookup button performs a distinct select of the values for the column on the underlying view. For example, if you want to restrict the sessions returned for a list of users, you could select the Username column under the session tree view node and click **Lookup**.

You can have multiple lookup windows open at once. This window can be useful for large lists or for number columns on which you want to perform a range check, as it will display the lower and upper limits currently in the database.

To use lookup

- » Select a **column** in the columns area and click **Lookup**.

A small stay-on-top window appears, containing the values found in the column.
From this small window you can:

- double-click values to copy them to the expression box
- drag and drop values into the expression box
- multi-select and then drag-and-drop the selected values into the expression box
- choose to close the window immediately after making your selection.

In the case of string values, the values will be delimited by single quotes when copied to the expression box.

Editing a User Defined Filter

You edit a user defined filter in the Session Browser in much the same way as you add a new one. Any part of the filter can be edited, including the name.

To edit a user defined filter

- » From the Session Browser Filter dialog box, select the **filter** you want to edit and then click **Edit**.

When the Edit Filter dialog box displays, you can use the same tools described in the Adding a User Defined Filter topic.

Deleting a User Defined Filter

You can delete a user defined filter in the Session Browser, whether it is one you have created or a standard filter provided with Toad.

To delete a user defined filter

1. From the Session Browser Filters dialog box, select the **filter** you want to delete and then click **Delete**. See "Filtering Sessions" (page 554) for more information.
2. Click **OK**.

Note: If you edit or delete standard filters they will be removed from the `toad_sessbrowfilters.ini` file. It is recommended that you keep a backup of this file if you change these. (See [Properties Files](#) for more information about locations of these files.)

Static Filters

In the Session Browser, a static filter is an internal condition which can be applied on its own or in conjunction with a user defined filter.

To apply a static filter:

- On the **Sessions** tab, click  (click the arrow) and select one of the following:
 - Exclude NULL and SYSTEM OS Users
 - Exclude parallel slaves
 - Exclude background TOAD sessions

When you select a static filter that filter is marked with a check and the filter icon turns red.

You can select more than one static filter at a time, and they can be combined with a user defined filter (in which case they are included as an AND condition at the end of the user defined filter expression). See "Adding a User Defined Filter" (page 555) for more information.

Exclude NULL

```
( (s.USERNAME is not null) and (NVL(s.osuser, ''x'') <> ''SYSTEM'') and  
(s.type <> ''BACKGROUND'') )
```

Exclude slaves

```
(s.ownerid = 2147483644)
```

See "Parallel Slave Processes" (page 557) for more information.

Parallel Slave Processes

Oracle can parallelize certain SQL operations. This involves breaking the task into smaller units, each of which are handled by a separate process. These separate processes show up in the V\$SESSION view yet they cannot be killed or traced, as they are owned by the processes which spawned them. On the left side tree view they appear as subnodes under the process which owns them.

Parallel slave processes are the only nodes which appear on the third level in the tree.

Note: When a top-level node in the treeview (such as program name) is selected, the detail tabs do not automatically show information for the sessions for parallel slaves. If you want to see details for a parallel slave, you will need to select the master session or the slave itself.

When a parallel slave process is fetched from the pool of available slaves, they appear in V\$SESSION until the task is complete and then they return to the pool.

An example query which creates these processes might be:

```
select /*+ parallel(x,4) parallel(y,4) */ * from all_objects x, all_objects y;
```

Slaves appear in V\$SESSION with an ownerid which is not equal to 2147483644. That is, all non-slave sessions have an ownerid of 2147483644. For slaves, the value of ownerid is a 4 byte value, the low-order 2 bytes of which represent the session number of the owning session and the high order bytes are the query coordinator.

There is a static filter which can prevent these from appearing in the tree. See "Static Filters" (page 557) for more information.

Viewing Information

Sessions

Selecting Columns to Display

Most of the columns from V\$SESSION can be included for display in the left side tree view of the Session Browser.

If you have selected more than one column, you may need to scroll to view them. Columns may be rearranged by dragging and dropping them in the location you want. However, the first column cannot be repositioned, and you cannot drag a column to replace the first column.

To display V\$SESSION columns

1. Select the **Sessions** tab.
2. Do one of the following:
 - Right-click in the top panel tree view, select **Visible Columns** and then select the column you want to display. From the right-click menu, columns must be selected individually.
 - Click  on the toolbar to select multiple columns at once.

Calculated V\$SESSION column

Included in the list is one calculated column as well: `Last_call`. This is computed as:

`SYSDATE-Last_call_et`

`Last_call_et` is the number of seconds since the last session call and `Last_call` is a more useful presentation of this value. `Last_call` essentially tells you how idle a connection has been.

Viewing Sessions Detail Information

The right side of the Session Browser reflects detail information for the selected sessions on the left side. You can select one session, or multiple sessions to view aggregate information.

To view sessions information

- » In the top panel, click the **Sessions** tab. Select one or more sessions.

The right side displays tabbed pages that let you see detail information.

Session Details

Session details in the Session Browser are provided using the following query:

```
SELECT * FROM V$SESSION WHERE {currently selected left side SIDs}
```

You can use the tabs at the bottom of the Session page to select single view or multi- view.

Single Record View

The single SID view provides you with more columns of information about the selected session.

To view information for a single record

1. In the left panel, select the **session** you want to view.
2. On the right panel, click the **Session** tab.
3. At the bottom of the page, click the **Single** tab.

Multi Record View

The multi-record view provides you with aggregate information for all selected sessions.

To view information for multiple records

1. In the left panel, multi-select the **sessions** you want to view. All sessions must be within the same node.
2. On the right panel, click the **Session** tab.
3. At the bottom of the page, click the **Multi** tab.

Process Details

Process details in the Session Browser are provided using the following query:

```
SELECT * FROM V$PROCESS WHERE {currently selected left side process addresses}
```

If you select a single session from the top panel, you can use the tabs at the bottom of the Process page to select single view or multiple view.

Single Record View

The single record view provides you with more columns of information about the selected session.

To view information for a single record

1. In the left panel, select the **session** you want to view.
2. On the right panel, click the **Process** tab.
3. At the bottom of the page, click the **Single** tab.

Multi Record View

The multiple record view provides you with aggregate information for all selected sessions.

To view information for multiple records

1. In the left panel, multi-select the **sessions** you want to view. All sessions must be within the same node.
2. On the right panel, click the **Process** tab.
3. At the bottom of the page, click the **Multi** tab.

IO Details Tab

IO details in the Session Browser are provided using the following query:

```
SELECT * FROM V$SESS_IO WHERE {currently selected left side SIDs}
```

If you select a single session from the top panel, you can use the tabs at the bottom of the IO page to select single view or multi- view.

Single Record View

The single record view provides you with more columns of information about the selected session.

To view information for a single record

1. In the left panel, select the **session** you want to view.
2. On the right panel, click the **IO** tab.
3. At the bottom of the page, click the **Single** tab.

Multi Record View

The multi- record view provides you with aggregate information for all selected sessions.

To view information for multiple records

1. In the left panel, multi-select the **sessions** you want to view. All sessions must be within the same node.
2. On the right panel, click the **IO** tab.
3. At the bottom of the page, click the **Multi** tab.

Waits Details

You can use the waits details to provide possible tuning considerations for your database in the Session Browser.

The page consists of various columns selected from V\$SESSION_WAIT and V\$SESSION_EVENT.

Note: The WAIT_TIME column will contain a value of -2 on platforms that do not support a fast timing mechanism. If you are running on one of these platforms and you want this column to

reflect true wait times, you must set the TIMED_STATISTICS parameter to TRUE. Remember that doing this has a small negative effect on system performance.

To view details about waits

1. If it is not active, click the **Sessions** tab.
2. Select a **session** or **multiple sessions**.
3. In the details area (right panel), click the **Waits** tab to view the resources or events for which the selected sessions are waiting.

You can sort the waits data by clicking in the column header.

Current Statement Details

Use this page of the Session Browser to see the current SQL statement for the selected session. You can only view data for one selected session at a time. If you select more than one session, the message "Multiple sessions selected" will appear in the data area.

To view statement details

1. Select a **session** from the top panel.
2. Click the **Current Statement** tab to display the current statement for the selected session.
3. Click the **Explain Plan** tab to display the explain plan for the current statement, for tuning or troubleshooting purposes.
4. Click the **Information** tab to display data from the V\$SQL view, which contains statistical data on the shared SQL area.

Current Statement toolbar

The toolbar on the Current Statement tab lets you manipulate the statement in several ways.

Button	Command
	Copy script to Clipboard
	Load script in Editor
	Tune Statement using SQL Tuning/Optimizer. See "Using SQL Optimizer with Toad" (page 106) for more information.

Open Cursors Details

Use this page of the Session Browser to see data from V\$OPEN_CURSOR, which lists cursors which each selected session has opened and parsed. It can show data from multiple sessions at once.

To view open cursors details

1. Select one or more sessions in the left panel tree view. The statements containing the cursors opened and parsed display in the bottom panel.
2. Click the **Explain Plan** tab to see an explain plan for the currently selected statement in the **Open Cursor** data grid above it, for tuning or troubleshooting considerations.
3. Click the **Information** tab to see data from the `V$SQL` view, which contains statistical data on the shared SQL area.

Access Details

This page of the Session Browser displays data from `V$ACCESS`, and lists objects in the database currently locked by the selected sessions.

To view access details

1. Select one or more sessions in the top panel tree view.
2. Click the **Access** tab.

Locks Details

User locks and system locks are displayed in the locks details page of the Session Browser. For user locks, transaction, user and blocking locks are shown. This data is queried from `V$LOCK`.

Note: Information displayed by the following procedure is individual database information. See "Types of Locks" (page 564) for more information about viewing aggregate locks details.

Types of Locks

In the locks page, locks are separated into two groups: Transaction, DML & PL/SQL locks; and Blocked or Blocking locks. Blocking and Blocked locks are dependent upon the transaction selected in the top area.

In the bottom part of the page you can choose to see locks that are blocking you or locks that are blocked by you for the selected user.

To view lock details

1. Click on the **Sessions** tab, if it has not been selected.
2. Select one or more sessions from the sessions tree view in the top panel.

In the bottom panel, click the **Locks** tab.

Note: You may have to scroll through the tabs on the bottom panel to see the Locks tab.

To view user locks

- » At the bottom of the Locks page, select the **User** tab.

To view system locks

- » At the bottom of the Locks page, select the **System** tab.

RBS Usage Details

Select this Session Browser tab to display transaction information for online rollback segments for the selected sessions. It is queried from SYS.V\$_TRANSACTION and SYS.V\$_ROLLNAME.

Information provided by this procedure is for individual RBS usage information. See "Types of Locks" (page 564) for more information about aggregates.

To view RBS usage details

1. Click on the **Sessions** tab, if it has not been selected.
2. Select one session from the sessions tree view in the left panel.

In the right hand panel, click the **RBS Usage** tab.

Note: You may have to scroll through the tabs on the right hand side to see the RBS usage tab. Flipping the layout can alleviate this. See "Flip the Session Browser Layout" (page 552) for more information.

Long Ops Details

The Session Browser displays data from V\$SESSION_LONGOPS for the currently selected sessions in the Long Ops Details page. Oracle defines long ops as operations that run for longer than six seconds in absolute time, including some backup and recovery functions, statistics gathering, and query execution. For more information about what is included in Long Ops, please see your Oracle documentation.

To view Long Ops details

1. Click on the **Sessions** tab, if it has not been selected.
2. Select one or more sessions from the sessions tree view in the top panel.

In the bottom panel, click the **Long Ops** tab.

Note: You may have to scroll through the tabs in the bottom panel to see the Long Ops tab.

Percent Column Calculation

The Percent column is calculated as:

```
decode(totalwork, 0, 0, round(100 * sofar/totalwork, 2))
```

Statistics Details

This tab of the Session Browser displays data from V\$SESSTAT, which is session statistics for the currently selected sessions.

To view statistics details

1. Click on the **Sessions** tab, if it has not been selected.
2. Select one or more sessions from the sessions tree view in the top panel.

In the bottom panel, click the **Statistics** tab.

Note: You may have to scroll through the tabs on the bottom panel to see the Statistics tab.

You can sort the waits data by clicking in the column header.

Viewing Locks Aggregate Information

User locks and system locks are displayed here, depending on the tab you select at the bottom of the Session Browser.

Note: Information displayed here is aggregate database information. See "Locks Details" (page 562) for more information about viewing locks details for individual sessions.

Types of Locks

In the locks page, locks are separated into two groups: Transaction, DML & PL/SQL locks; and Blocked or Blocking Locks. Blocking and Blocked locks are dependent upon the transaction selected in the top area.

In the bottom part of the panel you can choose to see locks that are blocking you or locks that are blocked by you for the selected user.

User Locks

Transaction, user and blocking locks are shown for user locks. This data is queried from V\$LOCK. As the row in the Transaction Lock grid changes, the user and blocking lock grids are updated for the selection.

In addition, you can use the drop down filter to limit the grid to displaying:

- All Locks (Show All)
- Blocking Only
- Blocked Only

To view user locks

1. At the top of the Session Browser, click the **Locks** tab.
2. At the bottom of the panel that appears, click the **User** tab.

System Locks

To view system locks

1. At the top of the Session Browser, click the **Locks** tab.
2. At the bottom of the panel that appears, click the **Session** tab.

Viewing RBS Usage Aggregate Information

This Session Browser page displays transaction information for online rollback segments, queried from SYS.V\$_TRANSACTION and SYS.V\$_ROLLNAME.

NOTE: Information on RBS Usage presented here is aggregate database information. See "RBS Usage Details" (page 563) for more information on individual RBS Usage.

To view RBS usage information

- » At the top of the top panel, click the **RBS Usage** tab.

Viewing Waits

The main waits tab in the Session Browser displays information about events and waits. The top panel displays aggregate information, while the bottom grid displays details of the selected events.

Changing the View

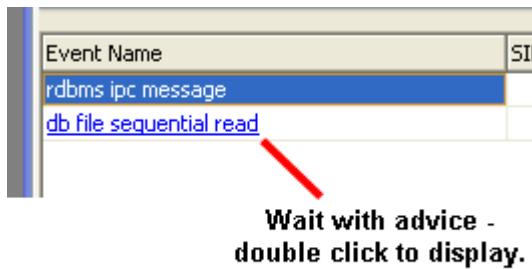
You can change the groupings of how waits are displayed.

To change the wait view

- On the Waits tab, click the appropriate sub-tab to view waits grouped by:
 - Last 60 seconds
 - By Session
 - By Wait

Advice

You can view advice on some waits by double-clicking them in the lower panel. Waits that have advice available are highlighted with a blue color and an underline:



Performing Actions on Sessions

Kill or Disconnect Sessions

Your ability to kill sessions in the Session Browser depends on your permissions status. For most non-slave sessions, you can kill sessions in one of the following ways.

- Kill a selected session
- Use multi-select and kill multiple sessions at once
- Kill a top level node, which kills all sessions below it

For example, you can kill all sessions for a selected user. You can even multi-select top level nodes and kill all those and their sub-nodes.

See "Parallel Slave Processes" (page 557) for more information on slave sessions.

To kill a session

1. Filter and/or group the sessions so you can easily see the sessions you want to kill.
2. In the top panel tree view, select the **session**, **multiple sessions**, or **node** you want to kill.
3. Do one of the following:
 - In the toolbar, click .
 - Right-click and select **Kill Sessions**.
4. Click **OK** to confirm your choice and kill the sessions.

To disconnect a session

1. Filter and/or group the sessions so you can easily see the sessions you want to kill.
2. In the top panel tree view, select the **session**, **multiple sessions**, or **node** you want to kill.
3. Do one of the following:
 - In the toolbar, click .
 - Right-click and select **Disconnect Sessions**.
4. Click **OK** to confirm your choice and disconnect the sessions.

Queries Used to Kill Sessions

For later versions of Oracle, the following query is used:

```
ALTER SYSTEM DISCONNECT SESSION <sid, serial#> IMMEDIATE
```

For earlier versions of Oracle the syntax is:

```
ALTER SYSTEM KILL SESSION <sid, serial#>
```

Trace Sessions

You can turn tracing on or off for the selected sessions in the Session Browser.

Toad uses the following procedure to trace sessions:

```
SYS.DBMS_SYSTEM.SET_SQL_TRACE_IN_SESSION( sid, serial#, TRUE/FALSE )
```

Note: The trace file is written to the INIT.ORA parameter `user_dump_dest` which is typically the bdump directory on the server. If you cannot locate them there, check your Oracle Parameters to see if the pathname for `user_dump_dest` has been changed.

To turn trace on

1. Filter and/or group the sessions so you can easily see the sessions you want to trace.
2. In the top panel tree view, select the **session**, **multiple sessions**, or **node**.
3. Do one of the following:
 - In the toolbar, click .
 - Right-click and select **Start Trace**.
 - In the confirmation window, click **OK**.

To turn trace off

1. Filter and/or group the sessions so you can easily see the sessions you want to trace.
2. In the top panel tree view, select the **session**, **multiple sessions**, or **node**.
3. Do one of the following:
 - In the toolbar, click .
 - Right-click and select **Stop Trace**.
 - In the confirmation window, click **OK**.

SGA Trace/Optimization

SGA Trace/Optimization

The SGA Trace/Optimization window displays SGA information for you so that you can easily optimize your database.

You can view information, utilize client-side filtering of the grid, and check session currently executing the selected query.

To access SGA Trace/Optimization

- » From the Database menu, select **Monitor | SGA Trace/Optimization**.

Use this window to view information about SQLs executed and how they performed.

Requires access to the V\$ Oracle Dictionary views. See "V\$ Tables Required" (page 153) for more information and a list of required permissions.[_](#)

There are four tabs in this dialog box:

- SQL Shared Pool
- Execution Stats
- SQL
- Explain Plan

Statistics Area

In the statistics area you can view Execution stats and the SQL within the shared pool. In addition, you can:

Search for SQL	Enter text of the SQL you want to limit the shared pool area to SQL starting with the letters you enter.
Hide Zero Stats	When checked any stats with a value of 0 are hidden in the execution stats area.
Select an Instance	If you are on a RAC system, you can limit the display to a particular RAC instance.

Execution Stats

Execution stats are displayed in the left side panel. This panel shows information about the selected SQL statement in the **SQL Shared Pool** tab.

SQL Shared Pool

The Shared Pool SQL is displayed at the top of the right hand side. This panel shows information about the SQL Shared Pool. You can also filter the SQL statements you want to view using the SGA Trace Toolbar. See "SGA Trace Toolbar" (page 569) for more information.

SQL tab

This shows the entire SQL for the selected SQL statement in the **SQL Shared Pool** tab.

If you get the "SQL Body Unavailable" message when clicking on the **SQL** tab, then the SQL is not present in Oracle's SGA (System Global Area), which is a pool of the most recently used SQL statements. Not all SQL statements can be retained in the SGA forever, because it is a limited size. The least frequently used statements are discarded in favor of new ones.

From the toolbar on this tab you can do the following:

Button	Command
	Copy script to Clipboard
	Load script in Editor
	Tune Statement using SQL Tuning/Optimizer

Explain Plan tab

This shows the Explain Plan for the selected SQL statement in the **SQL Shared Pool** tab. The total cost of the statement is displayed in the **Total cost for statement** label. If the cost information is not available because of rule-based optimization, then this label will be blank. You can also right-click and select Explain Plan options for this Explain Plan. See "SGA Trace Explain Plan Options" (page 569) for more information.

Sessions tab

The sessions tab displays any active sessions that remain in the SGA pool.

SGA Trace Toolbar

You can perform several commonly used commands from the [SGA Trace](#) Toolbar.



Icon	Command
	Change active session. In the drop down list, the active session is denoted by a checkmark.
	Filter by statement type, grants or parameters.
	Filter by users or cursors.
	Refresh grids
	Load selected statement in Editor
	Flush SGA

SGA Trace Explain Plan Options

There are two special options for using the Explain Plan that appear on the right-click menu of the Explain Plan tab in the SGA Trace window. See "SGA Trace/Optimization" (page 567) for

more information.

Always set session to statement user

This option performs an "ALTER SESSION SET CURRENT_USER=..." before it runs the Explain Plan.

Use connected user/schema

This does not perform the ALTER SESSION command.

Example

You are logged in as user DBAUSER and select a session belonging to the SCOTT user in the Kill/Trace window. You see that SCOTT has run the statement "Select * from EMP". Under Toad Options | Oracle | General | Table name, you have set the name to Toad_PLAN_TABLE. See "Oracle - General" (page 664) for more information.

Always set session to statement user

Set this option and do an Explain Plan. When Toad does the Explain Plan, Oracle makes the following two assumptions:

- The EMP table belongs to SCOTT.
- The Toad_PLAN_TABLE also belongs to SCOTT, unless there is a public synonym called Toad_PLAN_TABLE and SCOTT does not have a Toad_PLAN_TABLE. The Server Side Objects wizard creates a public synonym to Toad_PLAN_TABLE when it installs the Explain Plan objects to the Toad schema, but not when it installs the Explain Plan objects to a private user schema.

If you don't have a Toad_PLAN_TABLE public synonym but you want to make sure that Oracle always looks for the plan table in a certain schema, you can include the user name with the plan table in the options – for example, DBAUSER.Toad_PLAN_TABLE.

Use connected user/schema

Set this option and do an Explain Plan. When Toad runs the Explain Plan, Oracle also makes two assumptions.

- The EMP table belongs to you (DBAUSER in this example).
- The Toad_PLAN_TABLE belongs to DBAUSER.

If you are explaining the statement "SELECT * FROM SCOTT.EMP", then Oracle knows that the EMP table belongs to SCOTT, regardless of the option you choose.

StatsPack Browser

StatsPack Browser Overview

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Toad Statspack Browser supports Statspack in Oracle 8i and newer. It displays performance metrics between statspack snapshots in great detail. You can use this ability to track, compare and organize your statistics.

From the Statspack browser window, you can select snapshots, create new snapshots, select, display and print charts, program custom charts, and various other combinations. The browser window makes it easy to access the power of the data collected by Oracle's Statspack feature.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

To access the Statspack Browser

- » From the Database menu, select **Monitor | Statspack Browser**.

Using the Statspack Browser

In order to use the Statspack Browser in Toad, you must have Oracle's Statspack package installed on the database in question. It is not automatically installed with Oracle, so you may need to install it. Please see your Oracle documentation for information about how to accomplish this.

If you do not have the privileges on the PERFSTAT schema, or the PERFSTAT schema does not exist, Toad will notify you when you try to open the Statspack Browser.

The Browser window

The Statspack Browser window is divided into three areas, including a list of snapshots, a list of charts, and an area where the charts are displayed. These areas work together to display the metrics you need to see.

Snapshot List Area

The snapshot list area lists the snapshots that have been collected by the Statspack. To create charts based on these snapshots, you can select or clear the checkbox to the left of the snapshot name. By default, the Statspack browser will select up to the most recent 24 hours worth of snapshots with the same database start time.

Chart List Area

Several charts and grids have been built into the window, or you can easily add your own in addition to those provided. Select or clear the checkbox to the left of the chart you want to view

or hide. Selected charts are created for the selected snapshots. Right-click to select all, none, and so on.

Chart Display

You can display up to nine charts at a time, in a three by three chart area. See "Configuring the viewing area" (page 576) for more information on configuring the viewing area.

Working with Snapshots

Working with Statspack Snapshots

The Snapshots area of the Statspack Browser gives you the power to select, create, group and schedule snapshots.

Statspack Snapshots Toolbar



Button	Command
	Change active session. In the drop down list, the active session is denoted by a checkmark.
	New snapshot. See "Creating a New Snapshot" (page 573) for more information.
	Change snapshot parameters. See "Changing the Statspack Parameters" (page 574) for more information.
	Find snapshot job in Schema Browser, or schedule the job. See "Finding Job Schedules" (page 574) for more information.
	Save selected snapshot group. See "Saving a Selected Snapshot Group" (page 575) for more information.
	Load a snapshot group. See "Loading Saved Snapshot Groups" (page 575) for more information.
	Refresh just the snapshot listing.
	Refresh the entire browser.
	Refresh just the charts.

Viewing Snapshot Information

You can view groups of snapshot information using the charts provided in the Statspack Browser, or charts and datagrids you program yourself. See "Working with Charts and Datagrids" (page 575) for more information.

You can adjust the visible columns in the snapshot display by right-clicking the column header and choosing the columns you want to see. The columns can be reordered by dragging and dropping. In addition, you can sort by any column: click the column by which you want to sort.

In addition, you can see more detailed information for a specific chart using the Detailed Hint command. Hover your cursor over the snapshot you want to see and the hint will display detailed information. If it does not, check to make sure detailed hints are activated as described below.

To activate detailed hints

- » Right-click in the Snapshot area and select **Detailed hints** from the popup menu.

Selecting Groups of Snapshots

You can select groups of snapshots in multiple ways. In order to save a group, snapshots must be chosen by selecting the check box to the right of the snapshot in the list.

You can select groups of snapshots by:

- automatically by right-clicking over the list of snapshots and choosing a pre-defined grouping.
- by selecting the check box to the left of the snapshot entry.

Viewing advice for snapshot intervals

Toad displays advice in the right hand panel. When two snapshots are selected (not checked, but highlighted), click the Advice tab for information about the top wait event during the selected interval. You can also double-click the top waits grid in the chart display area to display advice about that wait.

Creating a New Snapshot

You can create a new Statspack snapshot directly from the Statspack Browser.

Snapshots created in this manner take a single snapshot. Parameter value fields display the default values for each parameter. These are either the values set by Oracle, or the default values you have set using the Change Statpack Parameters command.

To create a new snapshot

1. Open the **StatsPack Browser**.
2. In the **Snapshots area** (upper left corner) select **New Snapshot** from the toolbar.
3. Make any necessary changes to the default parameters.
4. Click **OK**.

Deleting a Snapshot

You can delete a snapshot that you no longer need directly from the Statspack Browser.

To delete a snapshot

1. In the Snapshot tree, select the Snapshots you want to delete.

Note: The delete is performed on *selected* snapshots, not on *checked* snapshots.

2. Right-click and select **Delete selected snapshots**.
3. Confirm the deletion by clicking **OK**.

Commenting on Snapshots

You can add comments to snapshots in the Statspack Browser, which are displayed in the detailed hints, and in the comments field of the snapshot.

To comment on snapshots

1. Select the snapshots you want to comment.

Note: The snapshots that will be commented are those that are selected by highlighting, not those that have check marks.

2. Right-click and select **Comment Selected Snapshots**.
3. Enter a **comment** and then click **OK**.

Changing the Statspack Parameters

Oracle sets basic thresholds for Statspack Snapshots. These are described in detail in your Oracle documentation. Within Toad's Statspack Browser you can change these default parameters so that each time you create a snapshot your custom parameters are set without needing to reset them.

For information about each individual parameter, please see your Oracle documentation.

To change Statspack parameters

1. Click  in the snapshot area of the **Statspack Browser**.
2. Click on the value you want to change and make your changes.
3. Click **OK** to save your new defaults.

Finding Job Schedules

You can use Toad's Statspack Browser to find a scheduled Statspack job within the Schema Browser, where you can then work with them and edit, reschedule, and so on.

To find a job

- » Right-click in the snapshot area and then select **Find Collection Job in Schema Browser**.

Note: Toad searches procedures for the string STATSPACK.SNAP within the

code, allowing you to name your job in a way meaningful to you.

- If there are statspack collection jobs in multiple connections, Toad will find the one in the connected session and stop looking.
- If Toad cannot find a statspack collection job, Toad will open the Create Scheduler Job window, pre-filled in for a collection job that runs every half hour on the half hour.

Saving a Selected Snapshot Group

It can be beneficial to save groups of selected snapshots. When you do this, you can come back to charts created from these snapshots easily and quickly. For example, you might save a group called "Peak hours: Date". You could have several of Peak Hours charts over several weeks, and later come back to compare the different groups.

To save a snapshot group

1. In the Statspack Browser, select the snapshots you want to group together.
2. Click  on the toolbar.
3. Name your group and click **OK**.

Loading Saved Snapshot Groups

You can load snapshot groups that you have previously saved.

When you load a snapshot group, all snapshots remain available, but the loaded snapshots are selected and the remainder are cleared.

To load a saved snapshot group

- » In the snapshot area of the Statspack Browser, click .

Working with Charts and Datagrids

Generating Programmed Charts and Datagrids

Several popular charts and datagrids are programmed into Toad's Statspack Browser. You can choose one chart or you can choose multiple charts to view at one time. See "Configuring the viewing area" (page 576) for more information about the effects of viewing multiple charts.

To generate a programmed chart or datagrid

1. From the snapshot area, select the snapshots you want to include in your chart.
2. Select the charts you want to see for this group from the list in the **Charts and Datagrids** area.
3. As you select charts, the charts will display in the Chart area to the right. See "Configuring the viewing area" (page 576) for more information.

Displaying Charts

There are several ways you can configure charts and datagrids from the Statspack Browser.

You can generate and display as many charts as you have available, but you can configure the window to display a total of nine at a time. Any more and scrolling is necessary to view them.

If you have many charts open in the viewing area, you can double-click the chart name in the tree view. Toad will navigate to the chart in the display area.

Configuring the viewing area

The more charts or datagrids you view per screen, the smaller the actual chart. If the charts you want to see are very detailed, you may want to configure your viewing area to only display two or even one chart at a time.

Charts are displayed in the order in which they were checked. Newly checked items are added to the end of the display.

You can change the order of the chart/grid display.

To configure the viewing area

- » In the Chart display toolbar, select the number of columns and rows you want to display.
Each of these values may be from 1 to 3.

To change the order of the chart/grid display

- » In the chart display area, right-click and select **Change Chart Order**.

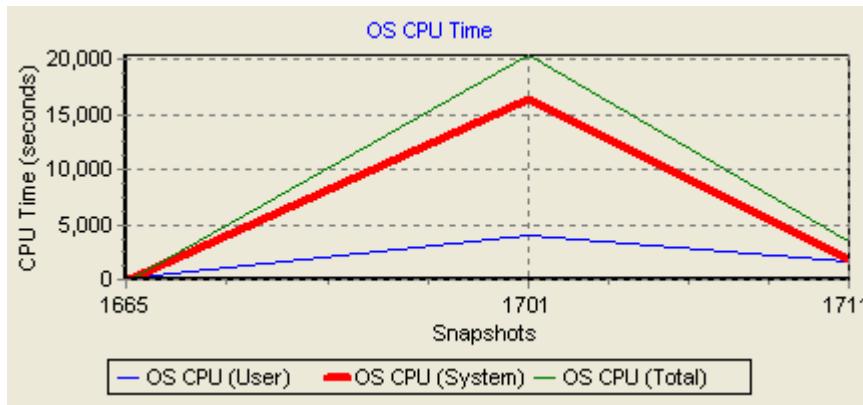
To enlarge a chart

- » In the chart display area, right-click over the chart you want to enlarge and select full-screen.

Viewing Series within Charts

Some charts can be very complicated, depicting many different series of data within them. In such a case, you can click the name of a series in the legend and that data will be highlighted in the chart.

For example, in this image, the OS CPU (System) series is selected, and the corresponding line in the chart is bold.



To restore it to normal display mode, click the item in the chart again.

Synchronizing Wait Times Charts

The Top Waits grid will synchronize with the Wait times by Event chart. When both are displayed in the display panel, the Wait times chart graphs whatever is selected in the Top Waits grid.

Refreshing the viewing area

You can add snapshots to your chart view at any time. Select them from the chart list.

To display the data including the new snapshot data

- » Click  on the chart display toolbar.

Creating New Charts

You can develop new charts and grids that reflect the information you need to extract from statspack snapshots and the Statspack Browser.

To create new charts

1. At the bottom of the **Chart** area, select the sub-node where you want the chart or datagrid to reside.

Note: If you do not choose a node, the new chart will be created directly in the Custom node. You can then drag it to its final category.

2. Enter a name for the chart or grid in the **Node Name** box.

Note: The parent node is displayed. This is the node that you have selected in step 1. If it is not correct, you can drag the chart to the correct parent node later.

3. Select the type of output.
4. Select the minimum version of Oracle.
5. Click **Next**.

6. Enter the **query** you want to use to base your chart upon. Click **Example** to see an example query for the chart type you have selected.
7. Click **Next**.
8. Enter the titles for your chart: which information is required will differ depending on the type of chart or grid you have selected.
9. Click **Next**.
10. Check the preview output. This should display the chart the way you want it.
 - If the chart is incorrect, click **Back** and make changes.
 - If the chart is correct, click **Finish** to create it.

Reorganizing the Custom Tree View

The custom node of the chart and datagrid area of the Statspack Browser can be organized and reorganized as you want it.

You can add categories (sub-nodes); edit them; drag and drop charts and datagrids between them; and delete them altogether.

To add a category

1. Select a node in which to create the category and then click .

Note: If you do not select a custom node, or you have a built-in category selected, the new category will be created within the main Custom node.

2. Enter a name for the category in the **Name** box and click **OK**.

To edit a category name

1. Select a category in the Custom node, and then click .
2. Make changes and then click **OK**.

To Reorder categories in the Custom Node

- » Drag and drop categories to the node where you want them to reside.

To delete a category

1. Select the **category** you want to delete.
2. Click the **Delete** button and then click **OK**.

Caution: If you delete a category with charts in it, all charts will be deleted as well. There is no undo option.

Printing and Exporting Charts and Grids

You can print or export created charts and grids. You can export grid or chart information from the Statspack Browser directly to MS Excel, or copy to the clipboard to paste it elsewhere.

To print charts or grids

- » In the **Chart and Grid** display area, right-click and select **Print**.

To export charts or data to Excel

- » In the Chart and Grid display area, right-click over the chart you want to export and select either:
 - Send data to Excel - Sends the data for the selected chart to an Excel worksheet.
 - Send all charts to Excel - Opens Excel and sends the data for all active charts to a worksheet.

Top Session Finder

Top Session Finder

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

This window lets you find the sessions in the database that are consuming the most resources. Oracle tracks hundreds of statistics for each session in the database, and the Top Session Finder lets you easily sort the sessions by their usage of any combination of parameters.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

To access the top session finder

- » From the Database menu, select **Monitor | Top Session Finder**.

Modes

There are two modes for viewing data: single parameter mode and multiple parameter select mode. You can select which mode to view from the Options area. See "Top Session Finder - Options" (page 581) for more information.

Single Parameter Mode

Clicking the parameter name will list each database session in descending usage order of the selected parameter. Weights for parameters are not used in this mode.

Multiple Parameter Select Mode

The multiple parameter select mode includes a **Stored Profile** dropdown and a **Weight** column next to the parameter column. You assign weights to two or more parameters, and the sessions are sorted by the weighted sum of the statistics.

The weights help reflect a true picture of resource usage. For example, if you are doing a session run on sorts, you might want to assign a weight of 100 to the resource intensive disk sorts and a weight of 1 to memory sorts. To assign or change a weight, click in the weight column and type the new weight. Click the List Sessions green arrow button at the top of the window, and the sessions will be listed in order of the weighted usage of the selected (weighted) parameters.

A right-click menu lets you **Reset all weights to zero**.

Stored Profile dropdown

The Stored Profile dropdown lets you recall and store profiles. Some profiles are already included.

When you first enter the multiple parameter select mode, the **Overall** profile is selected by default. It has weights assigned to CPU usage, memory usage, session logical reads, network traffic, and redo usage. The dropdown includes other built-in profiles including CPU, Cursors, Memory, Network Traffic, and Redo. These profiles can easily be modified.

You can create new profiles using the Create New Profile button and save profile settings using the Save Profile Settings button. You can save the current settings to a new profile by clicking the Create New Profile button and then saving the settings to the new name. The Delete button lets you delete the selected profile. The profiles are stored in a file called Topsess.ini, so if you want to revert to the default settings, just delete that file. (See "Properties Files" (page 163) for more information about locations of these files.)

Top Session Finder toolbar

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

This toolbar provides access to various commands found in the [Top Session Finder](#).



Icon	Command
	Top Session Finder Options
	List Sessions
	New Profile

Icon	Command
	Save Profile Options
	Drop Profile
Instance	Select RAC Instance (only available if you are connected to a RAC instance)

Top Session Finder - Options

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

This topic only covers unfamiliar information. It does not include all step and field descriptions.

To display the options for the window

» Click .

Short Parameter List

If selected, the parameter list is shortened to approximately 35 statistics that will be checked more often such as CPU and cursors. This provides an alternative to going through the entire list of parameters. When cleared, the parameter list includes everything in the v\$statname.

Exclude Inactive Sessions

If selected, only sessions marked as "ACTIVE" in v\$session will be included.

Exclude Sessions Inactive for the past ____ Minutes

If selected, only sessions that have been active within the specified time period will be included. This can be used to exclude "idle" connections.

Limit Pie Chart to top ____ sessions

Use this option to limit the pie chart to show only a portion of sessions. The pie chart can handle a maximum of 1050 sessions.

Top Session Finder - Viewing Data

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The data can be displayed in a Dataset (data grid) or a Pie Chart.

Dataset tab

In single parameter select mode, click a parameter in the list, and the grid displays each database session in descending usage of the selected parameter. It also displays session specific

information such as machine name and logon time. See "Single Parameter Mode" (page 579) for more information.

In multiple parameter select mode, after you press the List Sessions button, the grid displays a list of SIDs (System Identifier Names) that are connected to the database instance, session specific information for each SID listed, and it also displays the unweighted value of each statistic along with the weighted sum of all statistics. See "Multiple Parameter Select Mode" (page 580) for more information.

Some columns might not be populated. For example, you could optionally populate the action column if you have populated the module column. In the following:

```
dbms_application_info.set_module('abc', 'def')
```

"abc" would display under the Module column and "def" would display under the Action column.

Right-click options

If you right-click in the dataset grid the menu includes:

- Print Grid
- Export Grid

Pie Chart tab

The biggest slice of the pie chart protrudes slightly from the rest of the pie for easy identification.

- In single parameter select mode the pie chart displays the percentage of selected resource usage.
- In multiple-parameter select mode the pie chart displays the percentage of weighted resources. If you left-click a slice, information for that session will display.

Right-click options

If you right-click a slice, a right-click menu includes:

- Print.
- Save As Bitmap File.
- Copy image to clipboard.
- Find selected session in Session Browser.
- Info on session, info on another session (useful for when a slice is too thin to click).
- Remove skinny slices.

The Remove skinny slices item will prompt you for a percentage. Any session using less than that percentage of the pie will be removed from the pie. However, this does not actually remove rows from the data grid.

Finding a Specific Session

To find a specific session in the Session Browser

1. In the Top Session Finder, select the session you want to locate.
2. Right-click and select **Find Selected Session in Session Browser**.

Note: The Session Browser will open with the session selected.

Optimizing (Tuning)

DBMS_REDEFINITION Wizard

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

DBMS_REDEFINITION is a package supplied by Oracle. Using DBMS_REDEFINITION you can redefine and rebuild tables online. See your Oracle documentation for details on the package.

The DBMS_REDEFINITION Wizard is an interface to DBMS_REDEFINITION. The Toad interface is limited to Oracle 10 and newer.

All portions of the wizard directly relate to the Oracle package. For information on the parameters you supply, please see your Oracle documentation.

To use the DBMS_REDEFINITION wizard

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Database menu, select **Optimize | DBMS_REDEFINITION wizard**.
2. Refer to the following for more information:

Select Tables	If you use "Create Like" to create an interim table, when you click OK to execute the create table command, the table will be created and entered in the Interim Table Name field.
Order By	You can move selected columns from pane to pane, or move them up and down in the Desired Order list.
Start/Sync	Set the degree of Parallelism before you click Start. This applies to both start and sync.

3. Complete the wizard.

Estimate Index Size

Use this window to estimate how much disk space a particular index occupies. You can enter indexes into the grid and then choose to estimate the size of all or some of them.

Note: Estimates can be done on bitmap indexes as well. However, if the column used is not a good candidate for bitmap indices, the estimate will be several times too small. This occurs because the bitmap indices columns are much larger than they should be. You should attempt to choose good candidate columns to achieve accurate bitmap index results.

To access the index size estimator

- » Select Database | Optimize | Estimate Index Size.

Load and Scan Indexes

When you load indexes, the avr_row_len column in dba_indexes (if your indexes have been analyzed), and the DDL row size are loaded into the grid automatically. If you want indexes scanned to achieve those averages, you will need to see step 4 below. Scans can be slow, so it is not done automatically.

Note: These estimation values are based on how much disk space the index data occupies. These values differ from the EXTENTS values displayed on the **Schema Browser | Indexes** page | **Stats/Size** tab, because EXTENTS are containers that store data. Extents are created with a certain container size (for example, 1MB). Each extent could be empty, half full, three quarters full, or full. In all of these cases the EXTENT size remains the same, 1MB, but the amount of disk space occupied by data changes.

To load and scan indexes

1. Click the dropdown arrow on  on the **Estimate Index Size** toolbar.
2. Select one of the following:

Load my Indexes	Load all indexes from the currently connected schema
Load Indexes Like	Add a LIKE clause to the query that selects and loads the indexes.
Load Indexes by User	Select an index owner and loads the indexes from the appropriate schema.
Load Indexes by Tablespace	Select a tablespace and load all indexes contained in it.
Load Indexes by Table	Select a table and load all the indexes for that table.

Import Grid from Text file	Load indexes and open a grid that you have previously saved.
----------------------------	--

3. When the indexes are in the grid, check the box next to the indexes you want to estimate.
4. Click  on the toolbar. A confirmation dialog box appears, letting you change the percentage of rows scanned if necessary. The default is 10 percent. When finished, the Average Row length and the Estimated Size are entered into the grid.

Caution: This may take a while because the virtual storage size for all data must be summed and averaged. The more data you have in the index and the higher the percentage you choose, the longer this will take.

Using the Grid

When you have scanned sizes into it, the grid works like a spreadsheet. You can change the values of:

- num_rows
- pct_free
- ini_trans
- block_size

Estimated index size will update as soon as you click outside of that row on the grid.

Saving the grid

If you need to leave before you are finished, you can save the grid to a text file and reopen it later.

To save the grid to a text file

1. Click the dropdown arrow on .
2. Select **Export grid to text file**.
3. Enter a name for the file and click **Save**.

Estimate Table Size

Use this dialog box to estimate how much disk space a particular table occupies (or will occupy after more rows are loaded into it). You can enter tables into the grid and then choose to estimate the size of all or some of them.

To access the table size estimator

- » From the Database menu, select **Optimize | Estimate Table Size**.

Load and Scan Tables

When you load tables, the avr_row_len column in dba_tables (if your tables have been analyzed), and the DDL row size are loaded into the grid automatically. If you want tables scanned to achieve those averages, you will need to see step 4 below. Scans can be slow, so it is not done automatically.

Note: These estimation values are based on how much disk space the table data occupies. These values differ from the EXTENTS values displayed on the **Schema Browser | Tables** page | **Stats/Size** tab, because EXTENTS are containers that store data. Extents are created with a certain container size (for example, 1MB). Each extent could be anywhere between empty and full. In any case, the EXTENT size remains the same, 1MB, but the amount of disk space occupied by data changes.

To load and scan tables

1. On the Estimate Table Size toolbar, click the dropdown arrow on .
2. Select one of the following:

Load my tables	Loads all tables from the currently connected schema.
Load tables Like	Add a LIKE clause to the query that selects and loads the tables.
Load tables by User	Select a table owner and loads the tables from that schema.
Load tables by Tablespace	Select a table and load all the tables contained in it.
Import Grid from Text file	Load tables and open a grid that you have previously saved.

3. When the tables are in the grid, check the box next to the tables you want to estimate.
4. Click  on the toolbar. A confirmation dialog box appears, letting you change the percentage of rows scanned if necessary. The default is 10 percent. When finished, the Average Row length and the Estimated Size are entered into the grid.

Caution: This may take a while because the virtual storage size for all data must be summed and averaged. The more data you have in the table and the higher the percentage you choose, the longer this will take.

Using the Grid

There are four ways of estimating table size. These numbers are defined as follows when you click Scan on the toolbar.

- Avg Row Len (Scan) calculates avg row len based on the data that is currently in the table
- Avg Row Len (Stats) pulls the avg row length that stored by Oracle the last time the statistics on the table were gathered (based on data in the table at the time the stats were gathered).
- Max Row Len (DDL) pulls the maximum row length, based on the types and number of columns.
- If none of these methods are applicable, you can enter your own number in the Avg Row Len (User). For example, if you have sample data, but you know that the sample data has values in the fields that are too small, then you might take a scan, and then put a number slightly larger than Avg Row Len (Scan) into Avg Row Len (User).

When you have scanned sizes into it, the grid works like a spreadsheet. You can change the values of:

- Num Rows
- Pct Free
- Ini Trans
- Block Size
- Avg Row Len (User)

Estimated table size will update as soon as you click outside of that row on the grid.

Estimating Index Size

To estimate index size

1. Check tables that have indexes you want to estimate.
2. Right-click and select **Launch Index Size Estimator for Indexes on Checked Tables**.

Saving the grid

To save the grid to a text file

1. Click the dropdown arrow on the **Load tables**  button.
2. Select **Export grid to text file**.
3. Enter a name for the file and click **Save**.

Explain Plan

You can easily view previously run explain plans and compare them against a new one.

In order to view previously run explain plan history you must have Save previous explain plan results selected in the options page. See "Saving Explain Plans" (page 719) for more information.

The history page is divided into two panels. The top area lists all saved explain plans. When you select one of these plans, it appears in the bottom panel, with the SQL statement directly above it.

The displayed explain plan can be viewed and manipulated in the same way as an explain plan in the editor. (See Explain Plan Overview (page 716) and associated topics for more information.)

To display explain plan history

- » From the Database menu, select **Optimize | Explain Plan**.

Pinned Code

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

When the Oracle SGA fills, Oracle overwrites parts of the buffer with new data. Pinning a PL/SQL object in the SGA will keep Oracle from overwriting it.

If you frequently use a particular PL/SQL object you have loaded from your database, pinning it to the SGA will improve Oracle performance.

To pin an object

1. From the Database menu, select **Optimize | Pinned Code**.

Note: Each PL/SQL object in the SGA cache is listed in the upper grid, as well as its owner and whether or not it is pinned.

2. The tree view on the bottom lets you browse all the source code for the schema as displayed in the dropdown. You can select source code for pinning that is not currently in the SGA cache.
 - If the object is in the SGA cache, select the object in the upper grid.
 - If the object is **not** in the SGA cache, select the appropriate schema from the dropdown in the middle of the page and then select the object from the tree view.

3. Click  on the toolbar.

To unpin an object

1. Select the **pinned object** in the SGA cache grid.
2. Click  on the toolbar.

Flushing the SGA Cache

The SGA is the shared SQL pool where Oracle caches the most recently executed statements. This results in faster reprocessing. The Flush the SGA button removes everything that is not pinned from the SGA cache.

To flush the SGA cache

» Click .

Refreshing the SGA Cache view

To refresh manually

» Click .

To auto refresh

1. In the Pinned Code toolbar, Refresh (secs) field, enter the number of seconds you want to wait between refreshes. The default is 5.
2. Check the **Auto Refresh** box.

Repair Chained Rows

To access repair chained rows

» From the Database menu, select **Optimize | Repair Chained Rows**.

When data for a row in a table cannot fit into a single data block, it is stored in a chain of data blocks (more than one data block). The original row of data points to the new block or blocks of data. A result of chained rows is that Oracle must scan more than one block of data to retrieve information. The repair chained rows function basically rejoins rows of data blocks that were split across more than one block.

In order to use the Repair Chained Rows functionality, you will need to have a Chained Rows table defined as described by Oracle. If there is no repair chained row table (*chained_rows*), Toad notifies you and gives you the option to create one.

Analyze tab

Click the **ADD** button to display a **Select Tables to Analyze** menu where you can select the schema (from dropdown) and tables (from a list of tables in the schema) to analyze. Click the check box preceding the tables to select or unselect the tables. **Select All** and **Select None** buttons help with quick selection.

Caution: The Chained Rows table field contains the name of the table where Toad tells Oracle to store the row ids of the chained rows that are found. It is NOT the table to analyze. Remember, Toad will truncate the chained rows table before it analyzes the tables in the list.

Data tab

After you have analyzed your tables, click the data tab to display the schema, table name, and the number of rows chained in the table.

Repair tab

Note: You might need to increase the existing tables' data block size to eliminate chaining completely.

Clicking repair:

1. Creates an intermediate, temporary table (Toad_tmp_xxxx) in your default tablespace

Note: This temporary table is dropped if there are no errors. If there are errors, the table remains so you can troubleshoot.

2. Copies chained rows to it
3. Deletes the chained rows from the existing tables
4. Copies the rows back into the existing tables.

You can also select a rollback segment from the dropdown.

Results appear beneath each repaired table.

Results tab

The results tab lists any tables not repaired and the reasons.

Rebuild Table

Use this function to rebuild a table, optionally dropping columns, and/or renaming columns.

This window will create a complete script to rebuild a table, after which you can further edit to customize, if desired.

To rebuild a table

Note: You must own the schema you are browsing in order to rebuild a table from it.

1. From the **Database** menu, select Optimize | Rebuild Table.
2. Select a **table** to rebuild.

Note: You must be logged on as the table owner; therefore you cannot change owners from the owners dropdown list.)

3. Check the desired options on the **Options tab**.
4. On the **Table Storage** and **Index Storage** tabs, select storage parameters.

Note: You can either use the original storage parameters or use the current table size as the initial extent, which will combine all extents together into one extent, for faster disk performance.

5. On the **Columns tab**, double-click a column on the upper list to exclude it (drop it) from the table.

Note: To rename a column, click to select it, wait until after the mouse double-click time, then click it again. Enter the new name for the column.

6. Click the **SQL tab**.

Note: The rebuild table script will be constructed and displayed. Now you can either save the script to a file, or copy it to the clipboard.

Unix Kernel Params

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

If you are managing a database on a Unix server, updating some critical kernel settings can improve database performance. From this screen you can quickly generate the steps you need to modify your UNIX kernel and the critical kernel parameters to greatly increase Oracle performance. You may recognize these settings as being discussed in Oracle's "UNIX Installation Guide" in the "UNIX Configuration Section" of the "Pre-Installation chapter". This screen simplifies the configuration process.

This screen produces a recipe of what to do and the parameter values to set.

You will need to FTP the output to the UNIX server, paste the parameter values where they need to go, and manually perform the indicated steps to reconfigure the UNIX kernel.

To Access UNIX Kernel Params

1. From the Database menu, select **Optimize**.
2. Select **UNIX Kernel Params**.

Options

UNIX Type

Specify the variant of UNIX your database server is running. This setting directly controls generation of both the steps and parameters. For example, different UNIX variants accomplish kernel configuration differently. Likewise, different UNIX variants implement different parameters and recommended settings.

Concurrently Active Databases

Specify how many databases will be up and running at the same time for that database server. For example, a database server may have production database instances for the following three database applications: Payroll, Accounting and HR. In this example the database server will have three concurrently running database instances.

Concurrent Processes Per Database

Specify the average number of processes to be concurrently active at any given moment per database. For example, the Payroll application may average 40 concurrent users, the Accounting application may average 100 concurrent users, and the HR application my average 100 concurrent users. The average concurrent process count would be 80 ($40 + 100 + 100 = 240 / 3 = 80$).

Average Degree of Parallelism

Specify what degree of parallel operations should be supported. This should only be used on servers with excess CPU bandwidth (for example, SMP, MMP and NUMA architectures) and/or excess disk IO bandwidth (e.g. RAID, SAN and NAS). You must have either tables or indexes with a default degree of parallelism greater than one or DML with hints. Assuming these conditions are met, Oracle will consume much more in resources as it spawns additional processes to perform parallel operations. The UNIX kernel must be configured to support these additional needs.

Calculate

Click **Calculate** and Toad will produce the parameter modifications to optimize performance.

Windows Registry Params

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

If you are managing a database on a Windows NT/2000/XP server, updating some critical registry settings can greatly improve overall database performance. For example, you can run any of the industry standard database benchmarks, such as the TPC, using Quest's Benchmark Factory® for Oracle and obtain a raw score for your Windows server and its Oracle database. Then you can change the settings of the Windows Registry and run the benchmark again so as to obtain a new score- this can improve Oracle database performance anywhere from 50% to 150% .

You could manually define these settings using REGEDIT, but the registry keys and values are somewhat obscure. The Windows Registry Params window lets you define these settings easily and quickly.

It is recommended you check all four check boxes (two in Memory Management and two in NTFS fileSystem) and then select the IO Page Lock Limit that best corresponds to the size of your Windows server. The more memory your server has, the higher you can set the value. You'll have to experiment to be sure, but most servers should benefit from a value of 8K or larger.

To Access Windows Registry Params

- » From the Database menu, select **Optimize | Windows Registry Params**.

Reading Registries

This screen works with both local and remote Windows NT/2000/XP registries. Remote registries must be configured to permit remote registry access.

Note: accessing remote registries requires the remote computer name to be entered in the form of **computername**. The double backslash prefix is mandatory.

Updating Registries

You can update registries with changes you have made to these screens.

Note: Changes will not take effect until you reboot your computer.

Registry Export Files

These text files can be opened and modified with any text editor.

Double-clicking on them from within the Windows Explorer will update the local registry with their content. This is useful when you want to create the files locally and then copy them to remote servers for manual application.

To create a registry export file

- » Click **Create ".Reg" file** to produce a Windows standard registry export file.

Analyze All Objects

Analyze All Objects

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can analyze multiple tables, indexes, and partitions, see chained rows, and see the data Oracle stores as the result of the analysis. If you are using Oracle 10g or above, you can lock and unlock the table and schema stats that you are working with. You can override the lock by using the Force option.

To access analyze all objects

- » From the Database menu, select **Optimize | Analyze All Objects**.

When using this dialog box to analyze selected tables from the tables object list, this collects statistics so that COST based query optimization can be used and the optimizer can run better queries.

When you first open this window, the grids in the tabs are empty.

Analyze Tables and Indexes tabs

Note: See Set Options below for information on the default settings for this basic analysis, and information on how to personalize this analysis.

To analyze tables or indexes

1. Click the appropriate tab.
2. Load the grid by clicking or selecting a method for loading data from the dropdown beside it.
3. Select one or more objects in the grid using the check boxes.
4. Click on the toolbar. Confirm if necessary.

Columns(Histograms) tab

From this window you can:

- Delete statistics using dbms_stats
- Export/import/copy statistics

Chained Rows tab

To view chained rows

- » On the toolbar, click .

Note: You must have select privileges on the CHAINED_ROWS table to use this feature.

To repair chained rows

- » After chained rows data is displayed in the grid, click on the toolbar. See "Repair Chained Rows" (page 590) for more information.

Set Options

Analysis of objects can be customized. Click the **Options** tab to customize them and select **Use Analyze** or **Use DBMS_STATS**.

Toad saves the options you set in this window so if you do the same Analyze or DBMS_STATS command repetitively; you do not have to reset all of your options each time. For details on these options see either:

- Analyze Options (page 596)
- DBMS_STATS functions (page 596)

Analyze Options

The analyze functions area of the [Analyze All Objects](#) window lets you choose what type of analyze statement you want to create. Some of these options allow you to include a "For Clause" and some do not.

Note:This topic only covers unfamiliar information. It does not include all step and field descriptions.s.

Option	Description
Compute Statistics	This is the most detailed and accurate method of analyzing a table. Statistics are computed from data in the table.
Estimate Statistics	You can use Estimate Statistics to save the time and resources required to compute them. Some statistics may be slightly different than their computed counterparts. You can change the number of the sample Oracle uses to create that estimate and whether that refers to rows or percentages in the boxes beneath the Analyze Functions area. This is the default setting.
Delete Statistics	Use Delete Statistics to delete all analyze statistics from your table. This leaves the table as if it had never been analyzed.
List Chained Rows	If a table has chained rows, select the table and analyze using this function to display the chained rows in the Chained Rows tab. Note: This feature requires you have an appropriate Chained Rows table defined.
Validate Structure	Select this option to validate the structure of a table or index. If all is well, the analyze command proceeds. If there is a problem, Toad will display the ORA- error.

DBMS_STATS functions

The DBMS_STATS functions area lets you choose what to collect and how to arrange and organize the DBMS_STATS you collect from the Analyze All Objects window. See "Analyze All Objects" (page 594) for more information.

Using DBMS_STATS gives you many options for collecting information.

Note:This topic only covers unfamiliar information. It does not include all step and field descriptions.

Option	Description
Do not invalidate dependent cursors	If this is unchecked, and Oracle has execution plans for queries against tables you analyze, it will discard them and create a new execution plan. When checked, it will keep and use the old execution plans.

Option	Description
Block Sample	Oracle will randomly sample blocks of data as opposed to rows. Random block sampling is more efficient, but if the data is not randomly distributed on disk, then the sample values may be somewhat correlated. This option is only pertinent when doing estimate statistics.
For all ... Hidden ... Indexed Columns	<ul style="list-style-type: none">• Indexed columns - Collects data on all indexed columns.• Hidden columns - A table can have a maximum of 1000 columns. When you create an object table (or a relational table with columns of object, nested table, varray, or REF type), Oracle maps the columns of the user-defined types to relational columns. This creates the effect of "hidden columns" that count toward the 1000-column limit.
Copying Statistics - On different databases	If the schemas are on different databases, then Toad uses the following procedure to copy statistics. <ol style="list-style-type: none">1. Creates a temporary table to hold stats2. Exports the stats to that table3. Copies the stats to the other database4. Imports the stats from the table to the schema (Use the dropdowns to choose a tablespace.)
Copying Statistics - On the same database	If the schemas are on the same database, then Toad does not create a temporary table. The entire copy can be done with PL/SQL blocks.

Profilers

Profilers

Toad can facilitate profiling of your code in many ways. It provides graphic access to the data provided by the DBMS_Profiler package, and, in Oracle 11 and later the information provided by the DBMS_HPROF package.

You can view the information from the two profilers either in the desktop panel area of the Editor window, or in more detailed, graphical form in the Profiler Analysis window.

For information about the two profilers and how to use them in Toad, see the following:

- Using DBMS_PROFILER (page 602) - There is an [online video tutorial](#) for this feature. This opens a new browser window and requires an internet connection.
- Hierarchical Profiler (page 605)

For information about how to read the profiler analysis window, see Profiler Analysis. See "Profiler Analysis" (page 598) for more information.

Profiler Analysis

The Profiler Analysis window provides data on profiler runs that is consistent with the data displayed in the [Profiler tab](#) of the editor. You can open the profiler window from the Toad menu, or by clicking the details button on the Profiler Editor tab toolbar.

The top half of the window is a graph of the showing the percent of time required to run each component of the procedure.

Note: If you can see the pie chart labels but not the pie chart itself, resize the window horizontally to give it more space to draw.

In addition, labels on the chart show actual execution time for the fastest, slowest, and average unit or line of code.

The bottom half of the window lists the runs, including Run Number, Procedure, Timestamp, Comment, and Total Time to execute. You can sort on the columns by clicking on the column headers.

To access the Profiler Analysis window

» From the Database menu, select **Optimize | Profiler Analysis**.

Run Details

Opening a run

Selecting displays the graph for all units within that run. Expanding a run in the tree view will list the details of the run including Unit Type, Owner, Unit Name, and Total Time to execute.

Opening a unit

You can also select a specific unit of the selected run.

When drilling down on a unit, we see the lines of code executed and profiled. The column headers include Line Number, Passes (how many times each line of code was executed), Total Time to execute the line, Min Time, Max Time, and the line of Code itself. The graph changes to display the information within that unit.

Analysis Toolbar

Between the top half of the window and the bottom half, there is a toolbar of functions:



Button	Command
	Collapse all nodes.
	Expand all nodes.
	Open a selected procedure or line item in the Editor. (This can also be achieved by double-clicking the selected procedure.)
	Refresh data - If you switch to other windows to execute procedures for profile analysis, and switch back to the Profiler Analysis window, click to requery the profiler tables.
	Filter by schema.
	Delete a selected run from the profiler tables.
	Display as a pie chart.
	Display as a bar chart.
	Rotate chart.
	Graph properties - Change the visual display of the graph and/or group together values below a certain percentage or value. This is useful when you have several small pie wedges or bars. In the Graph Properties dialog box, you can also set the background color gradient, for example, from Blue to Black left to right.

Hiding Profiler Data

If you right-click the list, you can temporarily hide some data so that a better analysis of the remaining data can be performed. For example, if a particular statement takes 95% of the overall execution time, hide it, and the remaining statements, which were under 1% each will blow up to a larger relative percentage on the graph.

Displaying in Editor

If you select a valid unit in the tree view, right-click and select display in Editor, the editor displays the selected unit.

Toggle PL/SQL Profiling

To toggle PL/SQL Profiling

- » From the Session menu, select **Toggle PL/SQL Profiling**.

Editor Profiler Tab

Within the Editor, the Profiler tab displays profiler runs, as root nodes, and profiler units as child nodes. The latter are the actual code units that were executed during a profiler run. They can include anonymous blocks, procedures, functions, and packages executed while the profiler run data was being collected. In the line item profiler, child nodes contain the actual line data. In the hierarchical profiler, child nodes contain sub program calls.

This tab provides an overview of the data, but does not offer the graphs that the Profiler Analysis window does.

Navigating the Editor Profiler

Selecting a line item within the nodes automatically opens the referenced SQL source and displays the line referenced by the profiler.

Note: Because each editor tab is associated with a separate Profiler instance, navigating through your code this way may reset the node display in the Profiler tab.

To display the Profiler Analysis window for the current data

- » Click **Details**.

Executable line indicators

When you open a profiler run or unit into the Editor and have the option **show executable line indicators in gutters** selected, executable line indicators display as follows:

Indicator	Meaning
Blue dot with green square	Line was executed
Blue dot with red circle	Line was not executed

If Toad cannot determine when the unit was last executed, then the standard blue dot line indicators will appear.

Editor Profiler Nodes

Each level of node within the Profiler Analysis window has a slightly different meaning to the column contents. See "Profiler Analysis" (page 598) for more information.

Column	Contents
Profiler Runs	
Run Comment	Root node is designated by the profiler run comment, followed by the user that executed the profiler run in parentheses. For example, AA_TEST_1 (MICHAEL).

Column	Contents
Total Execution Time (secs)	Total time (in seconds) it took to execute all units included in that run.
Avg Execution Times	This will be blank for this level.
Run Date	The date and time that the run was completed.
Profiler Units	
Run Comment	Unit owner followed by the unit name. The unit type is also discernable by the icon for that node. If the unit says anonymous block it is not an object that actually appears in your database.
Total Execution Time (secs)	Total time (in seconds) it took to execute that unit.
Avg Execution Times	Average Execution time (in seconds) for a particular profiler Unit. Note: For the Line Item Profiler, this column will be blank for this level.
Run Date	The last DDL time (for non-anonymous blocks only) This is the date and time that the object was last modified and committed to the database. Last DDL time is queried from the ALL_OBJECTS view.
Note: If a unit appears in red, it was last modified after the profiler run was executed, and Toad cannot display the profiler line map in the Editor for that object.	
Profiler Data Lines (Only displayed in the Line Item Profiler)	
Run Comment	The line number of that line in the unit's source code.
Total Execution Time (secs)	The execution time of that line for all passes (executions) followed by the number of executions in parentheses. For example, if the line in question is within a loop then it may be executed numerous times.
Avg Execution Times	Average execution time (in seconds) for one execution of that line.
Run Date	Source text for the line.

Editor Profiler Tab Toolbar



Icon	Command
.	Refresh data.
.	Remove selected profiler run from the database.
.	Collapse all nodes.
.	Expand all nodes.
	Display the Profiler Analysis window with details of this profiler run. Profiler Analysis (page 598)

Profiler Filters

You get to this window from the Profiler Analysis window, Filter toolbar button. See "Using DBMS_PROFILER" (page 602) for more information.

Use this window to filter in or out schemas for a specific user.

To hide schemas

- » Select schemas in the right hand side and click > to hide.

Line Item Profiler

Line Item Profiler Analysis Overview

Oracle8i provides a Probe Profiler API to profile existing PL/SQL applications and to identify performance bottlenecks. The collected profiler (performance) data can be used for performance improvement efforts or for determining code coverage for PL/SQL applications. Application developers can use code coverage data to focus their incremental testing efforts.

The profiler API is implemented as a PL/SQL package, DBMS_PROFILER, that provides services for collecting and persistently storing PL/SQL profiler data.

Caution: Statistics may not be collected properly if you are running the Profiler on an Oracle server on a Tru64 platform.

Using DBMS_PROFILER

Improving application performance is an iterative process. Every iteration involves the following:

- Exercising the application with one or more benchmark tests, with profiler data collection enabled.
- Analyzing the profiler data, and identifying performance problems.
- Fixing the problems.

To support this process, the PL/SQL profiler supports the notion of a run. A run involves executing specified SQL commands through benchmark tests with profiler data collection enabled.

To start a run

- » Click  in the main Toad toolbar so that it is in the depressed position.

To end a run

- » Click  in the main Toad toolbar so that it is in the non-depressed position.

DBMS_PROFILER Session

A typical session involves:

- b>Starting profiler data collection in session.
- Executing PL/SQL code for which profiler/code coverage data is required
- Stopping profiler data collection.

Some PL/SQL operations, such as the very first execution of a PL/SQL unit, may involve I/O to catalog tables to load the byte code for the PL/SQL unit being executed. Also, it may take some time executing package initialization code the first time a package procedure or function is called. To avoid timing this overhead, you should warm up the database before collecting profile data. Warming up involves executing SQL once without gathering profiler data.

Collected Data

With the Probe Profiler API, you can generate profiling information for all named library units that are executed in a session. The profiler gathers information at the PL/SQL virtual machine level that includes the total number of times each line has been executed, the total amount of time that has been spent executing that line, and the minimum and maximum times that have been spent on a particular execution of that line.

The profiling information is stored in database tables. This enables the ad-hoc querying on the data: It lets you build customizable reports (summary reports, hottest lines, code coverage data, and so on) and analysis capabilities.

Using DBMS_PROFILER with the Java debugger

Toad lets you use the Profiler in connection with the Java debugger as well as when debugging PL/SQL. Output, however, is different.

When you profile Java code, all of the code is wrapped into an Anonymous Block, and then only that block is profiled. When debugging PL/SQL you are given the time per statement. In JDWP debugging, Toad returns the time for the entire procedure.

Setting Up the Line Item Profiler

You can set up the line item profiler to run from the Toad schema, or any private user's schema. Each case has a different script to run, as explained in the steps below.

Note: The minimum Oracle database version required for the PL/SQL Profiler is Oracle8i.

The **SYS.DBMS_PROFILER** package

Make sure you have the SYS.DBMS_PROFILER package. If this has not been loaded, you will need to create it as follows.

1. Login to an Oracle database through **Toad** as **SYS**.
2. Load the **Oracle home>\RDBMS\ADMIN\PROFLOAD.SQL** script into the Editor.
3. From the SQL Editor menu, select **Execute as Script (F5)**.
4. Make sure that **GRANT EXECUTE** on the **DBMS_PROFILER** package has been granted to **PUBLIC** or to the users that will use the profiling feature.

Install Profiler Server Side Objects

To install the server side objects required for the profiler

- » Run the Server Side Objects Install wizard. See "Installing Server Side objects" (page 172) for more information.

Using the Line Item Profiler

This section explains how the profiler works, and some of the options you can use to filter and delete data to create a customized profile. See "The **SYS.DBMS_PROFILER** package" (page 604) for more information if you have not yet set up the profiler.

Note: If you are using an Oracle 11g database, you have the option of using the Line Item Profiler or the Hierarchical Profiler. To use the line item profiler, from View | Toad Options | Execute/Compile | Behavior, clear the **Use hierarchical profiler on Oracle 11g and newer** checkbox.

To use the Profiler

1. Start Toad.
2. Click  on the main Toad toolbar to turn on profiling.

Note: Execute a procedure from the Schema Browser or the Editor using the Execute (lightning bolt) button. Set Profiler descriptions on the Set Parameters window. You will be prompted to enter a description of the procedure being executed. This appears in the Profiler Analysis window or the Editor Profiler tab when you are analyzing the results. Run the procedure several times to get some data into the profiling tables.

3. Click  to turn off profiling.
- Note:** Be careful to not leave the profiler toggled on when you switch to other Toad windows. Otherwise, profiler data will be collected from the queries Toad performs to populate those windows.
4. Do one of the following:

- Click the **Profiler tab** beneath the editor,
- Select the **Database | Optimize | DBMS Profiler Analysis** menu item. The Profiler Analysis window appears. For more information on reading the information provided, see [Profiler Analysis](#).

Anonymous Blocks and Lines Not Executed

By default, anonymous blocks and lines not executed are not displayed. You can display them by right-clicking in the tree-view and selecting them from the popup menu.

Hierarchical Profiler

Hierarchical Profiler

The hierarchical profiler is available beginning with Oracle 11g. The PL/SQL hierarchical profiler organizes data by subprogram calls, and stores the results in database tables letting you create custom reports.

Information provided includes:

- Number of calls to the subprogram
- Time spent in the subprogram
- Time spent in the subprogram and descendent subprograms
- Detailed parent-child information

For detailed information about the hierarchical profiler, please see your Oracle documentation.

Setting up the Hierarchical Profiler

You can set up the hierarchical profiler to run from the Toad schema, or any private user's schema. Each case has a different script to run, as explained in the steps below.

Note: The minimum Oracle database version required for the PL/SQL Profiler is Oracle 11g.

The DBMS_HPROF package

Make sure you have the DBMS_HPROF package. If this has not been loaded, please see your Oracle documentation for instructions on where to find it.

1. Login to Oracle through **Toad** as **SYS**.
2. Make sure that **GRANT EXECUTE** on the **DBMS_HPROF** package has been granted to **PUBLIC** or to the users that will use the profiling feature.

Install Profiler Server Side Objects

There are several database tables and other data structures that are required to use the analyzing functionality of the hierarchical profiler.

To install the database objects

1. Login to Oracle through Toad in the schema where you want the database objects created. These can be created in each individual schema, or alternately, this can be executed in a common schema (such as Toad) and synonyms can be made as described in step 4.
2. From the **Oracle home, RDBMS/ADMIN** directory, load the **DBMSHPTAB.SQL** script into the Editor.
3. From the SQL Editor menu, select **Execute as Script (F5)**.
4. If you have created them in a common schema, create Synonyms to the following objects and either grant them to each schema requiring them, or make them PUBLIC.
 - DBMSHP_FUNCTION_INFO (table)
 - DBMSHP_PARENT_CHILD_INFO (table)
 - DBMSHP_RUNS (table)
 - DBMSHP_RUNNUMBER (sequence)
5. Check to make sure each schema using the Hierarchical profiler has the WRITE privilege on the directory that specified when you start profiling.

Using the Hierarchical Profiler

Note: If you are using an Oracle 11g database, you have the option of using the DBMS Profiler or the Hierarchical Profiler. From View | Toad Options | Execute/Compile | Behavior, select **Use hierarchical profiler on Oracle 11g and newer**.

To use the Hierarchical profiler, there are several steps you will need to take:

- Set up the profiler.
- Set parameters for your code, checking the Hierarchical profiling options as well as code variables.
- Toggle Profiling on (on the main toolbar, make sure that  is depressed on the toolbar).
- Filter and View analysis in the Profiler tab below the Editor.

Or

View analysis charts in the Profiler Analysis window.

Note: If the Profiler tab is not visible, you can display it by right-clicking in the tab area and selecting **Desktop Panels | Profiler**.

Setting Hierarchical Profiler Parameters

Like the Line Item Profiler, the Hierarchical profiler has parameters that can be set from the Editor parameter page. Options set here persist on a per object basis.

To view and change parameters

1. Click  on the Debugger toolbar in the editor, or execute the procedure to open the parameters window.
2. Click the **Profiler** tab.
3. In the Hierarchical Profile area, make changes to the parameters described below.

Parameters

Note: This topic only covers unfamiliar information. It does not include all step and field descriptions.s.

Parameter	Information
Directory	Select the directory from the pre-defined list of Oracle directory objects. The list of possible directories is derived directly from your database, and cannot be altered here. Note: You must have WRITE privileges on the directory you use.
Limit call depth to <i>n</i> levels	If desired, limit the call depth to the specified number. Entering a "1" will give you only a top-level profile. Entering a higher number will give greater depth to your analysis.

Hierarchical Profiler Filters

You can filter the results of your hierarchical profiling session. This can be useful in making sure that you only see the results that are useful for you. See "Hierarchical Profiler" (page 605) for more information.

Toad will automatically filter out the system information that is added when the profiler is active. You can manually turn these on if you want to see that information.

To create a filter

1. From the Profiler tab at the bottom of the Editor, right click over the grid and select **Filter**.

Note: If you do not see the filter option, make sure you are actually using the Hierarchical Profiler.
2. Click **Add** to add a new filter to the filter grid. Enter the criteria you want to use to hide data. You may use the % wildcard within the filter.
3. Enable or disable any filters desired by selecting or clearing the **Enable** box.
4. Repeat steps 2 and 3 if necessary.
5. Click **OK**.

Oracle Tuning

Oracle Tuning Advisor (OEM) Overview

If you are using Oracle 10g and higher, you can tune using the Oracle Tuning Advisor. Or, if you have the SQL Optimizer module, you can use Quest's SQL Optimizer. See "Using SQL Optimizer with Toad" (page 106) for more information.

The Oracle Tuning advisor window provides a tabbed interface where you can create tuning tasks, drop tuning tasks, and set automatic tuning configuration.

There is an [online video tutorial](#) for this feature. This opens a new browser window and requires an internet connection.

Note: By default, unless you have instructed Toad to make this window accessible, this functionality is disabled. You can restore functionality from **View|Toad Options|Windows** and clicking the Available checkbox in the appropriate row of the grid.

Sending a SQL Statement directly to the Tuning Advisor

You can send your SQL statement directly to the Oracle Tuning advisor. This feature can be accessed from the:

- Editor window
- Create/alter windows for
- Views
- Triggers
- Snapshots
- Schema Browser
- Views
- Triggers
- Snapshots
- Session Browser
- SGA Trace/Optimization

Accessing the Tuning Advisor

In addition, Toad's Oracle Tuning Advisor window can display, open, delete, and create SQL Tuning jobs.

To access the Oracle Tuning Advisor window

- » From the Database menu, select **Optimize | Oracle Tuning Advisor**.

Creating Oracle Tuning Tasks

You can use Toad to access the Oracle Tuning Advisor and create tuning tasks. Toad's Tuning Advisor window provides a means to view, create and delete tuning tasks.

The Tuning advisor can be accessed from several places within Toad. In most cases, Toad will open the advisor after creating a new SQL Tuning job from selected code.

For information on parameters and how Oracle Tuning works, please see your Oracle documentation.

To use the Oracle tuning advisor from existing code

1. Put your cursor within the statement you wish to tune, or highlight the code you wish to tune.
2. In the toolbar, click the  drop down.
3. Select **Oracle Tuning Advisor**.
4. Make any changes to parameters and click OK.

Notes: Results are displayed in the Oracle Tuning Advisor window.

Creating a Tuning Task from the Tuning Advisor Window

You can also create a tuning task from the tuning advisor window. You might want to do this if you had several files that you wanted to tune, or if you have been reviewing results from tuning another piece of SQL code.

To create a tuning task from the window

1. From the Database menu, select **Optimize | Oracle Tuning Advisor**.
2. Click  in the left pane.

Viewing Oracle Tuning Tasks

When you create a tuning task from another location in Toad, when you click OK you are taken directly to the results tab of the Oracle Tuning Advisor. See "Oracle Tuning Advisor (OEM) Overview" (page 608) for more information.

You can view previous results directly from the Oracle Tuning Advisor window.

To view tuning results

1. If the Oracle Tuning Advisor is not open, from the Database menu, select **Optimize | Oracle Tuning Advisor**.
2. In the left hand side of the window is a list of all Oracle tuning tasks that have been created. Click on the one you want to view.

3. If the Results tab is not active, click on it to view results.
4. Change the level of results you can see by selecting the desired level in the **Level** box.

Viewing SQL Profiles

You can view SQL Profiles from the SQL Profiles tab. In addition, you can modify or delete the SQL Profile.

To view SQL profiles

1. From the Oracle Tuning Advisor, in the right hand side of the window, click the **SQL Profiles** tab.
2. Select a profile to display details for it in the lower panel.

Viewing Tuning Scripts

You can also view a recommended script for altering your code to suit the Tuning recommendations presented in the Results tab. For any tuning result there may or may not be a suggested script available for viewing. If there is no script, you will see the message "There are no recommended actions for this task under the given filters."

In addition, you can also choose to send the script to the editor, or execute it directly from the advisor. Click the appropriate toolbar button to perform one of these actions.

To view tuning script

1. From the Oracle Tuning Advisor, select the tuning task you want to view.
2. In the right hand side of the window, click the Script tab.

Quest SQL Optimizer

Quest SQL Optimizer Overview

Quest® SQL Optimizer for Oracle maximizes SQL performance by automating the manual, time-intensive, and uncertain process of ensuring that SQL statements are performing as fast as possible. Quest SQL Optimizer automatically analyzes, rewrites, and evaluates SQL statements within multiple database objects, files, or collections of SQL statements from the SGA. Quest SQL Optimizer also provides you a complete index optimization and plan change analysis solution, from index recommendations for multiple SQL statements to simulated index impact analysis, through comparison of multiple SQL execution plans.

The complete help file for Quest SQL Optimizer is available when you launch the program or from **Start | All programs | Quest Software | Quest SQL Optimizer for Oracle | Documentation | Help**.

Quest SQL Optimizer consists of the following:

Batch Optimizer (available in version 7.0 and above)

The Batch Optimizer enables you to submit files or database objects for batch processing. It first scans the code to extract the SQL statements, then optimizes each SQL statement and tests the SQL alternatives to find the best performing SQL for your database environment. It provides the replacement code with the optimized SQL statements.

SQL Scanner

The SQL Scanner identifies SQL statements from source code and database objects without requiring the execution of the SQL statements. Once the SQL statements are identified, the SQL Scanner analyzes and categorizes them according to suspected levels of performance problems.

SGA Inspector (formerly called SQL Inspector)

The SGA Inspector offers an easy way to view and analyze previously executed and currently running SQL statements from Oracle's system global area (SGA). You can specify your own criteria to retrieve the SQL statements and their corresponding statistics to review SQL performance.

Tuning Lab

The Tuning Lab contains the SQL Optimizer, the Index Expert, Deploy Outline, Test for Scalability and Best Practices along with the testing of the alternative SQL statements and the index candidates.

Tuning Lab-SQL Optimizer

The SQL Optimizer automates the optimization of SQL statements. It first analyzes the original SQL statement and then uses Artificial Intelligence to exhaustively rewrite the syntax of the SQL statement and apply the Oracle optimization hints. It produces a list of semantically equivalent and syntactically correct SQL statements. By test running these SQL statements, it is then possible to identify which SQL statement best suits the needs of your database environment.

Tuning Lab-Find Best SQL Alternative

The execution of the SQL statements enables you to test run the original and optimized SQL statements to select which SQL statement gives the best performance. The execution times and run time statistics help you identify which SQL statement is most suitable for the needs of your database application environment.

Tuning Lab-Deploy Outline

Deploy Outline stores an Oracle stored outline for a specific SQL statement. Oracle will use the stored outline when executing the SQL statement in place of using the execution plan.

Tuning Lab-Index Expert

The Index Expert enables you to determine the best possible indexes for your SQL statements. It analyzes the syntax of a SQL statement and the relation between tables to generate index alternatives. It provides all the alternative index sets that generate a unique execution plan for a SQL statement. It creates these index sets without physically creating the indexes in your database.

Tuning Lab-Find Best Index Alternative

The performance of a SQL statement can be tested to help you determine which indexes should be permanently created in your database.

Tuning Lab-Best Practices

Best Practices proposes common techniques to improve performance on your database.

Test for Scalability

The user workload that SQL statements may encounter can be simulated with Quest Benchmark Factory to see how the best SQL alternatives will perform under different workload conditions.

Global Indexing (formerly called Cross Index Analysis)

Global Indexing analyzes a group of SQL statements and determines the best common index set for all of those selected SQL statements.

Impact Analyzer (formerly called Plan Change Analyzer)

The Impact Analyzer helps you to ensure reliable database performance by tracking execution plan and Oracle cost changes for SQL statements. It keeps track of execution plan changes to allow you to estimate the impact on the SQL statements' performance due to database changes. You can simulate different database scenarios with a selected group of SQL statements that will give you a good representation of what will happen if a proposed database change actually occurred. Or, you can track the actual changes in the execution plan over time or as the result of actual changes in the database environment.

Outline Manager

The Outline Manager organizes the stored outlines used to improve the performance of SQL statements when you cannot or do not want to change the SQL syntax in the source code.

Rebuild Multiple Objects

Rebuild Multiple Objects Overview

Over time, indexes become fragmented. As the underlying table grows and shrinks, an index's storage parameters sometimes become inappropriate. When this happens, the index no longer

enhances the performance of the database. For this reason, indexes need to be periodically rebuilt.

From the Rebuild Multiple Objects window you can analyze indexes in order to determine which ones need to be rebuilt, and then to rebuild those indexes. You can also rebuild multiple tables at a time, if necessary.

To access Rebuild Multiple Objects

» From the Database | Optimize menu, select **Rebuild Multiple Objects**.

Indexes

In addition to the basic examine and rebuild features of this window, you can also perform the following on your indexes:

- Move indexes into various tablespaces based on the size of their extents.
- Adjust extent sizes to minimize the number of extents.
- Adjust extent sizes to a standard, to minimize the number of extents and decrease tablespace fragmentation.
- Specify criteria before analysis

When you rebuild multiple indexes, you will generally work in the following order:

1. Load a list of indexes.
2. Select criteria and indexes and analyze the index. See "Rebuilding Indexes" (page 614) for more information.
3. Rebuild indexes as necessary. See "Rebuild Recommended Indexes" (page 614) for more information.

Tables

You can easily rebuild several tables at once. In addition, you can use Conditional Thresholds to limit rebuilds to rows that meet certain criteria. See "Setting Conditional Thresholds" (page 618) for more information.

Email Notification - Rebuild Multiple Objects

You can choose to have email notification when you have completed rebuilding indexes. This can be useful if the rebuild will take some time. Set the indexes to rebuild, and Toad will notify the appropriate person when they are complete.

To set email notification

1. Click the **Email Notification** tab, and check the appropriate boxes. Choose to notify by email, and then check either HTML results or plain text summary to specify what to include in the email. HTML email is the default.

2. Set email options. Select **View | Options | Email Settings** and set the appropriate options for recipients and email accounts as described in Email Settings.

Rebuilding Indexes

Examining Indexes

Once you have selected a list of objects in the grid, you can examine them to determine if they need rebuilding. Tables do not need examining, however, you can set Conditional Thresholds to limit the number of tables you look at for rebuilding purposes. See "Setting Conditional Thresholds" (page 618) for more information.

To examine indexes

1. Select the **indexes** you want to examine. Click a grid row to check the boxes to the left of the index owner.
2. Click the **Thresholds and Performance Options** tab and set any standard thresholds. See "Height > " (page 618) for more information. These define when an index needs rebuilding. This tells Toad what parameters to look for in the index.
3. Click  on the toolbar.

When Toad is finished examining your indexes, it displays a recommendation in the index list, in the row under the index listing. These recommendations appear as follows:

No Rebuild Recommended

Rebuild Recommended - and a description of why

You can now rebuild some or all of the indexes. See "Rebuild Recommended Indexes" (page 614) for more information.

Index Rebuilding

Once you have examined your indexes, or if you know already which ones you want to rebuild, you can rebuild the indexes. When you rebuild indexes, you can also change storage clause parameters. See "Change Extent Sizes" (page 620) for more information.

There is an [online video tutorial](#) for this feature. This opens a new browser window and requires an internet connection.

Rebuild Recommended Indexes

When you examine the indexes in your index list, some of them may be marked Rebuild Recommended. These can be rebuilt at one time, with no other marking necessary.

To rebuild recommended indexes

- » From the Indexes tab toolbar, click .

The indexes that have been analyzed and marked for rebuild are rebuilt and the status of the index is displayed below the index name in the grid.

Create Script to Rebuild Recommended Indexes

You do not have to rebuild indexes immediately. You can create a script to do it for you later.

To create script to rebuild recommended indexes

- » From the Indexes tab toolbar, click . The script is copied to the clipboard. You can paste it into the Editor and save it for use later, if you want to run the rebuild from the command prompt. See "Run Rebuild Objects from the Command Prompt" (page 846) for more information.

Rebuild Checked Indexes

You can also select indexes manually to be rebuilt.

To rebuild checked indexes

1. On the Indexes tab, select the indexes to rebuild, by checking the box in the left-hand column of the grid.
2. On the toolbar, click .

Note: The status of the index is displayed below the index name in the grid.

Create Script to Rebuild Checked Indexes

You do not have to rebuild indexes immediately. You can create a script to do it for you later.

To create script to rebuild checked indexes

- » From the Indexes tab toolbar, click . The script is copied to the clipboard. You can paste it into the Editor and save it for use later, if you want to run the rebuild from the command prompt.

Rebuilding Tables

Loading and Clearing Tables and Indexes

You can load tables and indexes into the Table list (of the Rebuild Multiple Objects window) in several ways. Loading tables and indexes is cumulative. By selecting different **Load Tables** (**Indexes**) buttons on the toolbar, you can build a custom list. See "Rebuild Multiple Objects Overview" (page 612) for more information.

Load My...

This option loads all tables in the active schema into the Table list. If there are any partitioned indexes, each partition is placed in a separate row of the grid.

To load tables

1. Click either the **Tables** or **Indexes** tab, and then click **Load My...** on the toolbar.
2. When you have loaded the tables or indexes, the button is disabled. You can enable the button again by **Clearing** the entire list as described below, or by changing active sessions within this window.
3. If you change active sessions within this window, the list is immediately cleared.

Load... Like

To create and use a like clause

1. Click either the **Tables** or **Index** tab, and then click **Load ... Like** on the toolbar.
2. Choose the Table Owner from the dropdown menu.
3. Enter the condition you want the index or table name to be LIKE. The text you supply will be directly used in an Oracle query. This field is case sensitive, and the following wildcards characters apply:
 - % For multiple characters
 - _ For a single character
4. Select a **schema**, or multi-select several schemas using the **CTRL** or **SHIFT** keys.
5. Click **OK**.

Load by User

If you have the DBA role, you can also load tables belonging to more than one schema.

To load tables by user

1. Click either the **Tables** or **Indexes** tab, and then click **Load ... by User** on the toolbar.
2. Select a **schema**, or multi-select several schemas using the **CTRL** or **SHIFT** keys.
3. Click **OK**.

Load by Tablespace

If you have the DBA role, you can load tables belonging to a particular tablespace.

To load tables by tablespace

1. Click either the **Tables** or **Indexes** tab, and then click **Load ... by Tablespace** on the toolbar.
2. Select a **tablespace**, or multi-select several schemas using the **CTRL** or **SHIFT** keys.
3. Click **OK**.

Reload

To reload

1. Click the **Tables** or **Indexes** tab.
2. From the **grid**, right-click and select **Reload all**.
3. All storage information is reloaded and updated to its current state.

Clear Selected Rows

To clear selected rows

1. In either the table or index grid, select the indexes you want to remove. Use **CTRL** or **SHIFT** to multi-select.
2. Right-click the grid and select **Remove Selected Rows** from the menu. A confirmation dialog box appears.
3. Click **Yes** to remove the rows.

Clear Entire List

To clear entire list

- » Click either the **Tables** or **Indexes** tab and then click . The index is cleared, and the **Load my ...** button is enabled, if it had been disabled.

Table Rebuilding

After you have loaded and selected your tables, you can either rebuild them immediately or create a script to rebuild them later.

To rebuild selected tables

- » After selecting your tables, click .

Toad will display a status report in the grid when finished. Status for tables that were rebuilt successfully displays in green, while if there were problems, the status report will be in red.

To create a rebuild script

- » After selecting your tables, click . The script is copied to the clipboard, and you can paste it in the editor.

Thresholds and Performance Options

Standard Thresholds

When rebuilding multiple objects, you can set thresholds for your examinations. There are two types of thresholds: standard and conditional. See "Setting Conditional Thresholds" (page 618) for more information about conditional thresholds used to limit the Index list.

At least one standard threshold must be set in order to Examine selected indexes.

Standard thresholds are found in the middle of the Thresholds tab, in the area labeled **Mark Indexes for Rebuild only if:**. By default, all three thresholds are marked.

Height >

Height grows when there are splits to the index. If the height is high, consider rebuilding the index to reduce these splits.

The default for this option is 4, but Toad can look for a height greater than any number you specify.

? Deleted Rows >

If you have deleted rows in the database, the markers for those deleted rows still take up space in the index. Rebuilding the index to eliminate these markers can speed up usage.

The default percentage is set to 25. You can adjust this up or down as needed.

% Storage used < and % Storage used >

If your index has too much storage space for the amount of information it stores, or if it uses too much of the storage space it has, it can also slow down database performance. Use these two options to select an optimum range for storage space for your index, and mark those indexes that do not comply with your choice for rebuilding.

Conditional Thresholds

When rebuilding multiple objects, conditional thresholds let you eliminate indexes in your index list from consideration before you analyze them. This lets you shorten your index list immediately, without taking the time to run a full analysis on every index.

To use conditional thresholds

1. From the Thresholds tab, set conditional thresholds as described above.
2. Click the **Indexes or Tables** tab, right-click the grid and select **Remove items that fail consideration thresholds**. Failed items are removed from the grid, letting you analyze only the indexes you want to analyze. See "Rebuilding Indexes" (page 614) for more information.

Setting Conditional Thresholds

In the Thresholds tab area labeled "Consider Objects for Rebuild only if:" select one or more of the following options.

Size is greater than

This option lets you eliminate any tables or indexes where the size of the index is less than the specific amounts. Toad will only analyze sizes greater than what you specify. You can specify this number in MB or KB.

Extents is greater than

This option lets you eliminate any indexes where the number of extents is lower than the specified amount.

Using Conditional Thresholds

Use conditional thresholds when you have a long index list and you do not want to run a full analysis on the entire list.

Performance Options

When rebuilding multiple objects, the Performance options let you set parameters that affect the performance of your object rebuilding session. Performance options are located in the bottom section of the Thresholds and Performance Options tab. See "Rebuild Multiple Objects Overview" (page 612) for more information.

Tables and Indexes

Use 'Online' option

If you check this option, Toad can rebuild or move the table or index while it is in use.

Parallel

Check this command to use the PARALLEL keyword when rebuilding indexes. When checked, the following check boxes become active.

- Degree - Check this box and set the degree in the number field beside it.
- Alter indexes to noperallel after rebuild - When checked, Toad issues an "alter index ... no parallel command" after the index has been rebuilt.

Refresh Index Data

These radio buttons allow you to choose how you refresh the index data after a rebuild.

- Do not refresh index info after rebuilds - This option does not reload the index data at all.
- Refresh info for each index after each rebuild - This option reloads the data for one index immediately after that index has been rebuilt.
- Refresh info for all indexes after all rebuilds are complete - This option reloads index data for all rebuilt indexes after all the selected indexes have been rebuilt. This is the equivalent of choosing "Reload all" from the right-click menu.
- Rebuild associated indexes with tables - Select this box if you want to rebuild any indexes that are associated with the tables you have selected.

Indexes Only

Nologging

Check this command to use the NOLOGGING keyword when rebuilding indexes. When checked, the following check box becomes active.

Alter indexes to logging after rebuild

When checked, Toad issues an "alter index ... logging command" after the index has been rebuilt.

Change Sort Area Size for this session to:

This command allows you to set the index sort area size for the rebuild session. This can be set in KB or MB, and set in increments of one. The default is 10 MB.

After Rebuilds, change sort area size to:

This check box lets you set the sort area size to a specified size after the rebuild session.

Storage Clauses

During any rebuild of multiple objects, whether it was a recommended or a manual rebuild, you can change storage clause parameters. Use this to keep extent sizes fairly uniform and appropriately sized or to move indexes to another tablespace.

You can adjust the storage clause as follows:

- Specify the PCTINCREASE
- Set Next Extent = Initial Extent
- Scale Extent Sizes by a specified percentage, specifying the minimum and maximum sizes
- Define Extent Size

Change Extent Sizes

In addition, you can Change Extent Sizes. If you opt to use this feature, make sure you examine the index before you use it. Because the %used is a factor, this value can only be obtained by examining the indexes. Note that this is not the PCTUSED storage parameter. This refers to the actual percentage of allocated storage space for the index being used.

This option overrides any options set in the top part of the window.

To adjust extent size to minimize # of extents

When this option is selected, the new extent size for each index is calculated as follows:

1. Working size=total size * % used.
2. This working size is then passed through the "Make Extent this size, or "Just Round All Extent Sizes to the Nearest Power of..." algorithm, as selected. The resulting value is the new initial_extent size. It is also the new next_extent size. Pctincrease is set to zero.
- If you do not want to run the working value through either algorithm, select the "Just Round" and set the number to use as the closest power of 1. This is not recommended however, as it will result in each index being a different size, and this is a good way to fragment your tablespaces.

- If you have configured to adjust tablespaces base on extent sizes, Toad uses the new calculated size, not the original size.

Caution: If some indexed tables are used as large temporary tables, and are usually empty, but are sometimes filled, they may be marked as "rebuild recommended" when you examine them, because they have zero percent used. In this case, if you use **Adjust Extent Sizes** during the rebuild, the index will be built with small extents that may not hold all your data later. Avoid this by either using global temporary tables, or do not rebuild indexes with a percent used of zero.

Tablespaces

From this tab, you can choose to move all indexes to different tablespaces, or selectively dependent upon their size.

- If you choose to move indexes to a tablespace based upon the size of the index, and have chosen "**By Index Size**" on the **Extents tab**, size is based on the total size of the index.
- If you choose to move indexes to a tablespace based upon the size of the index, and you have chosen "**By Extent Size**" on the **Extents tab**, then the size is based on the INITIAL extent size, as opposed to the NEXT extent size.

Options

Formatting Options

You can set how Toad formats code when you select Formatting Tools. See "Code Statistics" (page 875) for more information.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

To set formatting options

1. From the View menu, select **Formatting Options**.
2. In the left panel, select the node that corresponds with what you want to set.
3. If you select a high-level node, the right panel will display a description of the kind of formatting included under that node. If you select a detail node, the settings will display in the right panel.
4. Make your changes. Option nodes that have been changed are displayed in **bold** type.
5. Click .
6. Close the window.

To reset all options to default settings

- » Click .

Changes in the Formatter

In Toad 9.7, the Formatter component was replaced with a new component that supports new Oracle functionality. Some formatter options have moved or changed slightly.

When loading a Formatter Plus options file, the new component preserves options as much as possible. If no exact match is possible then the following matches are made:

Formatter Plus option	Converted as follows
Parenthesis "open and close brackets in stacked lists" on same line	In the new group "Position around Multi-line Lists" a closely matching option is selected
Style of Parameter declaration and passed parameters	Parameter declarations and Parameters list arrangements Wrap or Stack on 1 column, or Stack on Overflow on 99 columns

Formatter Plus option	Converted as follows
AND-OR and Plus-Minus-Mul-Div "operators right and aligned"	"operators right"
AND-OR: Align top level OR or AND with keywords	Not converted, but the user can select a new radio button: <ul style="list-style-type: none">• Operators left• All conditions aligned when stacked• Operators aligned with the DML keyword
SELECT keywords left aligned	Keywords aligned LEFT (DML statements tab)
SELECT align lists at column	Middle margin (DML statements tab)
SELECT INTO style	SELECT list arrangement (similar)
SELECT TABLE, ORDER BY, GROUP BY, RETURNING style	Table Reference, ORDER BY and GROUP BY list arrangements (similar)
INSERT column values style	VALUES list arrangement (similar)
	Default list arrangement (Other Lists tab) set to Stack on Overflow

Toad Options

Toad Options

To use options

1. From the View menu, select **Toad Options**.
2. Select a category on the list at the left
3. Set options in the detail pane on the right.

Option settings are saved in TOAD.INI and restored the next time Toad is opened. Some of these options are set when you first create the TOAD.INI file (when you open Toad for the first time).

See "Searching Options" (page 623) for more information about searching the options.

Searching Options

You can search the options lists for the option you want. This can be useful if you remember a basic option, but cannot remember where it falls in the categories.

To search for an option

1. From the View menu, select **Options**.
2. At the bottom of the Options window is a Find box. Enter several characters from a keyword in this box.
3. Click **Search**.
4. Click a search result or select a result and press **ENTER** and the options window displays the page with that option, with the option in bold. The Option Window search dialog box remains open so you can look at all the results before moving on.
5. If you want, you can close the search results area by clicking the arrow beside the **Search** button.

Example

You know there is an option for making your passwords default to the username. But you cannot remember where it is in the Options windows.

1. In the **Find** box, enter *pass*. Press **Enter**, or click **Search**.
2. The search results window displays the following options:
 - Password Required
 - &Passwords
 - Save passwords for Oracle connections
 - Remember passwords for Oracle reconnects
3. Click the appropriate option, in this case Default Passwords to User name. The Options window displays the option.

Data Grids - Data

These options can be found at **View | Toad Options | Data Grids - Data**.

Behavior

Use Read-Only Queries

This option controls the ability to fetch updatable result sets in the Schema Browser and Master/Detail Browser windows.

If unchecked, then you automatically get editable grids in the Schema Browser and Master/Detail Browser.

If checked, then grids are not editable in the Schema Browser and Master/Detail Browser.

Note: Grids in the Editor are editable only if you include ROWID in the query or run an EDIT statement. See "Viewing and Editing Data" (page 955) for more information.

The default is unchecked.

Confirm record deletions

If checked, will confirm each record deletion before deleting the record. This option also affects the data grids on the Schema Browser "Data" tabs.

The default is unchecked.

Warn of cascading constraints on deletions

This option applies only to the Schema Browser. If checked, when you attempt to delete a row from a grid, Toad will check for an "ON CASCADE DELETE" foreign key constraint. This constraint may cause rows from other tables to be deleted as well. If it is present, Toad will warn you before deleting.

The default is unchecked.

Preview CLOB and LONG data

When checked, Toad will preview CLOB and LONG data in the data grids. When unchecked, there will be no preview. Checking this option can sometimes cause performance problems.

The default is unchecked.

Deferred LOB read

When checked, LOBs are read as they are displayed. This results in faster initial load, but slower grid performance.

When unchecked, LOBs are read in with the rest of the fields. This results in slower initial load, but faster grid performance.

NOTE: This option is ignored when CLOB/LONG preview is unchecked.

The default is unchecked.

Stop data fetches when available memory becomes less than *n* MB

You can change the number of megabytes that triggers Toad stopping data fetches. This number includes all available memory, both physical and pagefile.

Display**Show ROWID in editable grids**

If checked, the row id will display in data grids.

The default is unchecked.

Trim string data in CHAR and NCHAR columns

If checked, for CHAR and NCHAR columns, when data is retrieved from Oracle, any trailing spaces will be trimmed off, showing only actual data.

The default is unchecked.

Display large numbers in Scientific Notation

If checked, then numbers with over 15 digits are displayed in scientific notation in the data grids, and numbers with more than 15 decimal places are displayed rounded to the 16th place.

If unchecked, then all numbers in the data grids are fully displayed and the **Calculator** drop down will be disabled in number cells.

This option is set at the time that you establish your connection in Toad, so if you change the option, you will need to log off and make a new connection in order to see it in effect.

This option can affect exporting to MS Excel. When checked, numbers are sent to excel formatted as numbers, with a possible loss of precision. When unchecked, numbers are sent formatted as strings, and with no loss of precision (# of Decimals for Numbers option is ignored). Toad exports numbers up to 15 digits in Number format, and exports anything over as a string format to maintain precision.

Note: If you have the "use only general cell formatting" option selected, then all datatypes are exported as strings.

The default is checked. Keeping this default is recommended.

Date format: (dropdown list)

Normally, the data in Toad for date columns will display in the format selected in the Windows Control Panel. Selecting a different format will override the Windows Control Panel setting.

The default is your Windows Control Panel, Regional Settings, Short Date Style Format.

Time format: (dropdown list)

Select a different time format if desired.

The default is h:mm:ss AMPM.

Sliding window for entering two digit years

This option lets you change the sliding window value for using the current century in two-digit dates. It is the current system date minus the number of years specified in the sliding window option. The range of choice is 0 to 49.

For example, if you specify a 30 year window (which is the Toad default) and enter 1/1/87, the date produced will be Jan. 1, 1987; if you enter 1/1/57 that is outside of the 30 year window so the date produced will be Jan. 1, 2057.

Refresh Grid Data

Select when you want data grids to refresh:

After Inserts	Useful to keep grid data current as it changes because of default values and constraints. These options are selected by default.
---------------	--

After Updates	
Before Edits	Useful to keep records in sync in the situations mentioned above and when other users change records.

Note: Certain situations exist where a record level refresh is not possible because the record no longer exists, or its ROWID has changed. For these situations, you may wish to disable some or all of these options.

Data Grids - Visual

The Data Grid – Visual options control how the grid appears and works visually. These options can be found at **View | Toad Options | Data Grids - Visual**.

Behavior

Tabs

When checked, the tabs option allows you to tab through one record.

The default is checked.

Note: You cannot tab through multiple records unless Tab Through is also selected.

Tab Through

When checked you can tab through more than one record.

The default is unchecked.

NOTE: In order to tab through the records you must also have Tabs checked.

Row Select

With the Row Select option checked, clicking in a cell in the data grid will select the entire row rather than only one cell.

Unchecked, clicking will select one cell only.

The default is unchecked.

Multi Select

Checking the Multi Select box automatically engages row select. Multi select allows you to select more than one row at a time, using the **SHIFT** or **CTRL** keys to select while clicking on rows.

Unchecked, only one row at a time may be selected.

The default is unchecked.

Immediate Edit

If this option is checked, as soon as you click a data cell in the grid, an editor dropdown will appear. If unchecked, you must select the cell twice to place the grid in edit mode.

The default is unchecked.

Confirm sorts when clicking on column header

With this option selected, the Sort Options box appears when you click a column header. This allows you to select how you want to sort the data in that column.

Unchecked, the column is sorted immediately without displaying any options.

The default is checked.

Column Sizing

Size to header

Checking this option sizes all columns to the width of the column headers. So if the data is wider than the header, it will be truncated.

The default is unselected.

Size to data

Checking this option sizes all columns to the width of the data contained in them, rather than to the size of the column header. This allows you to see even the widest data in the table.

Unless "Allow columns to be less than the header width" is checked (see below), the column will never be narrower than the column header.

The default is checked.

Allow columns narrower than header width

If this option is checked, you can make columns narrower than the width of the column header. This can allow you to fit more data on the screen. If this option is not checked, columns will never be narrower than the header for the column, although this may be narrower than the data contained in it.

The default is unselected.

Allow columns wider than grid width

Check this option to prevent columns from automatically being resized greater than the grid size. This prevents column widths from becoming excessively wide due to LONG data.

The default is unselected.

Preview column height *n*

Changing the number of lines included in the preview column. Select any number of extra lines from zero to five (0-5).

The default is 1.

Display**Show Focus Rectangle**

When this selection is checked, if you select an item in the data grid and then click outside the grid, the item you selected is marked with a black rectangle.

Unchecked, the selected item is no longer selected or marked in any way when you click outside the grid.

The default is unchecked.

Show grid selection

When checked, if you select an item in the data grid and then click outside the grid, the item remains highlighted.

If unchecked, the selected item is no longer selected when you click outside the grid.

The default is checked.

Show grid lines

When selected, a grid appears around data in the results grid: lines divide rows and columns. If left unchecked, the grid lines do not display.

The default is checked.

Grid line width *n*

This option controls the thickness of the lines between rows on the data grid. The measurement is in points.

The default is 1.

Show row numbers

When this option is checked, a column containing the row numbers is displayed as the first column of the data grid.

The default is unchecked.

Use grid border color

With this option checked, the row numbers are shaded in the same color as the lines in the grid.

The default is unchecked.

Show Group Summaries

When selected, if the data grid is grouped by a column header (by dragging into the Group by area) a summary of group contents displays beside the group heading.

Unchecked, only the group heading, such as ENAME: SMITH is displayed.
The default is checked.

Null columns

You can select how null columns are displayed. Options include:

- Blank - null columns display as a blank cell. This is the default.
- {null} - null columns contain the word {null}.
- Yellow - null columns display in yellow.

Data font

Clicking **Grid** in this area displays the font selection dialog box. Changing the font here affects the entire data grid, with the exception of the preview column and headers. All data grids will have the same font. The default is MS Sans Serif 8 point.

Data Background

Select a color from the drop down menu for the background to the data. This will affect all data grids within Toad.

Header font

Clicking Header in this area displays the font selection dialog box. Changing the font here only affects the font displayed in the headers of the Data grids. The default is MS Sans Serif 8 point.

Header Background

Select a color from the drop down menu for the background to the header. This will affect all data grids within Toad.

Preview Column font

Clicking **Font** in this area displays the font selection dialog box. Changing the font here only affects the font displayed in the preview column.

The default is MS Sans Serif 8 point.

Colors

Select the colors you want to use in the data grid. You can set background and header colors.

Data Types

The Data Types Options page is accessed through the **View | Toad Options | Data Types** item. The options that are checked will appear as items in the Data Types dropdown in the Create

Table and Alter Table windows.

Types are listed in the Native Oracle Types panel and the ANSI Types panel. Select **All** and Select **None** buttons are in each panel. You can check and uncheck the individual types. The types checked are the only ones that will be included in the Table Data Types dropdown.

In addition, there are check boxes for:

Include Object Types (Oracle 8)

This option is available on Oracle 8 databases and above.

The default is unchecked.

Cache Object Type list per Connection

Caching the object type list prevents Toad from having to query and load everything in DBA_TYPES whenever you open the create/alter table (or index) screen. Memory usage of this cache should be insignificant. You may want to clear the cache manually if you just created some new object type and want to start using it in the create table screen. The cache automatically clears when the session is ended.

Include Byte/Char spec when creating DDL scripts from 9i databases

This option is available on Oracle 9i databases and above. For example, the script generated from SCOTT.EMP would have these differences:

Checked	Unchecked
<pre>CREATE TABLE EMP (EMPNO NUMBER(4), ENAME VARCHAR2(10 BYTE), JOB VARCHAR2(9 BYTE), MGR NUMBER(4), HIREDATE DATE, SAL NUMBER(7,2), COMM NUMBER(7,2), DEPTNO NUMBER(2))</pre>	<pre>CREATE TABLE EMP (EMPNO NUMBER(4), ENAME VARCHAR2(10), JOB VARCHAR2(9), MGR NUMBER(4), HIREDATE DATE, SAL NUMBER(7,2), COMM NUMBER(7,2), DEPTNO NUMBER(2))</pre>

The default is checked.

DBA

Access this window through the **View | Toad Options | DBA** menu item.

Tablespace map

This area allows you to modify colors and set fragmentation levels used on the Tablespace Map. See "Tablespace Map" (page 274) for more information. You can add multiple fragmentation levels.

To add new fragmentation levels

1. Click **Add** to add a new Fragmentation level.
2. Select the fragmentation percentage. You can either type the number in the box or select it by clicking the up and down arrows until the correct number appears. The cells whose segments equal to or exceeding this fragmentation level will be colored the color you choose.
3. Click  to select the color to highlight cells whose segments **equal or exceed** the fragmentation level you have set. The color selection dialog box appears. Click the **color** you want to use and click **OK**.
4. Click **OK** to add the level and close the Add Level dialog box.

To edit colors or fragmentation levels

1. To edit a color choice or fragmentation level, click the item you want to change and click **Edit**.
 - If you have selected a fragmentation level, the Add Level dialog box appears.
 - If you have selected another option, the Color Selection dialog box displays.
2. Make the desired changes and click **OK**.

Delete

You can delete Fragmentation Levels that you have added. You must retain at least one fragmentation level. You will not be able to delete the last fragmentation level.

To delete fragmentation levels

- Select the level you want to delete and click **Delete**.

No warning will display. The fragmentation level is simply removed from the list.

Show segment names on grid hint

If this box is checked, the segment names will display when you run your mouse over the Tablespace Map.

The default is checked.

Remember legend window state

Check this box to remember the state of the legend window when you close the Tablespace map. When checked, opening the map again will leave the legend where you had it last. (Visible or hidden).

The default is checked.

Remember segments window state

Check this box to remember the state of the segments window when you close the Tablespace map. When checked, opening the map again will leave the segments window where you had it last, either visible or hidden.

The default is checked.

Remember filters window state

Check this box to remember the state of the filters window when you close the Tablespace map. When checked, opening the map again will leave the filters window where you had it last, either visible or hidden.

The default is checked.

Confirm before overwriting Export/Import Files

When these options are checked, Toad will prompt you to confirm that you want to overwrite a file when you Export or Import.

Unchecked, Toad will overwrite the file without asking.

The defaults are checked.

Refresh Instance Manager database version during every poll

This determines whether the Instance Manager queries for the database version every time it polls a database. Normally, the database version for a database does not change, so there is no need to refresh it once it has been retrieved. However, this option will allow you to refresh the database version in case of a database upgrade.

The default is unchecked.

Debugger Options

All the Option settings are saved in TOAD.INI and restored the next time Toad is opened. These options can be found at **View | Toad Options | Debugger**.

Allow watches on package variables

Provided because the Oracle Probe API call for watching package variables acts differently on Oracle7 and Oracle8 databases. On Oracle7 databases, you have to step into the procedure BEFORE adding a watch on a package variable. On Oracle8, you can set up the watch on the package variable before or after stepping into the procedure. If you do not want to inspect package variables, then uncheck this option.

The default is checked.

Enable Trace Output while debugging

Creates trace information while the Debugger is running, which will help debug the Debugger interactions with the database. This is normally unchecked and is used for tech support or DBA.

The default is unchecked.

Enable DBMS_OUTPUT before debug session

If this box is checked, then DBMS_OUTPUT will be made available for your debug session. If the DBMS_OUTPUT window is not visible and there is DBMS output data, you will need to open it to view your output.

If this box is unchecked, DBMS_OUTPUT will not be displayed.

The default is checked.

This option can also be enabled/disabled from the DBMS Output window in the Debugger.

Step through package initialization

When you have a package that includes package variables, the first time you execute a procedure in the package the variables are initialized. If this option is checked, the Debugger will step to the lines of code where the variables are declared and initialized. If the option is unchecked, the Debugger will never step into the package initialization.

The default is unchecked.

Notify when debugging terminated

If checked, when debugging execution has terminated a message box with confirmation will display indicating Execution has terminated. If unchecked, no message will display at the end of debugging execution.

The default is checked.

Break on exceptions

This option causes the Debugger to stop when it hits a procedure exception (such as zero divide) and display a message. You can then continue debugging the exception handler code or stop.

The default is checked.

Debugger

Choose the debugging package you want to use.

DBMS

Selected, Toad will use the DBMS debugging package.

Note: To use either DBMS or JDWP you must have the appropriate package installed properly in the database, and database permissions to a use it.

JDWP

Selected, Toad will use the JDWP debugging package.

- Host- Enter the host used by JDWP.
- Port - Select the port you want to use for Java debugging.
- Allow stepping into Java Source - When selected, you can step into Java source.
Unchecked, Java source will be executed but not stepped through.

Script

Selected, Toad will use its internal script debugging abilities.

Transaction Control

These buttons let you choose how Toad deals with transactions in the Editor.

- Commit – a COMMIT statement is added to the anonymous block that is used to execute or debug code in the Debugger. Triggers do not default to rollback: they obey the settings for this option.
- Rollback – a ROLLBACK statement is added to the anonymous block that is used to execute or debug code in the Debugger.
- Prompt – when you finish executing/debugging code in the Debugger, Toad will prompt you to answer the question "Commit changes to debug session?" Answer Yes to commit, No to rollback.

The default is Commit.

Note: If the object has its own rollbacks/commits, the Debugger can only Rollback or Commit anything done since the last commit was performed.

Compile Dependencies Yes/No/Prompt

This will conditionally compile procedures called by your procedure with debug information just before the debugging begins.

- YES - compiles all procedures that your procedure calls with debug information.
- NO - does not compile those procedures with debug info.
- PROMPT - prompts you before debugging each time.

The default is **Prompt**.

Enable DBMS_JAVA Output

Default Buffer size

Select the buffer size when DBMS_Java output is enabled. The default is 20000.

Display

Use this area to specify how debugging items will display. Select the item in the box at the left, and then specify foreground and background colors for that object.

Debug session timeout (in seconds) box

This option limits the amount of time that the Debugger will wait for the database to respond with debug information. You can enter the number of seconds.

For a slow database, poor network speeds, or connection by modem, increase the number of seconds.

The default is 180 seconds.

Date format for Watches dropdown list

Allows you to select the date format for watched variables. Options are DD/MON/YY, MON/DD/YY, and MON/DD/YYYY.

The default is DD/MON/YY.

NOTE: Date format does not affect the NLS DATE FORMAT for the Toad sessions/connections. It only affects the Debugger session.

Editor - Behavior

These options can be found at **View | Toad Options | Editor - Behavior**

General

Apply commit/rollback to all tabs (threaded queries)

When selected, any commit or rollback selections made in the Editor will apply to all tabs, not just the active one. When unchecked, commit and rollback will only apply to the active tab.

The default is checked.

Auto Indent

When selected, Toad will automatically indent lines after you have indented the first. Use this option with optimal fill and Tab Stop settings to specify how the indent is created.

The default is checked.

Backspace unindent

When selected, you can use the backspace to unindent a selection. When unselected, pressing the backspace key will delete the selected text.

The default is unchecked.

Backup editor every *n* minutes

When selected, Toad will back up editor contents at the interval you have specified.

The default is checked and every 3 minutes.

Block select

When selected, you can select a block of text anywhere on the screen by using your mouse to drag a box around it.

When unchecked, text selection works in the standard manner.

The default is checked.

Clear grid on editor clear

If checked, when you clear the grid using the Edit menu or F7, the query grid will also be cleared.

Note: This does not clear the grid if you select all text and press DELETE, BACKSPACE, or perform a CUT operation.

The default is checked.

Collapse empty lines

When selected, any lines that are empty of text are collapsed to save screen space. Unchecked, these empty lines are displayed.

The default is checked.

Confirm Clear All Text

If clear, you can press F7 to clear all text from the Editor window without a confirmation dialog box.

If selected, Clear All will prompt for confirmation from both F7 and the Edit menu.

The default is unchecked.

Copy text in rich text format

If checked, when you copy text formatting will be preserved, and the text pasted in RTF format. When unchecked, all formatting is stripped and the code you have selected is pasted as plain text.

The default is checked.

Cursor beyond end of line

When checked, the cursor can extend beyond the end of line. This is especially useful when using the block select option, as you can make your block as large as you need it. When unchecked, the selection will not extend beyond the end of the first section you have selected.

The default is unchecked.

Double click line select

When checked, you can select a line by double-clicking on it. When unchecked, you must drag to select the entire line.

The default is unchecked.

Enable code folding

When checked, code folding will be enabled. Nodes will then be visible at the sides of the code that let you easily collapse or expand the code as desired.

The default is checked.

Find text at cursor

If checked, when opening a Find and Replace dialog box, Toad will automatically look for the word currently under the cursor. Otherwise, Toad will default to the word you searched for most recently.

The default is unchecked.

Group redo/undo

When selected, Toad will redo or undo text changes in groups of keystrokes. Groups are marked by a carriage return or by the change from typing to backspacing.

When unselected, Toad redoes or undoes items one at a time.

The default on both these options is unchecked.

Hide cursor when typing

When selected, Toad will hide the cursor when you are typing. When you stop typing and move your mouse, the cursor reappears.

When unselected, the cursor is visible at all times.

The default is unchecked.

Preload objects on "Load Object from DB" window

If checked, the Object Type filter is bypassed, and all objects from all object types are displayed right away.

The default is checked.

Scroll past last line

When this option is checked, you can scroll until the last line in the editor is at the top of the editor.

Unchecked, Toad stops scrolling as soon as the last line is visible in the editor.

The default is checked.

Treat underscore char as a word character

If selected, Toad treats all underbar characters, "_", as part of the object name. This can be useful if you often double click object names. With this option checked, a name such as ALL_TAB_COLUMNS will be highlighted. With it unchecked, only the word you click is highlighted (for example: COLUMNS).

The default is checked.

Use lower case object names from select windows

If checked, will return selected column names into the editors in lowercase. Otherwise they are returned in uppercase.

The default is unchecked.

Note: Only uppercase object names obey this option. Mixed-case and lowercase object names do not change case, regardless of the option.

- Lowercase object names are, of course, already in lowercase.
- Mixed case names must be double-quoted and cased correctly, as opposed to the situation where an uppercase name is submitted to Oracle in lowercase and automatically interpreted as uppercase.

Use single Editor instance for PL/SQL if possible

Toad can attempt to locate an editor that contains PL/SQL when loading it from outside of the Editor.

This will cycle through all open Editors and find one that contains PL/SQL. If found then Toad will use that Editor. PL/SQL is determined to exist in an Editor if the parser has successfully identified a procedure, function, package, package body, type, type body, trigger, or Java source object within it. If multiple Editor windows contain PL/SQL then the first one found is the one chosen. If no editor is found Toad will open a new Editor window.

The default is unchecked.

Word wrap

When selected, the editor will use word wrap on long lines, wrapping the text to the next line in the editor.

When unchecked, the editor will place all text on one long line.

The default is unchecked.

Word break on right margin

When checked, if word wrap is selected, the line wraps at the right margin (light gray line in the editor) if it is too long. When unchecked, the line wraps at the end of the visible editor.

The default is checked.

Tabs

Mode

Select the mode you want to use for tabs (spaces, tabs, or smart tab).

The default is Use Spaces.

Tab Stops

Select the number of tab stops you want to use.

The default is 4.

Block indent

Enter the number of spaces you want to use for an indent when you use the block indent command. The default is 4.

Optimal fill

When checked, Toad begins every auto indented line with the minimum number of characters possible, using tabs and spaces as necessary.

When unchecked, Toad begins every auto indented line with enough spaces to move the cursor where it needs to be.

The default is unchecked.

Languages

The Languages area allows you access to the language management windows, where you can make changes to the language parsers in the Toad editor. See "Language Management Overview" (page 688) for more information.

Code Templates

Opens the Language Management screen and activates the Code Template tab. See "Code Completion Templates" (page 700) for more information.

Syntax Highlighting

Opens the Language Management screen and activates the [Syntax Highlighting](#) tab. See "Syntax Highlighting" (page 690) for more information.

Key Mapping

Click the Key Mapping button to select shortcut keys for various editor commands. These shortcuts, limited to the editor commands, are superceded by any shortcuts set in the Toolbars/Menus | Shortcuts section. If you want to use the navigation keys as shortcuts, uncheck the **Enable Navigation Keys in the Grid** box. See "Toolbars/Menus - Shortcuts" (page 686) for more information.

Auto Replace

Click the Auto Replace button to set up options for auto replace. The grid provided lets you specify what keystrokes should be replaced by what text. For example, you can choose to replace all instances of "teh" with "the" automatically. When you have finished making changes and additions, click OK to return to the options page.

Editor - Code Assist

These options can be found at **View | Toad Options | Editor - Code Assist**.

Toad Insight Objects

Use this list to filter the Toad Insight lists by object type. Check the object types you want to include.

By default, all object types except Types (Collection and Object) and Synonyms are selected.

Code Snippets

You can use the Code Snippets area to add, edit, or remove any of the code snippets.

See "Code Snippets" (page 857) for more information and details about maintaining snippets.

Toad Insight

Cache Code Insight results

If checked, code insight results will be cached for quicker retrieval during multiple uses.

Note: Caching does use more memory. If this is a factor for you, you may want to clear this option.

The default is checked.

Ctrl+Click jumps to PLSQL objects

This option enables the **CTRL+Click** functionality in all PL/SQL Objects. When the hotkey is activated, clicking on the object name will load that object in the editor.

The default is checked.

Jump to package and type body

Use this option to enable the CTRL+Click functionality in package or type specs. Using this hotkey will take you directly to the body of the selected package, type or procedure.

The default is checked.

CTRL+Click describes objects

When this is checked, objects are described when you press <CTRL> and click on them. If both this option and CTRL+Click jumps to PLSQL objects are checked, then Toad first attempts to load the object into the Editor. Failing that, the object will be described.

The default is checked.

Show object types as text in pick list

When checked, the pop-up pick list will display the object type as text instead of a graphic icon.

The default is unchecked.

Display parameter hints after typing open parenthesis

If checked, when you are entering parameters in your code, and type the first paren "(", Toad will display hints for the parameter as described.

The default is checked.

Display pick list after typing object name followed by a period

If checked, will display the columns dropdown list. If unchecked, will not display the columns dropdown list. See [Toad Insight Picklist](#) for more information.

The default is checked.

Sort pick list alphabetically

If checked, columns popups are sorted alphabetically.

The default is checked.

Delay popups ... milliseconds

Use this to select the number of milliseconds Toad should wait before displaying popup hints.

The default is 1500 milliseconds.

SQL Recall

Save only valid statements

When checked, only valid SQL statements are saved in the [SQL Recall](#) area. Unchecked, all SQL statements, valid or invalid, are saved.

The default is checked.

Show only statements for the active session

When checked, only statements associated with the active session will be displayed.

The default is unchecked.

Write statements to disk prior to execution

When checked, Toad will write SQL statements to the disk before it executes them. This allows you to keep your SQL statement and recall it if something goes wrong in the execution.

The default is unchecked.

Statements to save:

Enter the number of statements Toad should save to SQL Recall. When the number of statements exceeds this number, the oldest ones will be deleted as new statements are added.

The default is 500.

Limit per connection

When checked, the option to limit saved statements will affect history per session. If it is set to 40, then the active session can have 40 saved statements. There may be more saved statements associated with other sessions.

The default is unchecked.

Make Code

You can change the language used when you select Make Code from the toolbar. You also can create your own language template for use in the Editor.

MakeCode format list

From this list, you can select the language syntax for Toad to convert a SQL statement into (Make Code Statement function) and out of (Strip Code Statement function). Currently, Delphi, VB, C++, Java, and Perl are automatically supported.

The default is VB.

Creating and Editing MakeCode languages

You can create your own templates so that you can switch between more languages than Toad automatically provides, or you can change our own with the Make Code command. Templates are stored with the Code Snippets options in the file templates.xml. See "Creating Make Code Templates" (page 895) for more information and examples of Make Code language.

To create your own language template

1. From the Options page, select **Editor | Make Code**.
2. Click **Add**.
3. Enter a name for the template in the Name box.

Note: Toad uses the basic language name for this name, but if you wanted to make slightly different templates for the same language you can name them as desired.

4. Enter the Escape character (if any) that you want to use.

5. Enter the delimiter required by the language you are using.
6. Enter the codes for the language template as described in Creating Make Code templates.

To edit a language template

1. From the Options page, select **Editor | Make Code**.
2. Click **Edit**.
3. Make your changes and click **OK**.

MakeCode Variable Name

Enter the Variable name you want to use for MakeCode commands. The default is SQL.

Select Statement based on cursor position

When selected, Toad will parse the code and select the statement residing at the cursor position.

The default is unchecked.

Strip Code copies to clipboard

When selected, if you choose to strip code, the code you strip is copied to the clipboard so that you can easily undo the operation. If you go on to strip additional statements, or perform other tasks that place data on the clipboard, the code is overwritten: only the most recent action is saved.

The default is checked.

Editor - Display

These options can be found at **View | Toad Options | Editor - Display**.

General

Highlight execution line when not debugging

When selected, the line being executed will be highlighted as it is executed. This can be very useful when stepping through code. If unchecked, execution will occur without highlighting the entire line.

The default is unchecked.

Lock results tab

When selected, the active results tab will remain active between editor tabs.

When unchecked, each editor tab can have a different results tab active.

For example:

You have an Editor opened with two tabs. You make the Data Grid results tab active on Tab 1 and switch to Tab 2 and make DBMS Output results tab active on there.

- If Lock Results Tab is selected, when you switch back to Tab 1 the DBMS Output results tab is active, since it was locked as the focused tab.
- If Lock Results Tab is not selected, when you switch to Tab 1 the Data Grid tab is active because it was the last used results tab for Tab 1.

The default is checked.

Persist display of execution time

When checked, the leftmost area of the status bar displays the execution time of the last executed query. If this option is cleared, the execution time is shown until the caret position is changed in the editor. At that time the display changes from execution time to the LINE:COL position of the caret.

The default is unchecked.

Persist dynamic highlighting when not focused

When checked, Toad will keep dynamic highlighting when you move focus into another panel or window within Toad.

When unchecked, dynamic highlighting will not be applied when you are not actively using the code that is highlighted.

The default is checked.

Persist selection when not focused

When checked, Toad will keep selected code highlighted when you move focus into another panel or window within Toad.

When unchecked, selected code will not be highlighted when you are not actively using the code.

The default is checked.

Persist selection when using navigation keys

When checked, Toad will keep selected code highlighted when you use arrow keys to navigate.

When unchecked, selected code will not be highlighted when you use arrow keys to navigate.

The default is unchecked.

Show word wrap indicator

When selected, visual indicators (arrows) display at the end of lines that have been wrapped to the next line in the editor .

When unselected, no indicators are present.

The default is unchecked.

Show control characters

When selected, control characters (such as spaces, tabs, carriage returns) are displayed within your code.

When unselected, no control characters are displayed.

The default is unchecked.

Show current line focus rectangle

When selected, in PL/SQL tab the line of code that has focus will also have a rectangle around it.

When unselected, the rectangle will not display.

The default is checked.

Show executable line indicators in gutter

When this option is checked, a blue dot appears in the gutter of lines that have executable code.

The default is checked.

Show line numbers

When checked, line numbers will display to the left of your code. When unchecked, no line numbers will display.

The default is checked.

Show results tab toolbars

If checked then any toolbars that results tabs have will show. If clear then they are not shown.

When checked, this option displays the toolbars in the Debug windows. Uncheck this option to hide the toolbars in the Debug windows.

For example, the Editor Data Grid tab has a toolbar with VCR style navigation bars and this toolbar will be shown or not shown based on this option.

The default is checked.

Use multi-line editor tabs

This option lets you choose whether all of the tabs will appear in one line (unchecked) or whether they will be shown in multiple rows when the list of tabs is too wide for the window (checked).

The default is unchecked.

Syntax Highlighting

Highlight table names

If checked, will show table names in the Editor window, using the syntax-highlighting feature. If unchecked, table names will appear in black text.

The default is checked.

Highlight view names

When checked, view names will be highlighted.

The default is unchecked.

Highlight stored procedure names

When checked, stored procedure names will be highlighted.

The default is checked.

Use when printing

When checked, syntax highlighting will be printed.

Unchecked, code will be printed in plain text.

The default is checked.

Fonts

Editor

Set the main editor font.

Line number

Use this to set the font for line number display.

Gutter and Margin

Use these to set the width and position of visible gutters and right margins.

Visible gutter width:

Specify the width of the gutter you see to the left of your code. The default is 50.

Visible right margin position:

Specify the position of the right margin on your screen to make your coding area wider or narrower.

The default is 80.

Background Color

Set the background color for the windows in your editor. You can select from any of the default Windows settings or specify your own color scheme.

The default is Window background, which corresponds to the Window Background setting for Windows.

Hex Editor Bytes per line: n

Use this option to specify how many bytes per line will display.

The default is 20.

Editor - Open/Save Options

These options can be found at **View | Toad Options | Editor - Open/Save**.

Opening Files

File splitting was designed to accommodate users with multiple PL/SQL objects in a single file. This feature lets you load multiple objects from one file and save package specs and bodies to one file.

When a file is loaded, the editor checks to see whether more than one PL/SQL object is created in the file. If so, the editor takes action depending upon which of the options listed below is set.

The default is Prompt to split files.

Automatically split files when multiple objects separated by "/"

This option will automatically split files when Toad comes across a "/". Toad assumes you want to split different objects onto different tabs.

Each section using a forward slash as a statement terminator will be placed in a separate tab.

See "Editor - Open/Save Options" (page 648) for more information about saving files that Toad has split.

Prompt to split files

When this option is checked, Toad will ask if you want to split a file into separate tabs. Splitting the file is recommended, but you can choose at the prompt to keep the file as one.

Never split files

When this option is checked, Toad will always load files into one tab and never split a file into body and spec.

Saving Files

When a package spec and body are both loaded from database into the editor, and you choose to save to file, Toad's behavior depends on these options.

If only the spec or only the body is loaded, then only the object that is loaded will be saved to file.

The default is Never combine spec/body.

Automatically combine spec/body when saving object to file

Puts spec and body into the same file.

Prompt to combine spec/body

Prompts you every time you close the files.

Never combine spec/body

Saves only the object on the currently active tab.

Use file splitting tags "/* <TOAD_FILE_CHUNK */*"

This option lets you re-save your split files into one file. Toad inserts the tag in the location where the file was split as a remark, so that it can easily split the file back out into separate tabs later. This allows you to save your files as single files, but still compile them and work in separate tabs within Toad.

Note: If file splitting tags are used, Toad will not scan the document to split the file at "/". Using the file splitting tags is more efficient for future file splitting, but it should not be used if the file might be modified outside of Toad to include additional PL/SQL objects.

The default is checked.

Save to separate files after splitting

If you have chosen to split a file into multiple tabs, Toad's treatment of the file depends upon this option to separate files after splitting.

- Unchecked: Keeps the original filename and load the contents of the file into separate tabs, so that there is one tab per object. Toad then keeps track of the fact that the tabs are all associated with the same file. You can choose whether or not to use "Toad file splitting tags". See "Editor - Open/Save Options" (page 648) for more information.
- Checked: Split the contents of the file into separate tabs so that there is one tab per object, but don't associate the tabs with any filename. This lets the user specify the filename when saving the tab.

The default is unchecked.

File Loading/saving

Prompt for reload on activation if timestamp has changed

If checked, this allows editing in an external editor. When an Editor window containing a file is reactivated (gets focus), Toad will check the date stamp of the file to see if it was modified by the external program. If the file was modified, Toad will display a prompt dialog box that will say that the file date/time has changed and ask you if you want to reload it. Select Yes, and the file will reload.

The default is unchecked.

Prompt to save on editor close

If checked, Toad will prompt you to save any text you typed in the editor.

Note: Even if this option is cleared, a loaded and modified file will always prompt you to save the contents.

The default is checked.

Format files when opened

If selected, this option will automatically format any file opened in the Editor, using Toad's built-in formatting capabilities. Formats can be customized using the View | Formatting Options window.

The default is unchecked.

Object Loading

Owner Name

Select when to include the owner name when listing an object.

- Always include - always include the owner name automatically. For example, JSMITH.TABLENAME. This is the default.
- Never include - never include the owner name automatically. For example, TABLENAME.
- Include on loads from other schemas - include the owner name automatically only when the object is loaded from a different schema.

Packages/Types

- Load Spec and Body as pair (Package or User Type) - If this option is checked, when you load a package or a type spec or body into the Editor, the associated spec or body will also be loaded. The default is checked.
- Separate Tabs - When checked, the spec and body will be loaded in separate tabs. When unchecked, the associated spec or body will be loaded into the same tab. The default is checked.

Editor - Printing

Use the Printing options to specify how the editor contents are printed. These options can be found at **View | Toad Options | Editor - Printing**.

Options

Word wrap

When selected, text entered into the Editor will wrap to the next line when it reaches the margin.

When unchecked, text will not wrap, but remain on the same line until it reaches an end of line code (line feed, carriage return, and so on).

The default is checked.

Hide collapsed

When selected, collapsed (folded) text will not be printed.

When unchecked, all text prints.

The default is unchecked.

Transparent

When selected, if you have line highlighting selected in Language Management | Highlighting, the highlighting will not print. See "Highlighting tab" (page 692) for more information.

When unchecked, line highlighting will be printed.

The default is unchecked.

Colors

Select the color scheme you want to use to print: RGB (color), Gray-scale, or black and white.

The default is RGB.

Line Numbers

Select whether to print line numbers, and where they should be placed.

The default is Left.

Fonts

Use the fonts area to set the printing fonts for specific parts of the editor printout.

- Header - sets the font for printing the header.
- Footer - sets the font for printing the footer.
- Line Numbers - sets the font for printing line numbers.

Header and footer

Use these areas to set a header or a footer to print when you print the editor contents. You can include tags to specify that certain things should be included.

They are:

- #page# - Include the page number.
- #title# - Include the filename.
- #date# - Include the date.
- #time# - Include the time.
- #datetime# - Include both date and time.

Both header and footer can contain multiple lines. They are saved in EditorHeader.txt and EditorFooter.txt, in the \User Files folder.

By default, the header contains #title# and the footer #datetime# and Page #page#.

Email Settings

These options can be found at **View | Toad Options | Email Settings**.

Global Settings

These are the settings that are applicable for all of the email windows. Enter your SMTP server information and user name here. The default port number is 25. You can change it if the port you use is different from the standard. If a password is required you can select that and enter it as well.

You can also send test email to test settings you have configured.

To send Test Mail

1. Fill out your email settings. All required fields (*) must be entered.
2. Click the **Send Test Mail** button. Toad will either send the test mail, or notify you as to why it could not be sent.

Window Settings

Set email options globally for the various Toad tools and managers that allow email notification from this options page. These tools and managers include:

- Analyze Objects. See "Analyze All Objects" (page 594) for more information.
- CodeXpert (CX) Results. See "Email Results" (page 327) for more information.
- Database Comparison. See "Compare Databases" (page 247) for more information.
- Database Monitor. See "Toad Database Monitor" (page 535) for more information.
- Health Check. See "DB Health Check" (page 287) for more information.

- Instance Manager. See "Instance Manager" (page 546) for more information.
- Rebuild Multiple Objects. See "Rebuild Multiple Objects Overview" (page 612) for more information.
- Schema Comparison. See "Compare Schemas" (page 260) for more information.

To select settings

1. In the Windows box, click the **Toad window** you want to adjust. For example, click Health Check. Health check is highlighted, and the rest of the boxes display the options for the Health Check window.
2. The **Subject** and the **From Name** boxes have default entries. These can be changed.
3. You will need to enter the **Reply To** address and the **From Address**.
4. You can also change the priority from **Normal**.

To add recipients

You can add an email address to the To, CC or BCC boxes.

1. Do one of the following:
 - Click the "+" (plus) button.
 - Press <Insert> on the keyboard. An Add Recipient dialog box appears.
2. Enter the address and click **OK**. The address appears.

To delete recipients

1. Do one of the following:
 - Highlight one or more email addresses in the To, CC or BCC box and click the "-" (minus) button.
 - Press **Delete** on the keyboard. A confirmation dialog box appears.
2. Click **Yes** and the addresses are removed.

To copy settings

You can copy all of the settings from one window to another:

1. In the Window box, select the **name** of the window that has the appropriate settings.
2. Drag it to the name of the window you where you want to assign those settings. A confirmation dialog box appears.
3. If the windows are correct, click **Yes** to copy the settings. This copies all setting except the Subject line.

In addition, you can copy any of the recipient addresses between the To:, CC:, or BCC: boxes by clicking and dragging them.

To clone settings

You can copy all settings except the subject from one window to all other windows that require email settings.

- » From the Toad Options | Email Settings page, click **Clone Settings**. A confirmation dialog box appears.

Executables

Access this page from the **View | Toad Options | Executables** menu item.

It contains boxes for the paths of the following executables:

- SQL*Plus
- SQL*Loader
- Import used in the Import Utility Wizard)
- Export (used in the Export Utility Wizard)
- TKProf
- TNS Ping (used in the Database Monitor window)
- Wrap
- Export Pump
- Import Pump
- RMAN
- Ping (used in the Database Monitor window)
- Editor (external editor)
- XML Editor (external XML Editor)

Auto#detect paths for current Oracle Home

You can click the find  buttons to use the autofind feature and the executable location will be filled in or you can click the drilldown button to search through your directories.

Execute/Compile

These options can be found at **View | Toad Options | Execute/Compile**.

Behavior

Poll for DBMS Output when detected

When selected, Toad will automatically poll for DBMS Output if output is detected when executing a script. If unchecked, you must tell Toad to poll for DBMS output.

The default is unchecked.

Prompt for substitution variables

When checked, the Editor will prompt you for variable values when it encounters a substitution variable in the SQL to be executed. Variable formats are: &VAR, &&VAR, and :VAR.

The default is checked.

Always open Parameters window

When checked, the parameters window will open for changes whenever you debug or execute a procedure.

When unchecked, the parameters window will not open automatically, but can be opened manually using the Set Parameters  button on the debugger toolbar.

The default is checked.

Save proc parameters between sessions

When checked, the parameters you enter for PL/SQL objects are saved to your ToadParams.ini file when you set parameters for debugging and are restored from the ToadParams.ini file for your next debugging session.

The default is checked.

Save profiler Settings between sessions

When checked, the parameters you enter for the profiler are saved when you exit the profiler and loaded when you start a new session.

The default is checked.

Use hierarchical profiler on Oracle 11g and newer

When checked, if you are connected to an Oracle 11g database or newer Toad will automatically default to the newer hierarchical profiler rather than the line item profiler. If you are connecting to a 10g or lower database, Toad will continue to use the line item profiler.

The default is unchecked.

Compiling

Allow compiling when source is loaded from database

If checked, this allows you to compile the code immediately when source is loaded from the database.

If unchecked, you must first save it to disk before recompiling, and a dialog box will display, announcing, "You may not recompile directly from database."

The default is checked.

Compile Spec and Body as pair (Package or User Type)

If you have both spec and body loaded in the editor, when you press Compile (**F9**), this option compiles the spec and then the body.

This option is especially useful if you use file-splitting for packages and want to compile both objects at the same time.

The default is unchecked.

Default to "Compile with Debug"

If this option is checked, the Toggle button will begin in the on position each session.

The default is checked.

Use "CREATE" instead of "CREATE OR REPLACE" when loading database objects

If this option is checked, the Create Procedure will not overwrite an existing object. When loading PL/SQL into the Editor, the Create clause will read, "Create Procedure/Function/Package ...". This is useful if, when compiling this procedure, a different object of the same name already exists in the database, hence the compile will fail, instead of overwriting it.

If unchecked, the Create clause will read, "Create or Replace Procedure/Function/Package" and overwrite any existing objects that have the same name.

The default is unchecked.

Notification when compile process is complete

When checked, this plays the ToadLOAD.WAV (croak sound) when the compile of a procedure has completed.

The default is unchecked.

Set optimizing compiler value (10g only)

Enter a 0, 1, or a 2 in the box. If checked, Toad executes the following query on a new connection and also when the options window options are applied for any 10g connections:

ALTER SESSION SET plsql_optimize_level=X

where X is the value entered in the dropdown.

The values set the level of optimization that Oracle uses to compile PL/SQL library units. For more information, see your Oracle documentation.

2 is the Oracle default.

Set Modified Flag off after compiling from database

When checked, whenever you compile source from the database, Toad will toggle the Modified flag, allowing you to tell when source has been modified.

Note: It is strongly recommended that if you are using Team Coding features you leave this checked.

The default is checked.

Login Scripts

Glogin.sql (traditionally for group login settings) and login.sql (user's personal login settings) are Oracle standards and used by SQL Plus as well as other applications. TOAD supports these for Editor script executions. These boxes are read-only. Toad uses a SQL Plus algorithm to locate them.

Note: glogin.sql is executed first and then login.sql is executed. Therefore, any settings in login.sql will take precedence over any settings that coexist in glogin.sql.

For example, if SET LINESIZE 100; resides in glogin.sql and SET LINESIZE 150; resides in login.sql then 150 will be used for LINESIZE.

glogin.sql

glogin.sql is most often located in the ORACLE_HOME\sqlplus\admin folder.

You can edit this file by clicking the Edit File button. The file will open in your selected text editor.

login.sql

Login.sql can be used to store initial settings for a script execution session. Toad finds login.sql by first searching the initial working directory of Toad upon startup. This is usually the installation folder, but may be another if you have changed the start location.

If login.sql is not found there Toad searches the SQLPATH for the active home. SQLPATH, like a PC's PATH variable, can contain many directories each separated by a semi-colon. For example:

```
'C:\Oracle\dbs;C:\MyPersonalOracleScripts;C:\TOAD\User Files'
```

In this example, Toad first searches C:\Oracle\dbs is searched for login.sql then continues on to C:\MyPersonalOracleScripts and so on. When login.sql is found, searching is aborted and that is the one used.

Execute login scripts

When this option is selected, login scripts will be executed. When clear, they will be bypassed.

The default is unselected.

Restore SET defaults prior to script execution

When checked, the settings in the default settings file will be restored prior to every execution of a script in the Editor. If unchecked, they are loaded at Editor startup and any changes persist for all executions that follow.

The default is selected.

Script Output

Limit results to

Selecting this option and entering a number in this box will limit your SELECT to that number of rows. Any results beyond that number of rows will be truncated. Entering 0 in the box will show all rows.

The default is unchecked.

Warn when available memory becomes less than n MB

When selected, if the result set takes up too much memory, Toad will warn you and give you the option of continuing or ending your query.

The default is checked and 50 MB.

Show Script Grids

When checked, script queries that return row results (for example: Select * from MyTable) send results to the Script output tab and a Grid.

To disable the Grid output, clear this check box.

The default is checked.

Maintain Script History

When checked, Toad will maintain a script history. When clear, Toad will not maintain one.

The default is unchecked.

Show Script Start/End times

When checked, the start and end times of the script are displayed in the output area.

The default is unchecked.

Font

Select the font you want to use for script output. The default is Courier.

Error Font

Select the font you want to use for script errors. The default is Courier in red. Using this you can see the error message within the script output much easier than if the same font is used.

Files - General

These options can be found at **View | Toad Options | Files - General**.

File Types:

Nearly all - but not all - of the File Open, File Save and Export file dialog windows displayed through Toad are for the purpose of manipulating SQL files. The grid dialog box lets you customize the file extensions that display in the system dialog box windows. To add another filter, begin typing in a blank row. To delete a filter, highlight the text and press the **DELETE** key.

The default filters include:

File Type	Filter
Function	*.fnc
HTML	*.html, *.htm, *.asp, *.xml, *.xsl, *.xsd
Ini	*.ini
Java Source	*.jvs
Java	*.java, *.jvs
Package Body	*.pkb
Package	*.pks
PL/SQL	*.sql, *.prc, *.fnc, *.pks, *.trg, *.vw, *.tps, *.tpb
Procedure	*.prc
RMAN	*.rcv
SQL	*.sql
Text	*.txt
Trigger	*.trg
Type Body	*.tpb
Type	*.tps
View	*.vw
All Files	*.*

To create a file association

1. Click **Add**.
2. Enter a description in the type box.

-
3. Enter the extensions you want associated with that type in the Extensions box.

If you want these associated with Toad on a windows level, check the "Open with Toad" check box.

Note: This creates a Windows file association for the specified file extensions. If you double-click in the file explorer on a *.SQL file, for example, then Toad will startup automatically.

4. Click **OK**.

Save source files in Unix format

When this is checked, CR-LF character pairs are saved as LF, making the source compatible with Unix.

The default is unchecked.

Use Universal Naming Convention (UNC) for file and folder names

If checked, Toad will convert file and folder names to UNC. This affects all open/save dialogs and the Project Manager.

The default is checked.

Number of files to save in recently used file lists

This option designates how many recently used files to maintain in the files list. Less recently used files over this number of files will drop off the list.

The default is 10.

Files - Open/Save Dialogs

These options can be found at **View | Toad Options | Files - Open/Save Dialogs**.

This screen controls the "Favorites" box on the open/save dialogs. You can specify favorites or remove them from your list here as well as from an Open/Save dialog.

Favorite Folders

Manage your favorite directories from this option window.

You can Add, Edit, or Delete entries. If Sort alphabetically is not checked, you can select a directory and move it up or down in the list.

Sort Alphabetically

If this is checked, all directories will be listed in alphabetical order. This makes them easier to organize. If unchecked, entries are listed in the order in which they were added, and you can rearrange the order

The default is checked.

Options - General

These options can be found at **View | Toad Options | General**.

Confirm before closing Toad

If checked, Toad will confirm whenever you attempt to close Toad.

The default is unchecked.

Flash TOAD when inactive and messages are written to the output window

When this option is checked, if Toad is inactive Toad's taskbar icon will flash when output messages are written.

The default is unchecked.

Flash the output window when messages are written to it

When this option is checked, if Toad is the active application the output window will flash when messages are written to it.

The default is unchecked.

Save Settings every *n* minutes

When selected, Toad will save your settings at the interval you set. Choose a number of minutes to save settings.

The default is unchecked.

When selected, the default is 3 minutes.

Save *n* Toad Actions per action type

Use this option to limit the number of actions of each type (email, export ddl, and so on) Toad saves.

The default is 10.

Default Encoding

Use this to specify the default encoding of Unicode files. Unless manually changed in the affected window, Toad uses this setting for encoding saved files in places where you can specify encoding (for example, Save As dialogs, Editor tabs among others).

Select from:

- ANSI (default)
- UTF-16 (Big Endian)
- UTF-16 (Little Endian)
- UTF-8

Application Data Directory

The default installation directory for new installs enables roaming profile support by default.

Use Default activates to your main application data folder.

Use Local Default activates your local application data folder, which does **not** support roaming profiles.

You must restart Toad for a change in this option to become active.

Exception Logging

Log File

Enter the full path and filename for the log file. If you leave this blank, the log file will be sent to the main TOAD.EXE directory.

Number of errors to log

Specify the number of errors you want to maintain in the log file. The last *n* errors are saved. The default is 10.

Numeric characters

Use these options to set the decimal and thousands separator for display purposes. Both must be set, and they must be different. Options in the dropdowns for both include:

- , (comma)
- . (period)
- (space)

Temp Files Directory

Use this to set the directory Toad uses to store your temporary files. The default is the Windows temporary file folder.

Network Utilities

Network Utilities Options allow you to set some of the parameters for using the tools provided by the Network Utilities window.

These options can be found at **View | Toad Options | Network Utilities**.

Adding and Editing Host, User names, and Default Directories

You can add, edit and delete Host and User names for use in several windows. These names will appear in the dropdown menus in Telnet, Rexec, and Ping. You can set a default directory for each host.

- Click **Add** to add new host information in the Server Settings window. Add your host, user name and directory and then click **OK**. You can have more than one user per server host. See "Server Settings" (page 750) for more information.
- Select an existing **Host name** and click **Edit** to change it. The host information dialog box appears. Make changes and click **OK**.
- Select an existing Host name and click **Delete** to delete it. The name is deleted.

Caution: When deleting an existing Host and User name, there is no warning. If you click **Delete**, the selected name will be deleted immediately.

FTP ASCII Extensions

You can define FTP extensions for ASCII files to control the transfer mode while using FTP. If you have listed an extension under ASCII, then files of that type by default will be sent using ASCII. Any extensions not listed in this box will be sent using binary. Add additional extensions by clicking Configure and selecting from the list. You can also add new extensions by clicking **Configure | Add New**.

FTP View Extensions

You can assign extensions that will open in the Editor when you fetch them using the FTP feature. Any extensions not listed will be sent but not opened in the editor. Add additional extensions by clicking Configure and selecting from the list. You can also add new extensions by clicking **Configure | Add New**.

Telnet and SSH

Font

You can change the font used for the telnet utilities.

1. In the appropriate area (Telnet or SSH), next to the Sample Telnet font, click **Font**.
2. Select the **font formats** you want to use when using the telnet utility. Click **OK**. The sample Telnet font changes to the font you have chosen, and the next time you telnet, this font will be used.

Background Color

You can change the background color used for the telnet utilities.

1. In the appropriate area (Telnet or SSH), next to the Sample Telnet font, click **Color**.
2. Select the background color you want to use when using the telnet utility. Click **OK**. The background of the sample Telnet font changes to the color you have chosen, and the next time you telnet, this color will be used.

Oracle - General

These options can be found at **View | Toad Options | Oracle - General**.

Passwords

Save passwords for all Oracle connections

Normally, only the schema and database are saved to the TOAD.INI file for each new Oracle connection. Checking this option will save the passwords, too. Be sure you work in a secure environment where your TOAD.INI file will not fall into the wrong hands. All passwords in Toad are encrypted using AES encryption.

This option can be toggled from the Save Passwords check box on the Server Login window as well. See "Save Passwords for Connections" (page 184) for more information.

The default is unchecked.

Remember passwords for Oracle reconnects

If this option is checked, then **Session | Test Connections** will not prompt for a password. To remember passwords when you close Toad, see [Save passwords for Oracle connections](#), above.

If this option is unchecked, then **Session | Test Connections** will prompt for a password, and the Server Login window will prompt for a password every time you connect, unless Save passwords for Oracle connections is checked.

Caution: Checking this option keeps your passwords in Toad's memory if a connection is broken. This may be a security risk.

The default is checked.

Newline format for character data

These options apply to the Popup Text Editor in the data grids. See "Popup Editors" (page 963) for more information.

Windows style (convert all newlines to CR/LF)

If selected, when Toad reads data from Oracle into the data grids, it will retrieve it without converting LF's or CRLF's. But when the text from a column is opened in the popup text editor, any linefeeds found in the text will be converted to CRLF's, and if the data is altered, Toad will post any CRLF's or LF's it finds in that data as CRLF's.

The default is cleared.

Unix style (convert all newlines to LF)

If selected, when Toad reads data from Oracle into the data grids and the popup text editor, it will read linefeeds (LF) as carriage return-linefeed pairs (CRLF). Then if data in the text columns is altered, Toad will post any CRLF's or LF's it finds in that data as LF's.

The default is checked.

Explain plan**Schema**

This is the schema name that will be used when writing out and fetching Explain Plan data.

The default is the windows logon name.

Table

This is the table name you want Toad to use when saving Explain Plan results. See "Installing Server Side objects" (page 172) for more information.

The default is "Toad_PLAN_TABLE".

Save previous Explain Plan results (requires Toad tables)

If checked, will save the Explain Plan outputs in the Toad tables, viewable in the "Database | Optimize | Explain Plan" window.

The default is unchecked.

Chained rows**Schema/Table boxes**

This option allows you to choose the schema and tablename for chained rows by entering it in the box.

The default tablename is CHAINED_ROWS. See "Repair Chained Rows" (page 590) for more information.

Caution: The Chained Rows table is where Toad tells Oracle to store the row ids of the chained rows that are found. It is NOT the table that you are supposed to analyze. Remember, Toad will truncate the chained rows table before it analyzes the tables in the list.

DBMS Output**DBMS Buffer Size**

Set the size of the DBMS buffer here. When the buffer exceeds this size you will receive a buffer overflow error. If you are using Oracle 10g, this buffer size is automatically set to unlimited and disabled from change.

DBMS Output Font

Click this button to set the font for DBMS output displays. See "DBMS Output Window" (page 963) for more information.

Default Schema

Default schema for connections to: *current connection*

You can enter a default schema in this box. When a connection is made to this database, the Schema Browser will open to this default schema if it exists on the Database.

If the schema does not exist on the connected database, the Schema Browser will open to the connected schema.

This option can also be changed using the Schema Browser popup menu | **Set current schema as default** or **Clear default schema**.

The default is no schema selected.

Default schema for connections to: *current schema@current connection*

You can enter a default schema in this box. When a connection is made to the database, the Schema Browser will open to the specified schema if it exists on the Database.

If the schema does not exist on the connected database, the Schema Browser will open to the connected schema.

This option can also be changed using the Schema Browser Popup menu | **Set current schema as default** or **Clear default schema**.

The default is no schema selected.

Used in

Click the **Used in** button to specify which windows will obey the default schema options. All default to OFF except the Schema Browser.

Double Quote Object Names

If you select:	These will be enclosed in double-quotes
Minimal	<ul style="list-style-type: none">Mixed case wordsReserved wordsWords starting with any of the following: 0123456789#\$_~^%&*(),-_=+{}[];<.>>?/ or spaceWords containing any of the following: ~^%&*(),-_=+{}[];<.>>?/ or space
Non-ASCII	Everything minimal double-quotes, plus words containing non-ASCII characters
All	Everything

OCI Array Buffer size number box

This option lets you set the size of the OCI Array buffer.

When a SELECT query is executed, Toad retrieves the rows from the Oracle server. Toad retrieves the rows in blocks. The number of rows retrieved in each block is the number of rows you specify with the OCI Array Buffer Size option.

You can set the buffer up to a value of 999. The disadvantage to a higher setting of OCI Array Buffer Size is that Toad must allocate memory to hold that many rows prior to each fetch. If that many rows are actually fetched, there is no loss. On the other hand, if not that many rows are retrieved, then some memory is allocated that will not be released until the cursor is freed. Overall, this amount of allocated memory is generally unnoticeable.

The default is 500.

CR/LF Example

You can use the following script to demonstrate the Newline options:

```
CREATE TABLE crlf_comp
(textcol VARCHAR2(20));

INSERT INTO crlf_comp VALUES ('crlf'|| CHR(13)|| CHR(10)|| 'char');
/*Carriage return linefeed combo*/

INSERT INTO crlf_comp VALUES ('line'|| CHR(10)|| 'feed'); /*Linefeed only*/
COMMIT;
```

See "Oracle - General" (page 664) for more information

Windows style

- The cells in the grid will show two black characters for a CrLF, and one black character for a LF.
- The memo editor will start a new line when it encounters a CrLF, but will just show a black character when it encounters a LF.
- When you post data from the memo editor, the line separator will be a carriage return + linefeed.

Unix style

With the option checked:

- The cells in the grid will show two black characters for a CrLF or a LF.
- The memo editor will go to a new line whenever it encounters a CrLF or a LF.
- When you post data from the memo editor, the line separator will be just a linefeed.

Oracle Optimizer Hints

These options can be found at **View | Toad Options | Oracle Optimizer Hints**.

This option screen lets you select the best optimizer hint for the DDL queries that Toad executes. You can choose between Default, /*+ CHOOSE */, /*+ RULE */, and /*+ FIRST_ROWS */.

Optimizer hints for several DDLs are built into Toad. You can edit these, or add others if necessary.

The screen is laid out in grid format, with the DDL, Oracle version and rule.

All Others

At the bottom of the window is a dropdown field. Use this to select an optimizer hint to use for any view not specified in the main Optimizer hint grid. For example:

- Toad is about to run a query against DBA_TABLES on Oracle 8i.
- First it looks in the grid: if dba_tables for 8i is specified in the grid, then it will use the hint specified there.
- If dba_tables for 8i is NOT specified, Toad will use the hint specified by the "all others" combo box.

To edit an optimizer hint

1. Put the grid into Edit mode by checking the **Edit** check box at the bottom of the window.
2. Click in the **Optimizer Hint** column of the record you want to edit.
3. From the **dropdown**, select the hint you want to use.

To add an optimizer hint

1. Put the grid into **Edit** mode by checking the **Edit** check box at the bottom of the window.
2. Click  at the top of the window. A new record is inserted above the location of your cursor in the grid.
3. Click in the **View Name** column of the new record and then select the **view name** from the dropdown list.
4. Click in the **Oracle Version** column of the new record and then select the **Oracle version** from the dropdown list.
5. Click in the **Optimizer Hint** column of the new record and then select the optimizer hint you want to use from the dropdown.
6. Click  at the top of the window to complete your edit.

Oracle - Transactions

These options can be found at **View | Toad Options | Oracle - Transactions**.

Execute queries in threads (Creates a separate session)

When checked, Toad will create a separate session specifically to execute queries. A new session will be created for each query being run from the Editor, Schema Browser, or Object Search window.

The default is unchecked.

Execute scripts in Toad session

When unchecked, Toad will create a separate session specifically to execute scripts.

When checked, Toad will execute scripts within the main session.

This provides considerably more flexibility for how scripts perform. For example, you can now execute a script with a DISCONNECT command in it:

- If the option is checked, it will disconnect the Main Toad session.
- If the option is unchecked, the disconnect will execute correctly in its separate session, having no adverse affect on the main Toad session.

The default is unchecked.

Commit after every statement

When checked, Toad will commit every time a statement is run, after any posted edits are made in the grid, and after a row is deleted in the grid.

The default is unchecked.

Use a separate connection when Toad itself is generating transactions

When Toad is putting data into the Explain Plan tables, this setting will force Toad to use a separate connection.

Note: When using this option and connecting to a RAC instance, you must have the TNSNAMES entry for the instance where the server directed the transaction. Or, you must connect directly to an instance of the cluster without letting the server assign an instance.

The default is unchecked.

When Closing Connections

Commit

When selected, Toad will automatically commit when closing a connection.

Rollback

When selected, Toad will automatically roll back any changes before closing a connection.

Prompt For Commit/Rollback when changes detected, or detection is not possible due to lack of privileges on dbms_transaction

When selected, Toad will always prompt you when you close a connection if any changes are detected, or if detection is not possible.

This is the default.

Reminder: Oracle will perform a commit after any DDL modifications.

Proc Templates

This option lets you add and remove templates. You can add as many or as few as you need.

To access proc templates

» Access this option from **View | Toad Options | Proc Templates**.

To add a template

Note: Templates must be created before you add them. Include the CREATE OR REPLACE statement. The macro %TriggerOpts% will receive the trigger options you select when creating a new trigger.

1. Click **Add**.
2. Select the **Object type for this template**.
3. Click in the **Display Name** field for the new template and edit the name to something descriptive.
4. Enter the filename of the SQL file that contains your template, or select it.
5. Click **OK**.

Note: There are two template types that you can use only within packages. These are Package Function and Package Procedure. You can create and edit these templates from the Toad Options | Proc Templates page, but you cannot access them directly from the Create PL/SQL Object window. See "Using a package function or package procedure template from the Create PL/SQL Object Window" (page 902) for more information.

To delete a template

1. Select the **template** you want to remove by clicking on it.
2. Click **Delete**. A confirmation dialog box appears.
3. Click **OK** to remove the template.

To edit a template

You can easily edit a template through an external editor (configure from Toad Options | Proc Templates).

1. Select the **template** you want to edit by clicking on its name.
2. Click **Edit File**. The external editor opens with the template loaded.

Note: you must have an external editor specified in Toad Options | Executables to use the edit feature. See "Executables" (page 654) for more information.

3. Edit your template and save it.

Substitution variables

This lets you add and remove template substitution variables. These variables are used to populate the New Procedure templates with default values or values in addition to the Toad defined variables (for example, %DATE%, %TIME%). You can add any substitution string you like and a default value for that string.

Value for %username% variable

This value you enter in the box will be substituted automatically for %USERNAME% when new procedure templates are read up into the Editor.

The default is blank.

Query Builder

These options can be found at **View | Toad Options | Query Builder**.

Behavior

Automatic AutoJoin

When selected, this feature will automatically check foreign key constraints and join tables that are dropped into a model with other tables. If this option is unchecked, then you can manually

join tables with the table popup menu.

The default is checked.

Include schema in generated SQL

When checked, this feature will always precede the table name with the schema name (such as, myschema.mytable) in the generated SQL. Schema names are always used if the table belongs to a different login.

The default is unchecked.

Automatically Select All Columns

When checked, this feature automatically selects all columns when a table is added to the Query Builder. If unchecked, no columns are selected, and must be selected manually.

The default is unchecked.

Allow Cartesian Joins

This option, when checked, lets you allow cartesian joins between tables.

The default is unchecked.

Warn

When selected, Toad will warn you when you have created a cartesian join.

The default is selected, but only in effect if Allow Cartesian Joins is selected.

Use ANSI Syntax

If checked, the join syntax will be ANSI if the database is 9i or higher.

If the database is less than 9i, ANSI syntax will not be used in any case as versions earlier than 9i do not support ANSI syntax.

The default is checked.

Open full screen from Schema Browser

This option, when checked, has Toad open the Modeler in full screen mode instead of minimized when opened from the Schema Browser.

The default is unchecked.

Limit visible columns to n when adding tables to the model area

When checked, this option limits how many columns display in the table model at one time. Other columns are available by scrolling. This can be useful if you want to model large numbers of tables.

The default is unchecked.

Display

Use these dropdown boxes to change the color of the joins in your model. In this way you can easily view join types:

- Inner join
- Outer join
- Auto join

Object Font

Click this option to change the font used in the Query Builder for displaying the names of objects.

Functions

This is the list of functions displayed in the Field Definition dialog boxes.

- To add a function to the list, enter it in the box and click the **Add** button. Added functions appear at the bottom of the list.
- To remove a function from the list, select it and click the **Remove** button.

Caution: Removing a Function happens immediately, without warning. However, the text remains in the box. If you click **ADD** immediately after removing a function you can restore it.

RMAN Templates

This screen provides a central location to list your RMAN templates and the path to them so that you can run them from Toad.

To add a template to the list

1. Click **Add**.
2. Enter the display name for this template. This is the name that Toad will display when you choose to Generate an RMAN script.
3. Enter the full path to where the template resides, or click  and navigate to it.
4. Click **OK**.

To delete a template from the list

1. Select the template you want to delete.
2. Click **Delete**.
3. Confirm that you want to delete the template by clicking **Yes**.

To edit a template

1. Select the template you want to delete.
2. Click **Edit File**.
3. When the file opens in your external editor, make your changes, and then save the file.

Schema Browser - Data

These options can be found at **View | Toad Options | Schema Browser - Data**.

Data Tab

Save layouts

When checked, Toad automatically saves the Data tab grid layouts with respect to column order, and columns to exclude.

Note: Sorting and Filtering are a function of the data filters and are automatically saved, whether or not this option is checked.

The default is unchecked.

Set focus to table data grid after selecting table

If this option is selected and you have the data tab selected in the right hand side, when you change tables in the Schema Browser focus will remain on the table data grid.

The default is unchecked.

Highlight columns populated by sequence/trigger pair

When a sequence/trigger pair has been created, selecting this option will highlight any columns populated by that method. See "Highlighting columns populated with a trigger/sequence pair" (page 951) for more information.

The default is checked.

Enable value lookup for foreign key constraints

When checked, you can look up foreign keys in the data grids.

The default is checked.

Include disabled FK constraints

This option is only available when Enable FK lookup is checked.

When checked, this option includes disabled Foreign Key constraints in the data grid lookup window. See "The Foreign Key Lookup Window" (page 1081) for more information. If unchecked, only enabled constraints will display when you perform a look up.

The default is checked.

Use NOPARALLEL hint

On tables that have parallelism (degree or instances > 1), Oracle runs multiple processes when you query them. In this case, the processes are not removed until the cursor is closed (in other words until you close the Schema Browser or move to a different table). Since the Schema Browser Tables Data page does not do any heavy processing, these processes can be better used elsewhere.

When checked, Toad will use the NOPARALLEL hint in the data grids, making the queries consume less of Oracle's resources.

The default is unchecked.

Don't select BLOB/CLOB fields in data grids

When checked, the data panel of the data grids will not display BLOB or CLOB fields. This can save loading time. When unchecked, the field is selected and displayed.

The default is unchecked.

Warn after n fetches (n records)

When selected, Toad will warn you when *n* number of fetches have been made.
The default is unchecked.

Fetch 25 rows at a time through db links

Use this option to limit how many rows Toad fetches through a db link. Limiting this can improve performance.

The default is unchecked.

Schema Browser - Left Hand Side

These options are found at **View | Toad Options | Schema Browser | Left Hand Side**.

Refresh Schema Browser

After an object is created

When checked, if you create a new object from the Schema Browser window, Toad will refresh the window after the object has been created, listing the object in the object pane.

The default is unchecked.

After an object is altered

When checked, if you create a new object from the Schema Browser window, Toad will refresh the window after the object has been created, listing the object in the object pane with any changes made to it.

The default is unchecked.

History

Limit to *nn* Items

Use this box to select the number of items the browser history will remember. See "Details Pane Toolbars" (page 981) for more information about the Browser History.

The default is 25 items.

Restore History on connection

If this option is checked, if you disconnect and reconnect Toad will remember your Browser history. If unchecked, when you end the connection the Browser history will be lost.

The default is checked.

User/Schema Lists

Show All Users

This is the default. All users are displayed in the user list.

Only Show Users That Own Objects

If checked, Toad will only show users who own objects. This is an alternative to the Oracle User List selection process. (See "Configure User Lists" (page 268) for more information about Oracle User list selection.) For example, if your environment includes only a few schemas that own objects granted to hundreds of schema names for security reasons, then checking this option will list only the few schemas that own objects instead of a long list of all the schemas. So, this filter makes the list more manageable.

The default is unchecked.

Only show users that own objects excluding Synonyms

If checked, Toad will only show users who own objects, but exclude synonyms. So if a user owns synonyms, but nothing else, that user will not be displayed.

Only show users that own objects excluding Synonyms and Temporary Tables

If checked, Toad will only show users who own objects, but exclude synonyms and temporary tables. So if any user owns synonyms and/or temporary tables, but nothing else, that user will not be displayed.

The default is Show All Users.

Filters

Save Filters for object lists

If checked, Toad will save the browser filters to disk, in files named SCHEMA.FLT in the \Toad for Oracle\Temps folder.

If you want to reset your Schema Browser filters each time you close and open Toad, then uncheck this option.

The default is checked.

Show Filter dialog before refreshing

If checked, before the Schema Browser window is loaded, a Filter dialog box appears. Enter filter criteria, and then the Schema Browser will load with only those objects matching the filter.

The default is unchecked.

When Copying object names to clipboard

Items separated by commas

When this option is selected, the list of objects will be pasted all on one line, separated by commas.

One item per line

When this option is selected, the list of objects will be pasted on multiple lines, one object to a line. This is the default.

Visual

Toolbars above object lists

When checked, the toolbar of commands appears above the object lists in the left hand side of the Schema Browser.

When unchecked, the toolbar is hidden. The default is checked.

Tab/Drop-Down Icons

When checked, the icon associated with the object in question is displayed on the object tab or beside the name in the drop-down object list.

Unchecked, the graphic is hidden. The default is unchecked.

Item Hints

When checked, hovering your pointer over an object on the left hand side provides a pop up hint describing the object.

The default is checked.

Font & Color

Use the font and color buttons to change the font and set a background color for the Schema Browser left hand side.

Use same schema after changing sessions

If checked, when you change sessions the schema will be the same.

The default is unchecked.

Fetch table names from Oracle as needed

If this option is selected, when you change a detail, Toad will automatically refresh the table name list in the Object list. If left unchecked, table name lists will not be refreshed until you refresh them manually.

The default is unchecked.

Milliseconds for list search timer on LHS lists

The number entered in this spinner sets the amount of time that Toad waits between keystrokes when you type an object name and before it goes to it on the left hand side. This option applies to tabs that allow multi-selection of objects and are not tree views.

The default is 900 milliseconds.

Schema Browser - Right Hand Side

The options on this page are found on the **View | Toad Options | Schema Browser | Right Hand Side** page.

Packages

Sort package procedures

If this is checked, when you expand the hierarchical view of packages in the Schema Browser, procedures and functions in the specification and body display in alphabetical order.

When unchecked, they display in the order they appear in the code.

The default is unchecked.

Show Body when Package Name is Selected

The default is unchecked.

Omit SYS objects from Procedure Dependencies List

The default is checked.

Compile Mode...

Click this button to select how Toad refreshes the Schema Browser when you compile an object from the following options:

- Refresh items one by one
- Refresh entire Left Hand side when complete
- Don't ask before compiling in the Schema Browser (unchecked)

The default is Refresh items one by one.

Tables - Columns Tab

List primary key columns

When checked, Toad will display the list of Primary Key columns, on the Tables/Columns tab, to the right of the Show Comments drop down list. For some tables with long column names, and/or compound primary keys, this label might not be long enough. Toad now places a small black triangle next to each column in the columns list that is a Primary Key column. The default is checked.

Include hidden columns

When checked, Toad will display hidden columns as well. The default is unchecked.

Show Column length info with Column data type

If checked, columns will show, in the columns tab, in the format "VARCHAR2(20)" including max length, scale, and precision (if applicable). If unchecked, length, scale, and precision will display in separate columns in the grid.

The default is checked.

Allow extra lines for column comments

If checked, the comments are shown in the grid and are wrapped so that you can see the full text of the comments. The rows of the grid are resized so that the full column comments are shown.

If unchecked, the columns take up one row each, and are no longer wrapped, so only what fits on one line is shown.

The default is checked.

General

Show Create/Alter dates

If checked, create and update dates for an object selected on the left panel in the Schema Browser will display at the top of the right panel. Unchecked, these dates do not display. The default is checked.

Update RHS on database object selection in LHS

If this option is selected, when you select an object from the Objects panel in the left hand side, Toad will automatically refresh the details in the details pane. If this is unchecked, details will not be refreshed until you refresh them manually.

The default is checked.

Only show top-level grants for Users, Roles, Sys Prvs, and Resource Groups tabs

When unchecked, the entire hierarchy of dependencies is displayed for all grants, regardless of level. For example, if you have been granted a DBA role, you will be able to expand that role and see the grants indirectly provided by this role (for example, CONNECT).

If this option is checked, only grants that have been directly granted to the user are shown. Checking this option greatly improves the loading time of those Schema Browser tabs, but clearing it gives you a detailed view of what privileges a user/role has been given.

The default is unchecked.

When copying column names to clipboard

Items separated by commas

When this option is selected, the list of objects will be pasted all on one line, separated by commas.

One item per line

When this option is selected, the list of objects will be pasted on multiple lines, one object to a line. This is the default behavior.

Schema Browser - Types Tab

These options can be found at **View | Toad Options | Schema Browser - Types tab**.

Capitalize keywords during code generation

If checked, when code is generated to create the objects, keywords will be capitalized.

The default is checked.

Autoload Tables Based On Object

If checked, will automatically load and display the tables based on the selected object and display them on the Properties tab.

The default is unchecked.

Autoload Columns Implementing Object

If checked, will automatically load and display the columns implementing the selected object on the Properties tab.

The default is unchecked.

Autoload Dependencies

If checked, will automatically load and display the objects that the selected object is dependent upon.

The default is unchecked.

Name New Objects

This is the name that will be given to a new object, until you rename it to something more meaningful. For each successive object, a number will be appended to this name, for example, NEWOBJECT1, NEWOBJECT2, and so on.

Name New Attributes

This is the name that will be given to a new attribute within a given object, until you rename it to something more meaningful. For each successive attribute, a number will be appended to this name, e.g., NEWATTRIB1, NEWATTRIB2, etc.

Name New Methods

This is the name that will be given to a new method within a given object, until you rename it to something more meaningful. For each successive method, a number will be appended to this name, e.g., NEWMETHOD1, NEWMETHOD2, etc.

Name New Collections

This is the name that will be given to a new collection of objects, until you rename it something more meaningful. For each successive collection, a number will be appended to this name, e.g.: NEWCOLLECTION1, NEWCOLLECTION2, etc.

Default Method Restrictions

Select the desired method restrictions: WNDS, WNPS, RNDS, and/or RNPS.

The default is all items unselected.

Default Attribute Type

This is the default data type for a new attribute.

The default is **VARCHAR2**.

Default Method Type

This is the default method type for a new method when the New Method button is clicked. Alternate method types can be selected from the drop down menu.

The default is Procedure.

Default Function type

This is the default function type for a new function.

The default is INTEGER.

Source Control Options

These options can be found at **View | Toad Options | Team Coding/Source Control**.

Access this window from **View | Toad Options | Team Coding**. This is where you set up the user parameters for using Team Coding with Toad. In addition, there are some options that relate only to Toad's legacy source control functionality.

Third Party File Based Source Control

Source Control Provider

Choose the source control provider from the dropdown menu. This list is populated from your computer's registry.

If you do not have a source control provider installed, this menu will only contain the word **<none>**. You cannot use source control with Toad unless you have a provider installed. See "Third Party File Based Source Control" (page 780) for more information about providers that have been tested with Toad.

Prompt for Check Out comment

Check this box if you want Toad to prompt you for a comment when you check out a file.

The default is unchecked.

Prompt for Check In comment

Check this box if you want Toad to prompt you for a comment when you check in a file.

The default is unchecked.

Prompt for Add File comment

Check this box if you want Toad to prompt you for a comment when you add a new file to source control.

The default is unchecked.

Team Coding

Disable login prompt on connection

This option is applicable only when Team Coding is configured to work with a third-party provider. It prevents the VCS provider login from displaying when you connect to a Team Coding enabled database.

The default is unchecked.

Automatic Check-Out

Select automatic check-out to force developers to check out an item when they open it.

The default is unchecked.

Automatic Check-In

Select automatic check-in to force developers to check in an item when they close it.

The default is unchecked.

Prompt for Check Out Comment

The default is checked.

Prompt for Check In Comment

The default is checked.

Prompt for Check In All on Exit

The default is checked.

Schema Replacement for Stored Code, Triggers and Views

These options work in two ways. When checked:

1. When you use the Import to database function to import code from one schema to another in the Code Control Groups window anywhere the original schema's name appears in the code, Toad replaces it with the destination schema. See "Importing Objects" (page 809) for more information.
2. If you have a user mapped to a code control group, where the master owner's schema appears in the code, Toad replaces it with the mapped user's schema name in the mapped user's schema.

For example, If you check out an object into the mapped user's schema and change it, then check it in, the copy in the version control repository will be updated, with the master user's schema instead of the mapped user's schema.

Schema replacement defaults are as follows:

- Schema Replacement for Stored Code - The default is checked.
- Schema Replacement for Triggers - The default is checked.
- Schema Replacement for Views - The default is checked.

Enable Actions in Schema Browser & Project Manager

The default is checked.

Simultaneously Check Out/In Spec and Body

The default is unchecked.

Default: Force New Revision on Check-In

Select this option to automatically save the object that is being checked in as a new revision, regardless of whether it has changed.

The default is unchecked

Default Working Directory

Enter the path of the working directory or click the browse  button to select it from a browse window.

VCS Provider Options

See "CVS Configurations Options" (page 814) for more information about these options.

Startup

These options can be found at **View | Toad Options | Startup**.

Show login window

When checked, the login window is displayed at startup to let you log in to an Oracle instance.

The default is checked.

Allow multiple copies of TOAD to be loaded

When checked, you can open multiple copies of Toad at one time.

Unchecked, only one copy of Toad can be open on your desktop at any one time.

The default is checked.

Check for Access to DBA Views

If you have access to the DBA views, such as DBA_TAB_COLUMNS, then check this option. At session startup, Toad will see if DBA views are available to that particular user schema. If so, Toad will query the Oracle Dictionary using the DBA views instead of the ALL views such as ALL_TAB_COLUMNS. DBA views are much faster than ALL views because the DBA views do not have the security checks. No security checks means faster queries.

Note: If you are running the DB Admin Module, Toad will always query to see if you have the DBA role, SELECT ANY TABLE, or specific access to the DBA view.

The default is checked.

Play Toad Wave File

If checked, Toad will "croak" when starting.

Note: If you are using any software which places the sound device in exclusive/locked mode, Toad will hang on startup. If you are experiencing this, or having sound card problems, uncheck this option.

The default is checked.

Download Toad Tips once a month

When selected, Toad will access the Toad internet site and download any new ToadTips for you once a month. This will **not** turn Toad Tips back on if you have told Toad to hide them. See "Toad Tips" (page 111) for more information about tips.

The default is checked.

File To AutoLoad on startup

This file will automatically be loaded into the first Editor window that appears after a database Login. Click  to choose a file.

The default is blank (display no file).

File to AutoExecute on new connections

This lets you set application info upon startup. The selected script file will execute after each new connection and the output displays after the normal "do you want to see output" prompt.

Toolbars/Menus

These options can be found at **View | Toad Options | Toolbars/Menus - Toolbars**.

Behavior

Auto-save current desktop

When checked, Toad will save the current desktop. Toad saves at three points: on close of Toad, when you change tabs, and when you change the desktop layout. See "Configuring your Desktop" (page 858) for more information. If you have multiple desktops open, the last one active is the one that is saved.

The default is checked.

Display

Show window titles on Window Bar

If checked, Toad will show the window title, for example "Editor" on the window caption. If unchecked, it will display only the icon for that window type.

The default is checked.

Show connect strings on Window Bar

If checked, will show the schema username, the "@" symbol, and the database alias in the window caption on the applicable windows. If unchecked, will show just the schema username.

The default is unchecked.

Use Vertical Text when Toolbars are Vertical

This option controls the horizontal/vertical orientation of text on the toolbars when docked vertically. If the option is checked, text on the toolbars will be displayed vertically. If the option is unchecked, the text is displayed horizontally, widening the toolbar.

The default is checked.

Multi-Line Window Bar

When selected, if you have many windows open, Toad displays the window bar in multiple lines when it runs out of room on the first line.

The default is unchecked.

Multi-Line Connection Bar

When selected, if you have many connections open, Toad displays the connection bar in multiple lines when it runs out of room on the first line.

The default is unchecked.

Quick connect/disconnect dropdown count

Enter the number of connections that should be listed in the Quick Connect dropdown  in the main toolbar.

The default is 9.

Connection Bar and Window Bar Fonts

Set the fonts for the connection bar and window bar descriptions here. You may want to change the font or the font size so that your descriptions fit on the buttons or are easier to read.

Visual Style

Select the visual style you want to use in Toad's display. Options include:

- Standard
- Enhanced
- Flat
- Office 2003
- XP

The default is Enhanced.

Toolbars/Menus - Shortcuts

These options can be found at **View | Toad Options | Toolbars/Menus - Shortcuts**.

Use this window to change the shortcuts for various commands.

See "Menu hotkeys" (page 129) for more information on changing command shortcuts.

Variables

Use the Variables options window to set any user variables and values that you want to use on a regular basis. In addition, there is a list of system variables that you can use within ToadApps, settings, and other places throughout Toad.

To add a new variable

1. From **View | Toad Options**, click **Variables**.
2. Click the **Add** button.
3. Enter the *variable name* in the **Variable** column in the grid
4. Enter any **value** you want to include.
5. Enter a **Description** of the variable in the Description column.

Windows

These options can be found at **View | Toad Options | Windows**.

Behavior

The windows options let you specify which settings Toad should save for each major window. You can check individual windows to:

- Available - makes the selected Toad feature available for use. Clearing the check box hides it from general use, although you can come back to the options window and select it at any time.
- Save Size - saves the window size as you set it
- Save Position - saves the last window position
- Auto open - opens the window upon making a connection
- One/connection - only opens one of that window per connection
- One/Toad - only opens one of that window per instance of Toad

Auto-open bring to front

If you have several windows selected for auto open, you can choose which of them you want to be active on opening Toad.

Describe windows

Select the way you want Describe windows to behave. The default is Stay on Top.

MDI	If selected, the F4 popup Object Describe windows will be created as an MDI child window. This means that they will be accessible from the Windows menu, and
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	<p>you can open as many as you want and they will not get lost behind the main Toad window.</p> <p>Note: MDI stands for multiple document interface. In an MDI application, more than one document or child window can be opened within a single parent window. This is common in applications such as spreadsheets or word processors - one window, usually called the MDI parent or MDI container, contains many other windows, usually called child forms.</p>
Stay on top	If selected, the DESCRIBE window will stay on top of all other windows in Toad until you close it. This is the default.

Scroll pinned windows at *n* millisecs

When selected, pinned windows will scroll out and open when rolled over by the pointer at the rate specified.

You can specify the rate at which a pinned window will open. The default is 300 milliseconds.

Display

Show USER@DATABASE in captions

When selected, the User and database is displayed in window captions. Unchecked, only the window title is displayed.

The default is checked.

Use Alias instead of database (set in login window)

The default is unchecked.

Show spec and body in package describes

If checked, both the spec and the body will be included in the describe.

The default is unchecked.

Language Management

Language Management Overview

The Toad Editor is an extremely powerful editor, and parts of this power come from its ability to manage language use. You can choose to have the editor parse in PL/SQL, Java, C++, HTML, or any number of other languages, including custom language.

Toad takes the source, and parses it according to the categories you have set up, breaking it into Tokens (parts of code defined by type). It then applies the rules you have set in order to apply such things as syntax highlighting and code folding.

Managing these languages has an effect on many areas of Toad. Syntax highlighting is based upon defined command words, as is code folding and the make code functionality. The ability to set up sub languages means that you can define capitalization effects that apply only to your PL/SQL code, and not embedded java, perl, or other languages.

The Language Management area of Toad Options provides you the ability to set language and highlighting rules, define tokens (including statements, comments, and other defined areas), set up code templates and sub languages, among other things.

To access the language management window

1. From View | Toad Options, select the **Editor - Behavior** node.

In the Language Management area, select the language you want to edit and click one of the following:

...	Edit the selected language.
Add	Create a new language.
Delete	Delete the selected language.
Clone	Create a new language based on the selected one.
Code Templates	Go directly to the Code Templates tab.
Syntax Highlighting	Go directly to the Syntax Highlighting tab.

Language Management Tabs

The component parts of languages can be edited from several tabs in the language management area. Information on these tabs is interrelated, and settings in one tab can affect settings in the others. This creates extremely powerful and configurable parsing capability.

Tabs include:

- General tab (page 692)
- Highlighting tab (page 692)
- Tokens Tab (page 693)
- Parser Tab (page 694)
- Rules Tab (page 695)
- Sub Languages Tab (page 698)

- Code Templates Tab (page 699)
- Grammar (page 700)

Syntax Highlighting

The Editor supports flexible syntax highlighting. The highlighting is language-specific, and is configurable in the Language Management area of the Toad Options.

The list of reserved words used in each language is also customizable. If during a Toad session you have used any window or function that retrieves the table names for the active Oracle session, table names will be colored as well.

Syntax highlighting is based on your selection of languages. You can do this from either the options window, or from the editor itself.

To select a language for highlighting

» Do one of the following:

- From the **Toad Options | Editor - Behavior** page, in the **Language Management** area, select the language you want to apply and then click **OK**.
- In the editor, right-click and select **Language**. From the menu provided, select the language you want to use.

Syntax Highlighting Table names, Views and Procedures

Toad can syntax highlight the table names, views and procedures in the current schema.

If the highlight table names (or views, or procedures) option is selected Toad will load and highlight these objects from your schema automatically. If it is not checked when you make a connection, but you turn it on while you are working, names will be highlighted as soon as you load them (by opening the Object Palette, or pressing **CTRL+**, or so on). If not checked, they will not be highlighted even when the object palette is loaded, loaded in the Schema Browser, and so on.

To highlight table names

» From View | Toad Options | Editor - Display, select **Highlight Table names** in the Syntax Highlighting area.

To customize table names colors

1. From View | Toad Options | Editor - Behavior, select the language you want to use in the Language Management area.
2. Click **Syntax Highlighting** and in the Styles list select **Toad_UserTables**.
3. Change the styles as described in the Highlighting tab topic. See "Highlighting tab" (page 692) for more information.
4. Click **OK**.

Syntax Highlighting SYS View Names

Toad can also syntax highlight SYS View names (for example, ALL_TABLES).

To initially populate SYS view names

- » Using either the SYS schema or a schema with the DBA role, open the Schema Browser window to the **Views** tab, and if necessary select SYS from the username dropdown list.

Toad queries all SYS views, and cache the list in Toad for Oracle\Temps\DATABASE_ALIAS\SYSVIEW.TXT.

If you want to reload the list, simply delete the appropriate SYSVIEWS.TXT file and repeat the above steps. Be aware that different databases have different lists of SYS views, e.g., Oracle7, Oracle 8.0.5, Oracle 8i, Personal Oracle, and so on.

To customize table names colors

1. From View | Toad Options | Editor - Behavior, select the language you want to use in the Language Management area.
2. Click **Syntax Highlighting** and scroll down in the **Styles** list to **Toad_SYSViews**.
3. Change the styles as described in the Highlighting tab topic. See "Highlighting tab" (page 692) for more information.
4. Click **OK**.

Parser Scripts

The primary configuration for syntax parsing and highlighting in Toad comes from a parser script file that is loaded at runtime. This is the lexer.lib file, and is edited when you use the Language Management options. See "Language Management Overview" (page 688) for more information.

You can modify the list of reserved words.

To modify reserved/keywords

1. From the Language Management | Rules tab | Keywords, click the **Conditions tab**.
2. Modify keywords in the tokens panel. You can delete words, add new words, make words case sensitive, and so on.

You may want to add too that they should go to the reserved words rule (check that name, not sure that is what it is called exactly) and go to the conditions tab to modify the list of words

Removing Reserved and Keywords

If you want to add or remove Oracle SQL Reserved words, PL/SQL Reserved words, or Oracle keywords from the lists that are syntax highlighted, it can be done from the Language Management | Rules tab. Highlighting options may be changed from the Language Management | Highlighting tab.

Language Types

Language types are defined in the **Toad Options | Editor - Behavior | Language Management** area. You can create a new language by cloning one of the provided ones, or manually. The general tab specifies which file extensions are used with which language.

General tab

Within the Language Management options area, the general tab defines the basic areas of the language you are editing. See "Language Management Overview" (page 688) for more information.

Within this tab, you can specify file extensions that will automatically use this language when opened, the default block comment and style for the text; and the line style you want to use.

Name

The name box contains the name you want to use for this parser. For example, if you are coding in PL/SQL, there is a PL/SQL language defined.

File extensions

Any file extensions entered in this box will affect how Toad parses the code that you are opening. For example, the SQL, FNC, PKB file extensions will always be opened and parsed with the PL/SQL language unless you specify otherwise.

Block comment

Enter the default marker for creating a block comment. This is the marker that Toad will use to view the following text as a comment.

Default Style

This is the default text style you want to use for text when working in this language. For the most part, the token that identifies this style should be default.

Line Style

This style applies when the line is active (the cursor is located in it) in the editor.

Highlighting tab

Within the Language Management options area, use the highlighting tab to configure highlighting settings for specified styles. These styles can then be applied to tokens or rules as necessary. See "Language Management Overview" (page 688) for more information.

In the styles list, you can add, edit, delete, copy from (clone) or disable styles.

Note: The default highlighting style cannot be renamed or removed.

Style Settings

Style type

Select a style type for this style setting. The default is default, which means that it reverts to the style set in the default style. You can choose a custom font, which allows you to change all of the font settings as described below, or a limited custom font, such as background/foreground (which lets you set only the background and foreground colors).

Background

Choose a color for the background of the text.

Font color

Select a color for the text itself.

Capitalization effect

Select the capitalization format you want for the text:

- Unchanged
- Uppercase
- Lowercase
- Initial Caps

Custom Font

If you have selected Custom Font under Style type, click the Custom Font button to set the font.

Font Style

Select one or more of the following styles:

- Bold
- Italic
- Underline
- Strike Out

Borders

You can choose to place a border on one or more sides of the text in the selected style. In this area, select the line type and thickness for each border (left, right, top or bottom) and the color Toad should make that border.

Tokens Tab

Within the Language Management options area, use Tokens tab to define tokens that can be used within rules and parser specifications. These are specific language constructs: for example, PL/SQL has Strings, Integers, Comments, etc.

Parser Tab

Within the Language Management options area, use the parser tab to define the way in which Toad finds tokens within the code. See "Language Management Overview" (page 688) for more information. The window is separated into three areas: Categories, Parse, Advanced.

Toad uses regular expressions to define where a token starts and ends. Tokens must be defined in the Token tab before they can be applied to a category.

Categories area

The category list contains the categories that are available for definition. They will be parsed in the order they are listed. When working through code, Toad will stop attempting to match the definitions as soon as one of the rules met.

In this area, you can:

- Add new categories - create a new category that you can define as desired.
- Edit a category - display an edit dialog so you can rename the category.
- Delete a category - delete the selected category. No warning is issued.
- Copy from a category - display the copy from dialog. Select the language and any categories you wish to include in the definition. You can choose multiple categories.
- Disable a category - disable the selected category until you enable it.
- Move categories up or down in the list - change the priority of a selected category.

Parse tab

Use the parse tab to specify the regular expression test for the selected category, and set the token type and default highlighting style. See "Examples of Regular Expressions" (page 971) for more information.

Select a category and the details for that category are displayed here.

Regular expression test

Edit or add a regular expression in this box. This expression will define what Toad looks for when attempting to apply the category to code.

Evaluates to token type

Select a token type from the dropdown list. See "Tokens Tab" (page 693) for more information.

Default Highlighting style

Select a default highlighting style to be used on this category of code. The default highlighting style will be applied only if the code does not also satisfy any rules as defined on the Rules tab. See "Rules Tab" (page 695) for more information.

Advanced tab

While the settings on the Parse tab provide enough information to locate simple tokens, you may want to narrow the focus even more. The advanced tab provides methods to require specific parents, or to enable only within a certain character position.

Parent block

Use the parent block box to set the range for a parent limitation. When this is set, the category only applies to sections of code that begin with the selected range. By default, this affects code where the code either directly follows the parent range, or is included in another range nested within that parent range.

You can also specify the following amendments to this:

Strict

Only includes code that fits the regular expression defined on the Parse tab, and that directly follows the parent range. For example, is directly within a "CREATE OR REPLACE procedure" definition: not within an IF clause within that CREATE category.

Not a parent

Only includes code that fits the regular expression defined on the Parse tab, and is NOT part of the specified parent block.

Enabled from character position: _____ to _____

When a range of character positions is included, only code which fits the defined regular expression, the parent rules (if any) and is between those character positions will be included in the category.

Rules Tab

Within the Language Management options area, the rules tab contains all rules applied to tokens after parsing is complete. See "Language Management Overview" (page 688) for more information. These rules supersede any previous designations of categories, defaults, or tokens. As such, code folding is determined by these rules, as is much of the syntax highlighting specifications.

Rules can have multiple conditions, or only one. All conditions are applied in numerical order, from 1 to 2, and so on.

Rules are, like Parser categories, applied in the order they are listed in the Rules Names list. If a higher priority rule is satisfied, Toad will not apply later rules.

Conditions tab

The conditions tab provides an area for you to specify the conditions to define the rule selected in the rules list. You can specify any number of conditions.

To add a new condition

1. Click + in the Condition: area.
2. Select one or more token types where the condition should apply.
3. Select an operator.
4. Select the tokens you want bound by the condition.
5. Repeat until all conditions you want established have been added.

To delete a condition

1. Select the condition you want to delete in the condition list.
2. Click the - button.

Properties tab

The properties tab is the active tab by default. This tab specifies the rule type, style, and highlighting to apply if the rule is met.

Rule type

Specify the type of rule. This can include tag detector, line separator, range start or range end.

Change token type

You can use this option to change the identifier to a different token type. For example, for syntax highlighting purposes, you can take an "IF" token and apply "SELECT" highlighting to it.

Style

Select the style you want to apply to code that matches this rule. Styles are defined on the [Highlighting tab](#).

Range Highlighting

Select any range highlighting you want to apply to this code. Range highlighting is defined by the styles on the [Highlighting tab](#).

Collapsed text string

When you collapse text for code folding, the node created can have a collapsed text string displayed upon it for identification. Enter this string here. You can have Toad display the first token, or any token after by using the syntax:

%s0%s-1

where 0 is the first token, -1 is the next, -2 is the third, and so on. Anything after the last number will be displayed in its entirety.

For example, if you have a range beginning with "IF", %s0woo! will display as "IF woo!" when you fold the code.

Active Highlighting

Toad can highlight a range when it is active. When this is activated, highlighting will take place when the caret is positioned as specified.

Caret position box

Specify the caret position when Toad should highlight the code as active. You can choose it to be marked active when the caret is in the range, always highlight it, or highlight when the caret is within specific tokens. Use this dropdown to select the desired caret position.

Select minimal range

When checked, if ranges are nested, Toad will only highlight the first range where the caret is located, ignoring any parent ranges. When unchecked, Toad will highlight the entire range, including any parent ranges.

Draw block staple

When checked, a grey staple will be drawn around the range of code that can be folded. When unchecked, no staple will be displayed. The default is checked.

Self Closing Range

A self closing range is useful if you have a type of range where there is no consistent end of range marker.

When checked, Toad will not look for a close range rule to close the range. Instead, the close of the range is defined by the start of the next range.

The default is unchecked.

Advanced tab

While the settings on the Parse tab provide enough information to locate simple tokens, you may want to narrow the focus even more. The advanced tab provides methods to require specific parents, or to enable only within a certain character position.

Parent block

Use the parent block box to set the range for a parent limitation. When this is set, the category only applies to sections of code that begin with the selected range. By default, this affects code where the code either directly follows the parent range, or is included in another range nested within that parent range.

You can also specify the following amendments to this:

Strict

Only includes code that fits the regular expression defined on the Parse tab, and that directly follows the parent range. For example, is directly within a "CREATE OR REPLACE procedure" definition: not within an IF clause within that CREATE category.

Not a parent

Only includes code that fits the regular expression defined on the Parse tab, and is NOT part of the specified parent block.

Gramma

If you have created specific grammar, you can add individual grammar to the rule. Select the grammar you want to use from the dropdown list.

Range Offset

Range offsetting changes what Toad considers the beginning (or end) of a range for code folding purposes. Ranges are defined by starting and ending tokens.

For example if you have a string of tokens as follows:

Token	A	B	C	D	E	F
Range Position	2	1	0	-1	-2	-3
Token	G	H	I	J	K	L
Range position	3	2	1	0	-1	-2

The Range starts at "C", then the token type C is position 0 for start of range.

The Range ends at "J", then the token type J is position 0 for end of range.

If you have set the beginning range offset at B, then Toad will hide all tokens to the right of it when you fold the code.

Cancel next rules

When this is set, Toad will cancel further processing of rules conditions when the condition is met. When it is clear, Toad will process all rules in order.

Relative to end of condition

This sets the parsing relative to the end of the condition: for example, if the condition specifies "CREATE OR REPLACE FUNCTION", when checked, Toad sets the 0 position at FUNCTION (the end of the condition). When unchecked, Toad will set the 0 position at CREATE (the beginning of the condition).

Sub Languages Tab

Within the Language Management options area, the Sub Languages tab defines any languages you want to use *within* the primary language. For example, PL/SQL can have Java embedded within it. If you have styles and rules defined that will change the capitalization of PL/SQL, you do not want it to affect Java in the same way, since Java is case-sensitive. In this case, you can set up a sub language of Java so that Toad can differentiate between the two and use different highlighting and code folding rules as appropriate.

To set up a sub language

1. From the editing screen of the main language, select the **Sub Languages** tab.
2. In the **Sub Language** box, select the **language** you want to embed.
3. Select a default **style** for the sub language. This can be any style defined on the Highlighting tab, or <none>. See "Highlighting tab" (page 692) for more information.
4. Use the parent block box to set the range for a parent limitation. When this is set, the category only applies to sections of code that begin with the selected range. By default, this affects code where the code either directly follows the parent range, or is included in another range nested within that parent range.
 - Select **Strict** to include only code that directly follows the parent range. For example, is directly within a "CREATE OR REPLACE procedure" definition: not within an IF clause within that CREATE category.
 - Select **Not a parent** to include only code that is NOT part of the specified parent block.
5. Choose to start at the beginning or end of the text.

Set the **start** and **end** conditions.

Note: These should be regular expressions that define a starting marker and an ending marker for the language you want to embed.

Code Templates Tab

Within the Language Management options area, you can set up and delete code templates from this tab. See "Language Management Overview" (page 688) for more information. Different code templates can be developed for different languages.

To add a template

1. From the Toad Options | Editor - Behavior page, select the language where you want to add a code template and click **Code Templates**.
2. Click **Add**.
3. Enter a shortcut name and a description. Click **OK**.
4. Click in the editor window below the template list and enter the text you want to be included. You can include substitution variables and cursor placement as described in Code Completion Templates.
5. Click **OK**.

To edit a template

1. From the Toad Options | Editor - Behavior page, select the language where you want to add a code template and click **Code Templates**.
2. Select a completion template and then click **Edit**.
3. Change the shortcut name and a description. Click **OK**.

-
4. Click in the editor window below the template list and edit the code template.
 5. Click **OK** or **Apply**.

Advanced Templates

An advanced template allows you to use pipe characters literally in the code template. A simple (not advanced) template uses the pipe character to determine caret placement when the template has been inserted into the editor.

An advanced template uses `<caret>` to determine where the caret will go. Advanced templates also support inserting data from clipboard. Clipboard data is inserted where `<paste>` appears.

To use the advanced template

1. In the **View | Toad Options | Editor - Behavior** page, click **Code Templates**.
2. In the template grid, select the advanced check box beside the template you want to use in the advanced mode.

Grammar

Within the Language Management options area, the grammar tab is used for more detailed specifications than you can make easily from the rules tab. See "Language Management Overview" (page 688) for more information.

In fact, you can create a rule with no conditions, and from the Advanced tab select a grammar from the list, making it your only rule. See "Advanced tab" (page 697) for more information.

To access the grammar demo

1. From Toad Options | Editor | Behavior, in the Language Management area select **Pascal**.
2. Click **Edit**.
3. Click the **Grammar** tab.

Code Completion Templates

Code Completion Templates use a manual keystroke (**CTRL+SPACE**) to perform the substitution. Code templates are more than a single phrase and can contain line feeds, substitution variables and a cursor position indicator.

You can edit the Code Completion templates directly in the Language Management, **Code Templates** tab. See "Code Templates Tab" (page 699) for more information.

Example

One of the code templates defined in Language Management is:

```
entire cursor block (crbl)  
DECLARE
```

```
CURSOR c1 IS
SELECT | FROM WHERE;
clrec IS c1%ROWTYPE;
BEGIN
OPEN c1;
LOOP
FETCH c1 INTO clrec;
EXIT WHEN c1%NOTFOUND;
END LOOP;
CLOSE c1;
END;
```

Where:

- "crbl" is the macro for the template (the text YOU type)
- "entire cursor block" is the description of the template
- everything following until the next template is the body of the template

Note: Do not leave spaces between the end of the template description and the final right bracket! NT4.0 API calls to manage profile strings have a bug that will cause reading of the templates file to fail.

Keyboard Shortcuts

The default keyboard shortcut for Code Completion templates is **CTRL+SPACE**. Enter the template name (such as crbl) and press the shortcut to expand it.

Using a Template

When you enter the name of a template and press the shortcut key, Toad follows the following procedures:

- If the name you have entered does not match any of the names on the code template list, a dropdown listing of available code templates appears so you can choose the correct template.
- A dialog box appears listing the substitution variables and prompting you to enter values.
- Expands the code and replaces variables.
- Removes the cursor placement marker, and places the cursor there.

To use the code template

- » Type the macro (for example, `crbl`) and then press **CTRL+SPACE** to load the body of the template and place the cursor at the position of the vertical pipe character. If the word or phrase under the cursor does not match an existing macro exactly, a dropdown list of all macros is displayed.

Cursor Placement

If Toad finds a single pipe (|) in the template body, then when the substitution of the template is complete, the cursor is positioned at that point in the code. The pipe is removed, as it is used only as a marker for the cursor position. Only one pipe can be used this way in a code template.

Substitution Variables

The Code Completion templates also support substitution variables. Enter the substitution variable in the form of an ampersand followed by a valid simple Oracle identifier. For example, `&1` is not a substitution variable, but `&a` is.

When a template containing substitution variables is selected, you will be prompted to enter values. Any occurrence of the substitution variable is then replaced with the entered value.

Editing the Code Template List

Toad provides a list of default templates. As you use this feature, however, you will create templates that work better for your purposes, and you will want to edit the default templates.

You can edit and add templates to suit your needs in the Language Management window.

Auto Replace Substitutions

A substitution is a text phrase that corresponds to replacement text. For example:

- If you specify a substitution pair of ACT = ACTIVITY_CENTERS, when you type ACT and press space (or other word delimiters), ACT is automatically replaced by ACTIVITY_CENTERS
- If you specify a substitution pair of NDF = NO_DATA_FOUND and you type NDF and press a delimiter, NDF is automatically replaced by NO_DATA_FOUND

Auto Replace Substitutions are different from aliases in that you can use any group of characters to define and complete the replacement. Aliases do not change the text in the SQL. They are a method of referring to a table by a different name. Substitutions will actually change the text within your code to match the target keystrokes.

To edit Auto Replace entries

1. From the **Toad Options | Editor - Behavior** page, click **Auto Replace**.
2. Make changes in the **Auto Replace** grid.

Using Substitutions

When auto-replace is active, Toad uses several characters as auto replace activation keys. Toad will automatically replace an activation key with the substitution value when it reaches a terminator, for example the space key. For example, "teh" is by default set to replace with "the" in the editor. Or, you can enter "pack" and Toad will expand it to "package".

An activation key will cause a matched "replace" string immediately before the cursor to be replaced by the "with" substitution value. For example, if you have dept = DEPARTMENT in your auto replace file, you can enter the following:

dept [space] and the editor will expand to DEPARTMENT .

Or, you can enter dept: and the editor will expand to DEPARTMENT:.

Or you can enter dept; and the editor will expand to DEPARTMENT;.

Note: The activation key is always included in the expanded substitution.

You can edit this list of keys in the box if you have other needs.

Importing and Exporting Files

Also from the Editing options window, you can import and export auto substitution files.

Toad comes with a handful of substitution pairs. You can edit and add to the list from the Auto Replace dialog. You can then export the settings to a text file. Alternately, you can create or edit a substitutions file manually and then import it.

Export

Saves the auto replace settings to a separate text file. If you make many changes to your auto replace settings, it is recommended that you export them regularly for back up.

Note: If you do not export your settings to a file before you import a file, they will be lost.

Import

You can import a text file into Toad. This file can be created independently or by exporting the settings you have created in Toad.

Importing a file overwrites the current settings.

Editing a substitutions file

Because it can be tedious to add large amounts of information to the substitution file directly from the interface, you may want to edit or create a text file directly.

Use the format of string=replacement string. For example:

aax=AAX_ACCESSGROUP_APPLICATION

aca=ACA_ACTIVITY_ACTION

acc=ACC_ACTIVITY_CATEGORY
acd=ACD_ACTION_DESCRIPTION
acp=ACP_ACTIVITY_CONTACT_PARTIC

Printing

Printing

You can send data to the printer in several different ways from Toad. You can print text or code located in the editors, you can print the data from the data grids, and you can print reports using Reports Manager. See "Reports Manager Overview" (page 733) for more information.

Printing editor contents

When you print Editor text or Editor code, Toad will attempt to print in color by default. If you uncheck the **View | Toad Options | Editor -Display | Syntax Highlighting | Use when printing**, the code will be printed in standard black and white.

To print Editor text or Editor code

- » From the File menu, select **Print**.

Printing a Data Grid

You can print a data grid easily by following the procedure below. To customize the printed grid, see the Print Grid and Report Link Designer topics for more information on printing options.

To print a data grid

- » Right-click over the data grid and select **Print Grid**.

Print Grid

When choosing to print the results grid, you can choose one of two ways to print. You can print either the grid contents (the results of the query) only, or include the query that returned those results.

To include the grid query

1. Select the **Print Grid** menu item from the File menu or the popup menu.
2. In the Query area, select the **Print** box. Choose whether to print the query before or after the results.
3. Click **Print Preview** to access the Report Link Designer dialog box for more options before sending the data to the printer.

To print grid results

1. Select **Print Grid** from the File menu or the popup menu.
2. In the Query area, clear the **Print** box if necessary.
3. Click **Print Preview** to access the Report Link Designer dialog box for more options before sending the data to the printer.

Report Link Designer

You can change how you want to print from a data grid on the Report Link Designer.

To access Report Link Designer

1. Select **Grid | Print Grid**.
2. Click **Print Preview**.
3. Click .

Using the ReportLink Designer

Use this dialog box to select grid print options, and then print the grid contents to paper.

There are five tabs on this screen: [Options](#), [Colors](#), [Fonts](#), [Behaviors](#), and [Miscellaneous](#).

Any changes you make on these tabs are previewed in the right panel.

Title Properties

Clicking **Title Properties** opens a dialog box that lets you set a title for your report, and specify where it will print (such as the top of every page). Click the **Properties** tab to set the font, color and alignment of the title.

Options Tab

Show

- Bands - When checked, Toad adds a blank band (bar) to the top of the grid. The default is unchecked.
- Header - If checked, the column headers are included in the printout. If unchecked, column headers are not included. The default is checked.
- Footers – Not applicable to data grids
- Group Footers – Not applicable to data grids

Preview

If checked and if you have activated Preview Current Column, the preview columns will print. See "Working with Results" (page 877) for more information.

If unchecked, or if checked and you have not activated Preview Current Column, the preview columns will not print.

The default is unchecked.

Grid

- Node Grid - If checked, will print the column lines in a data grid. If unchecked, the column lines will not print in the data grid. The default is checked.
- Grid - If checked, the grid lines (the lines between the rows and columns) will print. If unchecked, the grid lines will not print. The default is checked.

Colors tab

The Colors Tab lets you set colors. You can set colors for the grid background, the preview column, the band, the header, and the grid line. The Transparent check boxes remove the colors and disable the associated color dropdowns.

- Group Node and Group Footers (and their color choices) are not applicable to data grids.
- Extended Management by Colors – Not implemented at this time

Fonts tab

The Change Font button lets you change fonts for the selected area of the grid. This includes band, font, header, and preview.

Behaviors tab

The Behaviors tab lets you change where bands and headers are placed, how much of the selection prints, whether or not any nodes automatically expand. You also have the option of choosing to use three-dimensional effects. The Graphics area is currently not applicable to any printable grid in Toad.

Miscellaneous tab

The Miscellaneous tab lets you choose effects for tree view grids and checkmarks.

Reporting

Toad Control Files

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can view information about the Control files record sections for your database by selecting: **Database | Report | Control Files** from the main menu bar. The Control Files window appears.

The control file contains information about the associated database that is required for the database to be accessed by an instance, both at startup and during normal operation. A control file's information can be modified only by Oracle; no database administrator or end-user can edit a database's control file.

A control file contains information including:

- database name
- timestamp of database creation
- names and locations of associated datafiles and online redo log files
- tablespace information
- datafile offline ranges
- log history
- archived log information
- backup set and backup piece information
- backup datafile and redo log information
- datafile copy information
- current log sequence number
- checkpoint information

When you create a database, Oracle creates the database name and timestamp. The database name is taken from either the name specified by the initialization parameter DB_NAME or the name used in the CREATE DATABASE statement.

Whenever a datafile or an online redo log file is added to, renamed in, or dropped from the database, the control file is updated to reflect this physical structure change. These changes are recorded so that:

- Oracle can identify the datafiles and online redo log files to open during database startup.
- Oracle can identify files that are required or available in case database recovery is necessary.

Therefore, if you make a change to your database's physical structure, you should immediately make a backup of your control file.

Control files also record information about checkpoints. Every three seconds, the checkpoint process (CKPT) records information in the control file about the checkpoint position in the online redo log. This information is used during database recovery. It marks entries not necessary for database recovery because they have already been written to the datafiles.

Dependencies

This feature allows you to:

- View the database objects that reference a selected database object or
- View the database objects that the selected object is dependent on.

The Dependencies function does not rely on the Toad_DEP_TEMP table.

The tree views can be completely expanded by **CTRL+SPACE**.

There is also a tab to view the dependencies on all objects. Indented objects are dependent on outer objects.

To access the View Dependencies window

- » From the **Database** menu, select **Report | Dependencies**.

ER Diagrams

ER Diagram

The ER (Entity Relationship) diagram lets you quickly diagram a table and graphically see the dependencies and joins to other tables. The ER diagram functionality is a subset of the Toad Data Modeler functionality and as such is a powerful diagramming tool.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

Note: This is not a modeling tool. See "Integration with Toad Data Modeler" (page 714) for more information about performing full data modeling on your table structures.

To Access the ER diagram:

- » Do one of the following:
 - From the **Database | Report | ER Diagram**.

- From the Schema Browser, Tables page, right-click on a table and select **ER Diagram**.

Note: The Create Object Scripts feature is only available in the commercial version of Toad with the optional DB Admin Module.

ER Diagram Toolbar

This toolbar is located at the top of the ER Diagram window. See "ER Diagram" (page 709) for more information.



Icon	Command
	New ER diagram
	Change active session. In the drop down list, the active session is denoted by a a
	Load ER diagram from file
	Save changes to diagram
	Save diagram as new file
	Print Preview
	Print ER diagram
	Page Format
	Add Objects to diagram
	Refresh diagram from Database (F5)
	Auto-Layout
	Create report
	Copy diagram image to clipboard
	Export to graphics file
	Send ER diagram to Toad Data Modeler. (This button only appears if you have Toad Data Modeler installed.)

Icon	Command
	Pan - cursor drags the diagram around the screen
	Select mode - cursor selects items by dragging or clicking.
	Add note to ER Diagram
	Add a note line in the ER Diagram
	Add a title and information to the diagram
	Create a color-coded category to organize the objects in the diagram
	Zoom by dragging around objects
	Zoom out
	Zoom in
	Zoom to fit entire diagram
	Zoom by percentage
Filter Dropdown	Select to limit what is displayed in the diagram
	View diagram in IE notation
	View diagram in IDEF1X notation
	Snap to grid
	Show grid in designer
	Define grid size properties
	Align selected objects

Creating an ER Diagram

You can create a new ER diagram in different ways.

To create a New Diagram

1. From the toolbar, click .
2. Click .
3. Select the **Schema** you want to use.
4. Select the number of levels of referential tables you want to load.

Note: The more levels of referential tables you load, the more complicated the diagram will become, and the longer Toad will take to create the diagram.

5. Select the **Table** you want to diagram.

Note: Referential tables to the level specified will be selected when you select your table.

6. If you want to exclude referential tables, click in the **Ignore** column of the tables you want to exclude.

From a Few Tables

1. From the Object Palette, select the tables you want to add to a new ER diagram.
2. Drag the tables into the ER diagram window from the source window.

Note: Joins between objects are automatically displayed; however, if a dependent table is not included in the diagram in this way, it will not be diagrammed. To be sure to find all dependencies, add objects as described in [To create a new diagram](#).

Reading the ER Diagram

Within the ER Diagram, each object listing contains the name of the table and the schema where it resides (in the title bar), the columns in the table, the column type, whether the column is indexed, and any icons selected in the Display Options area when the diagram was created. See "ER Diagram" (page 709) for more information.

Shapes contain the objects included in that diagram. Lines connect objects where one table is dependent on the other. Formatting can be selected based on either IE or IDEF1X notation.

Working with the graphic model

- Right-click on an object and select Schema Browser Menus to display the popup menu from the Schema Browser.
- F2 toggles full screen mode.
- F4 or double-click performs a Describe, if Toad supports Describes on that object type.

Notation Format

The diagram can be created using either IE or IDEF1X notation. Each of these formats provides different information and a different format for the graphical model. Select the notation you are

used to using.

To change the notation

» From the ERD toolbar, click either:

-  for IE
-  for IDEF1X

Adding new tables to the model

After you have created a diagram, you may want to add other tables to it. For example, in a production system the database may have several tables that are used, some of them may not be connected to other tables in the system. However, since it is part of the same system, you may want those in the diagram too. You can drag tables to the diagram from the Schema Browser, Query Builder, or Project Manager at any time and click the find dependencies button to find any joins.

Highlight Attributes in Parent/Child objects

Hover over a foreign key constraint to highlight attributes (from keys) in parent and child objects.

Navigating the Diagram

The ER diagram can be manipulated and arranged to display the entity relationships in a way that is appropriate for your situation. The basic ER diagram can be navigated in the left hand pane, by clicking the Model tab.

Left Hand Side

Model tab

The model tab contains a tree structure that includes every object and area in the diagram. The top node on the tree is Workspaces, a listing of all workspaces you have created. Click on a workspace, and the Workspace tab populates with the objects contained in that workspace. In addition, in the right hand pane the selected workspace is brought to the forefront and becomes active.

You can also drag items from a node on the model tab to a workspace area in the right hand side. As long as the object remains in the Model, referential relationships can be found for that object and added to the diagram.

Workspace tab

The workspace tab contains a tree structure describing the active workspace.

- Double-click on an item in one of the nodes to select it in the right hand side.
- Select an item and press **F4** to DESCRIBE it.

Right Hand Side

Workspaces

A workspace containing All Items is always created with your model. You can also create new workspaces to subdivide the objects as needed. You can create additional workspaces that are subsets of the main diagram. In this way, you can split a large project into smaller sections that are easier to browse and view.

To create a new workspace

1. In the tab bar, click .
2. From the All_Items Workspace navigator, or the Model navigator, drag items to the new workspace.

Or

1. In a workspace, select the objects you want to separate into a new workspace.
2. Right-click and select **Add to Workspace | New Workspace**.
3. Name the new workspace and enter any notes you want to explain it.

Integration with Toad Data Modeler

Quest Software's Toad® Data Modeler is a cost-effective, yet powerful database modeling and design tool that is built for the individual developer, DBA and data architect. Toad Data Modeler makes it easier for you to build complex entity relationship models (both logical and physical), synchronize models, generate complex SQL/DDL, create "ALTER" scripts (Oracle 9i, Oracle 10g, Oracle 11g, MS SQL Server 2005 and MS SQL Server 2008), reverse engineer legacy databases, create HTML and RTF reports and much more.

Toad for Oracle users can:

- define Toad for Oracle as a default editor for generated SQL scripts
- load Toad for Oracle aliases
- open Toad for Oracle projects in TDM3
- import Toad for Oracle ER diagrams to TDM3
- use Toad for Oracle icons in TDM3

Toad Data Modeler supports the following database platforms: Oracle, MS SQL, DB2, MS Access, MySQL, PostgreSQL and Sybase ASE.

If you have Toad Data Modeler installed, you can send your saved ER diagrams to the Data Modeler for deeper analysis.

In addition, working from Toad Data Modeler, there are several additional points of integration to Toad for Oracle. See your Toad Data Modeler help file for more information.

To launch Toad Data Modeler

1. From Toad's ER Diagram window, click  and load a saved ER diagram.
2. **Note:** If you have just created a diagram, you must save the file in order to export it to Toad Data Modeler.
3. Click . The ER diagram is opened as a Toad Data Model.

Workspace Format

Format the workspace to suit your needs. Each workspace page can be formatted individually. In addition, each object within a workspace can be formatted individually, including lines, notes, and model titles.

The workspace format allows you to change general display options and options for shape and object. Options displayed are directly related to the object or workspace selected.

Option type	Notes
General	Format colors for display, types of lines, and rename the object or workspace.
Shape	Use these options to specify design of the shapes containing objects in the diagram.
Objects/DBObject	Use the object option to change how the objects display, including what portions of the object display.

To format a workspace

1. Click on the workspace tab that you want to format.
2. Right-click and select **Workplace Format**.
3. Make changes to display options.
4. Click **OK**.

To format a workspace object

1. Within a workspace, right-click on the object you want to format.
2. Select **Workplace Object Format**.
3. Make changes to display options.
4. Click **OK**.

Explain Plans

Explain Plan Overview

Explain Plan is an Oracle function that analyzes SQL statements for performance issues. The Explain Plan determines the execution plan Oracle follows when executing a specified SQL statement. It inserts a row describing each step of the execution plan into a specified table. If you are using cost-based optimization, this statement also determines the cost of executing the selected statement.

The results of the Explain Plan include:

- Order that Oracle will search and join tables
- Types of access employed (index search or full table scan)
- Names of indexes used.

Toad uses the Windows User name plus the date and time to generate a unique statement id for the Explain Plan. If the user has a longer than normal user name, you may need to expand the Statement_ID column of the Plan table.

If you have not set up the Explain Plan tables, or the plan table specified in Toad Options | Oracle | General, Toad will ask you to do so. If you do not want to store previous Explain Plan results, disable the option Save previous Plan results in the Toad Options | Oracle | General window. This will keep Toad from asking you repeatedly to create the table.

Note: If you do not set up the Explain Plan tables, you will not be able to recall previous Explain Plan results.

See "Explain Plan Results" (page 717) for more information on Explain Plan results.

Viewing the Explain Plan for the Current Statement

To view the explain plan

- » Click  on the Editor toolbar executes the Explain Plan for the current statement (either the entire window, or any highlighted portion). Results are then displayed in the Explain Plan tab below the editor.

Results

Results can be displayed in several formats. By default, the plan is displayed in a tree view. You can also choose to display the plan information in plain English, or one of two graphical modes. In addition, you can view the explain plan one record at a time.

To view in single record view

- » Right-click over the Explain Plan and then select Single Record View. See "Single Record View" (page 950) for more information.

To change the display format

1. Right-click over the Explain Plan and then select **Display Mode**.
2. Select the display format you want to view.

Executing Explain Plan

You can run an Explain Plan on a statement inside a full script as well as on a single SQL statement.

Execute Explain Plan on SQL Statements

If you attempt to activate an Explain Plan and you have not created the needed Toad temp tables, Toad displays an error message telling you the table or view does not exist.

This does not affect the display of the Explain Plan window accessible from **Database | Optimize | Explain Plan**.

Only the Explain Plan histories are stored in `Toad_PLAN_SQL` and `Toad_PLAN_TABLE`

To execute Explain Plan on a SQL statement in the SQL Editor

- » Place the cursor on a SQL statement. Select **Editor | Explain Plan Current SQL** (CTRL+E)

Troubleshooting

Toad expects to find an Explain Plan table with columns to match the most recent specification from Oracle.

If you get "Invalid Column" errors when executing Explain Plan, you can recreate the explain plan tables using the Server Side Install wizard.

Explain Plan Results

The Explain Plan treeview lists the contents of the `Toad_PLAN_TABLE` for the given statement id. The query used to retrieve information for this treeview is based on the one given by Oracle in `utlxplp.sql`. Please see Oracle's documentation of the Explain Plan table and its columns for more information.

Explain plan results can be displayed in several formats:

- Tree
- Plain English
- Graphic
- MS Graph

In addition, in tree view, you can choose how you display some of the columns, or even to display them at all. By displaying them as columns rather than inline with the main plan you can create a display that is customized to your needs.

To change the display mode

1. Right-click over the Explain Plan and then select **Display Mode**.
2. Select the display format you want to view.

Adjusting Content

Use the Execution Plan Preferences dialog to adjust the content of the Explain Plan. Choices you can make from this dialog include making several of the columns visible or hiding the information altogether, and also choosing to display the information inline with the tree view or in columns to the left of it.

You can only adjust content in the tree view.

To adjust content

1. Right-click in the Explain Plan and select **Adjust Content**.
2. Select or clear the checkboxes in the **Visible** column to display or hide the associated information.
3. Select or clear the checkboxes in the **As Column** column to view the associated information inline with the plan or in a column to the left of the plan.
4. Rearrange columns by dragging the column where you want it directly on the Explain Plan. In this way you can put columns in any order, or to the right of the plan.

Object Usage

From the explain plan, you can view object usage for the query you have run. See "Explain Plan Overview" (page 716) for more information.

The Object Usage window displays the Operation, option, object type, object owner, and object name of the objects used.

Arrange data:

- Reorder columns by dragging their headers into the order you want.
- Sort columns by clicking on the column header.
- Group data by a column type by dragging the column header into the area above the grid.

To view Object Usage

1. Run an explain plan.
2. Right-click over the explain plan window and select **Object Usage**.

Printing and Copying Explain Plans

When you have run an Explain Plan, you can print it from the grid or from the Explain Plan window, or copy it to the clipboard to paste into other documents.

When you copy or print the Explain Plan to the clipboard, it is copied or printed just as it is displayed, whether hierarchical, plain text, or graphical.

See "Explain Plan Overview" (page 716) for more information about using the explain plan.

To copy to clipboard

1. Run an Explain Plan.
2. Select the Display Mode you want to use.
3. Right-click in the Explain Plan and select **Copy to Clipboard**.

To print

1. Run an Explain Plan.
2. Select the Display Mode you want to use.
3. Right-click in the explain plan and select **Print**.
4. Select your printer settings and then click **OK**.

Viewing Previous Explain Plan Results

This window displays the results from previous calls to Explain Plan. The format of these Explain Plans is the same as if you had just run the plan on your SQL. See "Explain Plan Overview" (page 716) for more information. Viewing previous plan output lets you compare different results for similar statements or for revisions of the same statement as you tune them.

Previous plan results remain in the Toad tables until cleared by the user using the CLEAR button on the Explain Plan window.

To access previous explain plans

- » Do one of the following:
 - From the Database menu, select **Optimize | Explain Plan**.
 - Click  on the main toolbar.

Saving Explain Plans

There are two ways to save Explain Plans from Toad.

You can save them automatically for viewing from **Database | Optimize | Explain Plan** or you can save them to an XML file. The latter will allow you to compare a current or historic Explain Plan to the saved file in the future.

To save Explain Plans automatically

1. From the Toad Options screen, select the **Oracle | General** page.
2. Select the **Save previous Explain Plan results** box.

To save Explain Plans to an xml file

1. Run an Explain Plan.
2. Right-click over the plan and select Save to XML file.
3. Choose a location, name your file and then click **OK**.

To load an xml file

1. Right-click in the Explain Plan area.
2. Do one of the following:
 - Select **Load from XML** file and then select the file to load and click **OK**.
 - Drag the xml file from Windows Explorer to the Explain Plan window.

Comparing Explain Plans

You can compare a currently run Explain Plan, or an Explain Plan that has been saved to the plan table with one you have saved to an XML file. This can be useful if you are comparing variations of the same SQL. See "Explain Plan Overview" (page 716) for more information.

Each side of the screen can be connected to a different database, so you can use this feature to compare a plan for the same SQL from two different databases.

Comparing Explain Plans displays a side-by-side comparison view of the plans you are comparing. The Explain Plans are compared using the Difference Viewer. (See "Viewing File Differences" (page 257) for more information.) No highlighting is provided to show differences. However, the status area above the left side panel will display either Plans Match in blue or Plans Differ in red as required.

For differences to be highlighted, you must view the explain plans in tree view.

To compare Explain Plans

1. Select an Explain Plan to compare, from either:
 - A current plan run in the Editor
 - An Explain Plan opened from the **View | Explain Plan** window.

Right-click over the plan and select **Compare to another Plan**.

Note: The differences viewer opens with the selected plan in the left side.

2. In the right-panel toolbar, click the **Open Plan** button and select a saved plan for comparison.
3. Click **OK**.

Code Road Map

Road Map Overview

The Code Road Map graphically displays the complex PL/SQL interdependencies within a database. You can think of the Code Road Map as a developer's model of the application code.

The Road Map displays two different levels: code only and code plus data.

There is an [online video tutorial](#) for this feature. This opens a new browser window and requires an internet connection.

Note: Creating scripts is only available in the commercial version of Toad with the optional DB Admin Module. See "Code Road Map Toolbar" (page 721) for more information.

To access the road map

- » From the Database menu, select **Reporting | Code Road Map**.

Code Only

In the code only version, you see a graphical representation of the run-time, call-stack dependencies. There are three additional options for this mode:

- expand packages for calls into them
- include calls to SYS owned PL/SQL
- include calls to other schema's PL/SQL

Code Plus Data

The code plus data diagram lets you visually see what database objects the code references and in what manner (for example, read versus write). In this diagram, you can also include pertinent triggers and views. Views are essentially treated as tables.

Code Road Map Toolbar

You can manipulate the [Code Road Map](#) from the toolbar.



Button	Command
	Create a new map, choosing new code to model. See "Choosing Code to Model" (page 722) for more information.
	Clear the model window and revert to the initial start up state.

Button	Command
	Change the active database session.
	Open a saved map file (.crm extensions).
	Save the map with a new name.
	Save the current map.
	Save Diagram as text file. See "Saving a Text Model" (page 725) for more information.
	Create a bitmap version of the code map.
	Print the model side of the code map.
	Use the Code Road Map Info button to add a comment to your saved code map.
	Collapse/Expand Package View: when you are in Collapse Package View, any sub units that are referenced will be included under the object type in the graphic model. See "Reading the Code Model" (page 723) for more information.
	Refresh Diagram.
	Create object scripts. This opens the DDL Script dialog box, where you can choose the options you want to use to create an object script. The script is copied to the clipboard and you then can paste it into an editor. <i>Note: The Script dialog box is only available in the commercial version of Toad with the optional DB Admin Module.</i>
	Change colors for database objects.
	Zoom in or out of the graphic model.
	Previous auto layout / Next auto layout.

Choosing Code to Model

To access the code road map

- » From the Database menu, select **Report | Code Road Map**.

When you first open the Code Road Map, there will be no map loaded. Do one of the following:

Icon	Function
	To create a new map, click the New Map button.
	To open a saved map, click the Open Map button. The dropdown will display the last few maps you have had open.

New Map

Note: This topic only covers unfamiliar information. It does not include all step and field descriptions.

When you choose to create a new map, the Model Code dialog box appears. This dialog box lets you choose what code you want to map, and what options you want to use when it is mapped.

Display Options

These options only affect the visual display of the map. The data in the map is not affected by these selection.

- Expand packages and types for calls
- Include triggers (for Code + Data)
- Include views (for Code + Data)
- Include calls to SYS-owned objects
- Include calls to other schema PL/SQL

Reading the Code Model

Within the Code Road Map, the code model is designed in a similar way to the models you can create using the Query Builder. See "Query Builder Overview" (page 933) for more information.

The final model consists of a list of components, in a hierarchical tree, organized by object type on the left panel of the window. In the right panel is a graphic model of the code.

Browser

You can use the tree view browser at the left of the window to see at a glance just how large the map is. You can also use it to navigate from object to object.

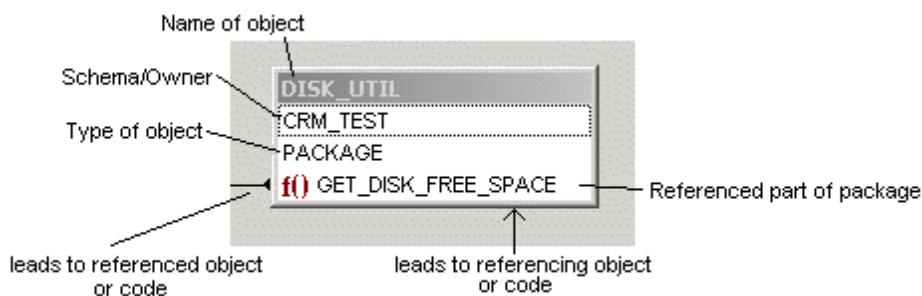
The tree view is organized by object type. For example, all procedures are listed under the Procedures node, and all tables under the Tables node.

- Click on an object in the tree view and the graphic model to the right centers on that object.
- Right-click on an object to display the popup menu from the Schema Browser for that object.

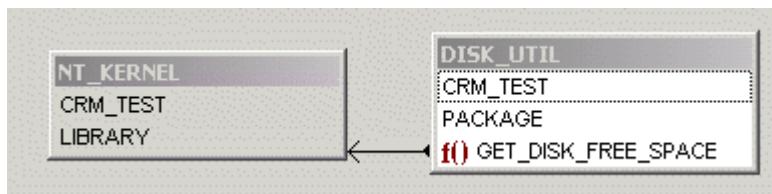
- F4 performs a Describe, if Toad supports Describes on that object type.
- Double-click an object to perform a Describe.

Graphic Model

Each object listing contains the name of the object, the schema where it resides, and the type of object. If the object is a package and you are in Collapse Package View, any sub units that are referenced will be included under the object type. For example:

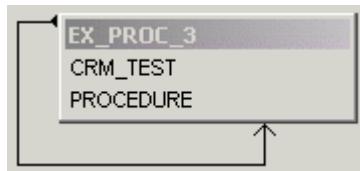


Lines connect every two objects where one object is dependent on the other. Lines have a knob end and an arrow end. The referencing object resides at the knob end, and the referenced object at the arrow end. For example:



In this example, DISK_UTIL references the library NT_KERNEL, specifically from the function GET_DISK_FREE_SPACE. The example model is in collapse package view.

A self-referencing reference is shown in the same manner, with the arrow returning back to the same object, as follows:



Working with the graphic model

- Right-click on an object to display the popup menu from the Schema Browser for that object type.
- F2 toggles full screen mode.

- F4 or Double-clicking on an object performs a Describe, if Toad supports Describes on that object type.

Saving a Text Model

You may find that you want something less graphical than the basic models provided by the Code Road Map, and easier to print or carry with you. See "Road Map Overview" (page 721) for more information about creating the road map. To do this, Toad can export the code model to a text file. This consists of a list of the objects and what they reference.

For example,

```
PROCEDURE CRM_TEST EX_PROC_1 ---> PACKAGE CRM_TEST EX_PACK_2
PROCEDURE CRM_TEST EX_PROC_1 ---> PROCEDURE CRM_TEST EX_PROC_2
PROCEDURE CRM_TEST EX_PROC_1 ---> PROCEDURE CRM_TEST EX_PROC_3
PROCEDURE CRM_TEST EX_PROC_1 ---> TABLE CRM_TEST EMP_SNAPSHOT
PROCEDURE CRM_TEST EX_PROC_1 ---> VIEW CRM_TEST SALES
```

might be the results of a small code map. The map is laid out as follows:

OBJECT-TYPE SCHEMA OBJECT NAME --> OBJECT-TYPE SCHEMA OBJECT NAME

where the arrow means "calls".

To Save a Text Model

1. Create your road map.
2. Click  on the roadmap toolbar.

Copying the Code Model

From the Code Road Map, you can copy the code model to the clipboard and then paste it into another document or graphics application.

There are several ways to accomplish this.

To copy the code model

- » Do one of the following:
 - Right-click in the model and choose **Copy image to clipboard**.
 - From the Edit menu, select **Copy**.
 - Press **CTRL+C** or the keystrokes you have set up for a Copy shortcut.

The image of the graphic code model is copied to the clipboard and can be pasted into another application if desired.

HTML Schema Doc Generator

HTML Schema Doc Generator

This window lets you select one or more schemas from the left panel and create HTML documentation describing the schemas using the Begin HTML Schema Doc Generation button at the top of the screen. Hyperlinks throughout the final HTML document let you jump between sections of the documentation.

To access the Schema Doc Generator

» Do one of the following:

- From the Database menu, select **Report | HTML Schema Doc Generator**.
- From the Automation Designer, select the **DB Misc** tab and click 

All options are saved to and loaded from the TOAD.INI file. Schema selections are saved and loaded on a per-database basis.

Note: This topic only covers unfamiliar information. It does not include all step and field descriptions.s.

Sources tab

Schemas available to document are listed on the left of the window. Check one or more schemas to document.

Right-click the schema list to choose from several default selections.

Use the right pane to create schema documentation from the .def files. These def files are created in the Generate Schema Script window. See "Generate Schema Script" (page 429) for more information.

Note: You must check "Def file will be used for HTML Schema Doc generation in Generate Schema script to include all parts of the schema."s

To use this feature, the def file name must match the schema name. In other words, for the schema called SCOTT, your def file must be called SCOTT.DEF.

Content tab

This tab contains check boxes that let you select what to include in your HTML document. They are divided into Object Summaries and Object Descriptions. By default, all check boxes are checked. See the following for additional information:

Option	Information

Option	Information
Content Tab	
<i>Object Summaries</i>	
Privileges	Object privileges will include the Object Owner, as well as the name and grantable or non-grantable privileges. System privileges will include the privilege and whether there is an Admin option for that privilege
Counts of all objects	Counts not only the number of objects of the selected type in the schema but also miscellaneous details such as number of table columns and table partitions
Format Tab	
One file per schema	Each schema is written to its own file. If more than one schema is selected, an additional HTML page will be created that is a link between the schema documents.
Use Existing CSS file check box	Most of the style options are written to a CSS (Cascading Style Sheet) file. If you want to use your own customized version of the CSS file, select this option and specify the file name or URL. When this option is selected, the options that write to the CSS file are disabled.
Indent HTML files	When checked, the HTML code in the files will be indented with spaces so it can be more easily read. When the option is unchecked, no indentations will be made in the HTML code, so the resulting files are smaller and can be read faster by computers. This option does not change the way the HTML documents are displayed when viewed through a browser.
Page Breaks before Tables	When checked, Toad will insert a page break before each table. This makes a change to the CSS file, not to the HTML file, and has no effect unless the HTML docs are printed.
Lowercase Tables	Displays HTML tables entirely in lowercase. This option changes the CSS file, not the HTML file.
Aliases for Schema Names Tab	

Option	Information
Grid	<p>The grid automatically enters the source choices you have made on the Sources tab. If you leave this area blank, then schema names and database names will be included in the HTML document Toad generates.</p> <p>If you fill in an alias for any schema, that schema name will be replaced by your alias throughout the HTML document.</p> <p>You might want to use an alias if:</p> <ul style="list-style-type: none">• Your schema name is different from the application name and you want to see the application name displayed.• You want to extract an HTML doc from more than one def file of the same schema. If you do not use an alias, the file names will overwrite each other because they will be the same. Using an alias, the file names will be different.• Readers of the HTML docs shouldn't know your schema or database name.

Scheduling Schema Doc Generation as a Windows Task

If you are likely to use these settings repeatedly, you may want to set them up as an action or part of a ToadApp in the Automation Designer. See "Managing Projects" (page 433) for more information. You can schedule the generation as a Windows task directly from the Schema Doc Generation window as well.

To generate a schema doc task

1. Set up your script options and settings as in HTML Schema Doc Generator, but do not execute the command.
2. Instead, click  in the status bar.
3. Enter the information as required for the Add Task wizard. See "Add Task Wizard" (page 763) for more information.

Master/Detail Browser

Master/Detail Browser

Use the Master/Detail browser to view or edit data from multiple tables, snapshots, views or queries linked by foreign keys or a user-defined master-detail relationship. This is typical of a

database setup from an Entity/Relationship diagram, where one table's objects are related to another table's objects by a linking field or fields.

For example, you could start with the DEPARTMENT table, and display details. Select a department record in the Master grid, and the detail grid will display employee records for that department only. If multiple tables are linked by foreign keys, you can add additional details beneath the first.

In addition, you can add sub-details of the detail objects.

There is an [online video tutorial](#) for this feature. This opens a new browser window and requires an internet connection.

To access the Master/Detail Browser

- » From the Database menu, select **Report | Master/Detail Browser**.

Navigator

To the left of the Master Detail Browser is the Master Detail Navigator. As you add detail tables, they are added to the navigator under the original table. Using the navigator can make it much easier to control very detailed sets of master/details.

Within the navigator, you can hide or display the schema name and delete detail nodes.

You can use the navigator to find the grid for a specific detail table.

To find a detail

- » In the Navigator, click on the node for the detail you want to view.

Note: In the Master Detail browser, the grid for that detail flashes in the lower grid pane.

Single Grid Mode

You can set Toad to display only one grid at a time by checking the Single Grid Mode box on the Master/Detail toolbar. Use the navigator to select which grid you want to see.

Master/Detail Browser Toolbar

From the Master/Detail browser toolbar you can add details, save a master/detail relationship, open a relationship, edit the query used for the master relationship and more. See "Master/Detail Browser" (page 728) for more information.



Button	Command
	Change active session. In the drop down list, the active session is denoted by a
	Open Master/Detail relationship
	Save current Master/Detail relationship
	Minimize Toolbars for maximum grid area
	Optimize Dataset Heights
Single Grid Mode	Toggles single grid mode
	Generate Report. See "Report" (page 740) for more information.
	Sort/Filter selected tables
	View/Edit the query for the master dataset
	Refresh the grids
	Add detail to the selected dataset. See "Adding Detail Datasets" (page 731) for more information.
	Make grid smaller
	Make grid larger
	Remove this detail from the relationship
Type:	Object type contained in the grid.
Single Grid Mode	Displays only one grid at a time: use the navigator to select the grid to display.
	Select Foreign Key - select a detail table to display, based on foreign key.

Generating XML Output

You can generate XML output from a master-detail relationship. From the master-detail grids, you can send a query to the editor that will generate the output. Output will be created in XML Form, one XML document per row. See "Master/Detail Browser" (page 728) for more information.

This feature is available only in Oracle 9iR2 and newer, and when the Master-Detail relationship consists of one master and one detail.

To generate XML output

1. From the Master Detail browser, open or create a relationship that consists of one Master and one detail.
2. Right-click on the master grid, and select **Send XMLGEN Query to Editor**.
3. Switch to the **Editor** window in Toad.
4. Execute the query to generate XML output.

Toad creates an XML document for each row in the master dataset, with each XML document containing all corresponding detail rows.

To save XML output to disk

1. Right-click on the **Editor grid** and choose **Export BLOBS (longs, raws)**.
2. Select the **XMLDATA column** from the **Export this Column** drop down.
3. Enter or select a **directory** where you want the files stored in the **Export Path** box.
4. Select the method of naming your files:
 - Use sequentially numbered files
 - Export to files named for the value in this column (select the column)
5. Click **OK**.

Selecting the Master Object

Before you can add details, you first need to select the master object for the relationship view.

To select a master object

1. From the Database | Report menu, select **Master Detail Browser**.
2. In the Type box, select the type of object you want to use.
3. In the owner box, select the schema that contains the object.
4. In the Name box, select the name of the object.

The grid populates with the contents of your selected object.

Adding Detail Datasets

You can easily add detail datasets to a master grid, or to a detail grid.

If you choose Other as the dataset type, (not Table(FK)), then the  drop down will include Reverse Foreign Keys. This lets you define the master-detail relationship by going through a foreign key in reverse.

To add a dataset

1. From the Master/Detail Browser, open a master object. See "Master/Detail Browser" (page 728) for more information.
2. On the master toolbar, click .
3. Behavior is determined by number of foreign keys:

One foreign-key defined detail	Added automatically.
Multiple foreign-key defined details	Choose from a list of available tables and click OK.
No constraints defined	Define a relationship in the Define Master-Detail Relationship dialog.

Defining a Master/Detail Relationship

If there is no foreign key specified, you can create a Master/Detail relationship by hand.

To define a master/detail relationship

1. From the Master/Detail browser, select a master object. See "Selecting the Master Object" (page 731) for more information.
2. Click .
 - If there is no defined detail dataset, the Master/Detail Define Relationship dialog appears. Continue with **step 3**.
 - If there is only one defined detail dataset, it is displayed. In the Type dropdown, select **Other**, and then click .
3. In the Master area, select the columns you want to link and click the > arrow to move them to the Key Columns list.
4. Select any columns you do not want to link from the Key Columns grid and click the < arrow to remove them.
5. In the detail area, select the Object type containing the dataset you want to link.
6. Select the schema containing the dataset.
7. Select the Object Name containing the dataset.
8. In the Available Columns grid, select the column you want to link to the selected column in the Master Table.

Note: These must be in the same order as the Key columns in the Master area.

9. Click **OK**.

To close without making changes

- » Click **Cancel**.

To delete the master-detail relationship

- » Click **Clear and Close**.

Reports Manager

Reports Manager Overview

The Reports Manager lets you easily manage reports that have been previously created, including several that Toad provides for you. You can Open, run, and print from the Reports Manager window, without dealing with design screens. If you want to create a report from scratch, you can open the Report Builder wizard from this screen.

To access the Reports Manager

- » From the Database menu, select **Report | Reports Manager**.

Using Reports Manager

When you first begin using the Reports Manager, you will need to import the reports you want to use. Importing queries and fr3 report definitions from a single file is much easier than running the query separately each time you want to run a report. Having a single file creates portability between versions of Toad: you only need to move one file to have queries, comments and report layout for the report.

Queries are displayed in the report manager supply the data to the reports, and can be edited from the Reports Manager.

There are advantages to accessing the report builder from the reports manager rather than directly from the editor:

- A report needs two things - a query and a report definition file (the .fr3 file). The reports manager gives you a convenient way to organize them, clone them, share them, etc. When you run and re-run reports from the editor, you need to remember the query (or remember where you saved it).
- The reports manager allows you to create master/detail datasets to report on. This cannot be done in the editor, however you can create them from the Master/Detail Browser and then create a report.

The Reports Manager is divided into two areas. The left hand side contains a list of loaded reports for you to select. The right hand side contains information about the selected report, including options to view the Master Dataset (query), Comments you have added, or the Detail dataset. Parameters are listed in the grid at the bottom of the right hand side.

Report History

The last report you viewed will remain open when you close the Reports Manager and reopen it.

Reports area (Left hand side)

The reports area organizes your reports within various categories. You can move the reports between categories, add, or delete them from your reports file.

When you expand a category and close the window, Toad will remember that it has been expanded and open it that way the next time you use the Reports Manager.

The Reports area is also multi-select enabled. This means that you can select more than one report from the list and then act on them at once. When you have multiple reports selected you can Change Categories, Export, Print, Delete them.

Report Information area

The right hand side, or report information area, displays the query on which the selected report was based, any comments you have entered for the report, parameters that need to be entered before Toad can run the query, and displays Index columns, if applicable.

Scheduling Reports

You can schedule reports by using the command line interface. See "Printing or Exporting Reports Manually from the Command Line" (page 740) for more information.

Reports Manager Toolbar

Use the [Reports Manager](#) toolbar to manage your reports and the queries associated with them easily and quickly.



Button	Command
	Change active session. In the drop down list, the active session is denoted by a
	Export Report (Save report file as).
	Import Definition File.
	Import all definition files in a directory.
	Copy Report.

Button	Command
	Change category.
	Edit selected report.
	Run selected report.
	Print report.
	Create command line file.
	Schedule selected report.
	Create a new report.
	Delete selected report.

Creating a Report

Creating a report in the Reports Manager consists of several parts. See the following for more detailed information:

- Changing a Report's Category (page 738)
- Queries (page 736)
- Report Builder Wizard (page 742)

To create a report

1. Click  on the reports manager toolbar.
2. Enter or select the category name you want to use for the report and click **OK**.
3. Name the report and click **OK**.
4. In the right pane, enter the query for the **Master Dataset**, and for any detail datasets.
5. Click  and create a report.

Building a Report on Ref Cursor Output

You can create reports with simple queries, but you can also create reports that are built upon a ref cursor. Results should be assigned to an output parameter of type "cursor". Within the Reports Manager, RefCursor output is only supported as the master dataset (with no detail).

Example Query for RefCursor Output

```
DECLARE
```

```
P_RECORDSET Types.cursor_type;
```

```
BEGIN  
  
    GETEMPRS ( P_RECORDSET );  
  
    :rcP_RECORDSET := P_RECORDSET;  
  
END;
```

Queries

The basis for a report in Fast Reports is the query. You can easily generate a report from the data grid using the Report Builder wizard; from the Create Report toolbar button in the Reports Manager and then import it into the Reports Manager (See "Importing/Exporting Reports" (page 739) for more information); or you can build your query directly in the Reports Manager.

Queries can include variables that are specific to Toad as well as variables of the standard type.

Some of these include:

Variable	Reference
<DA>	Use <DA> and the Reports Manager will automatically convert it to <i>sys.dba_</i> or <i>sys.all_</i> , depending on your privileges in the current connection when the report is run.
Current Schema	You can create a variable of the Current Schema type to automatically substitute the currently active schema name.
Shortcuts to the Data dictionary	See "Parameters" (page 736) for more information.

Parameters

You can use the Parameters area of the Reports Manager to include the parameters for the query you have created.

Value (Literal)

The value (literal) parameter is a bind variable. This only works with Date, Number or String parameter types. You must enter a literal value such as 4, 'hello', or 03/23/2006 1:34:25 PM (the same date format that shows up in the grids).

Value (Expression)

Can be more useful. This is like a substitution variable, but more expansive. You can use this anywhere in the query.

You could use this as a variable for a table name in the from clause, the select list, or somewhere in the where clause. It can be a subquery, a list, anything. Toad just substitutes an expression into the query. Since it's a substitution variable, parameter type doesn't really matter. Except for the "special" parameter types (the ones from "Cluster" on down the list).

Special Parameter Types

Cluster parameter types and the remainder of the parameter list are shortcuts into the data dictionary. The ones classed as "list" are designed to return multiple values, and the others return single values.

String Parameter

For example, if your query looks like this:

```
select *  
from user_tables  
where table_name = :tn
```

You could specify a STRING parameter type for table, but then you'd have to type in the table name yourself. If you'd rather choose it from a list, change the parameter type to "Table". Then, under "Value (Expression)", click the "..." button and you'll get a list of tables.

Table List Parameter

If you want to report on multiple tables, make your query like this:

```
select *  
from user_tables  
where table_name in (:tn)
```

Change the parameter type to Table List, and when you click ..., you can select multiple tables.

Other Parameter Types

Other parameter types work the same way, so:

- Current Schema - Automatically uses the currently active schema in your query.
- Schema - Lets you pick a single user name.
- Schema List - Lets you pick multiple schema names.
- And so on.

Creating a Master/Detail Dataset

When working in Reports Manager, after you have created your master dataset, you may wish to add a detail dataset. This adds information to your report.

There are many examples of master-detail datasets in the sample reports, particularly in the **Tables and Index Reports** and **Stored Program Reports** categories.

To create a master-detail dataset

1. Add a report and enter the master query (for example, `SELECT * from SCOTT.DEPT`).
2. Click  and enter details.
3. Enter SQL for the detail dataset (for example, `SELECT * FROM SCOTT.EMP`).
4. Rename the detail dataset if desired.
5. Define the key fields to link the master and detail datasets by clicking  on the detail dataset tab.

COPYING A REPORT

You can copy (clone) a report in the Reports Manager. This creates an identical query and .fr3(report definition) file. Using this method, you can create similar reports quickly.

To copy a report

1. In the Report Name area, select the report you want to copy.
2. Click .
3. If you want to put your new report in a different category, select the new category from the **New Category** dropdown.
4. Enter a new name for your report in the **New Report Name** box.
5. Enter a new filename for the report definition file in the **New Report Definition File Name** box.
6. Click **OK**.

ADDING RUN INFO DATA TO A REPORT

To add RunInfo data to a report

1. Select the report where you want to add RunInfo.
2. Click .
3. In the menu, select **Report | Data**.
4. Check the **RunInfo** box in the Select Report Datasets dialog.

CHANGING A REPORT'S CATEGORY

You can change the category where you have filed one or more reports in the Reports Manager. This can be useful if your categories are changing, or if you have misfiled a report as you imported it.

To change a report category

1. Select the report or reports you want to change. You can multi-select between categories, but all reports will be changed to the same category.
2. Click .
3. Do one of the following:
 - Select the new category from the **Category** dropdown.
 - Type a new category name into the **Category** box instead of selecting one.
4. Click **OK** to change the category.

Importing/Exporting Reports

You can import or export a report from the Reports Manager file. This makes it easy to add new reports to the samples provided, and to export your reports into a file that can be shared with other users.

You can import or export more than one report at a time.

To import a file

1. Click one of the Import buttons:

	Import Report Definition file(s)
	Import all Report Definition Files in a Directory (includes subdirectories)

2. Select the file or folder by browsing for it in the Open file dialog.
3. Click **OK** to import the file or folder.

Exporting files

You can export one or more files.

To export a file

1. Select the file (or files) you want to export.
2. Click  and choose one:
 - Export Selected Reports
 - Export All Reports
 - Export All Reports in Current Category
3. Name your file and specify where to save it.
4. Click **Save**.

Scheduling a report as a Windows Task

To generate a report task

1. In the Reports Manager, select the reports you want to schedule. Reports Manager Overview (page 733)
2. Click .
3. Select or create a filename for a command line report settings file and then click **OK**.
4. In the Schedule Reports window, select a report output format.

Note: If you have selected Email or File you must enter a recipient or an output directory, respectively; also select a format for the output.

5. Select an action for Toad to perform after the report is created.
6. Click **Schedule**.
7. Enter the information as required for the Add Task wizard. See "Add Task Wizard" (page 763) for more information.

Reporting from Data Grids

Report

Toad provides access to a powerful reporting tool from Fast Reports, Inc. With this tool you can create reports from any grid within Toad, including the Editor data grid, the Master/Detail Browser and the Schema Browser.

Included in Toad are several pre-designed reports that will let you quickly and easily organize your data into a report format. See "Reports Manager Overview" (page 733) for more information.

Printing or Exporting Reports Manually from the Command Line

You can easily print or export your reports from the command line, saving you the trouble of opening the FastReports page every time you want to rerun a report.

This feature also lets you schedule when you run your reports.

Supported "save to file" extensions

The supported extensions are:

- .pdf
- .txt
- .xls

- .bmp
- .rtf
- .jpg
- .gif
- .csv
- .htm(l)

Supported Parameters

You can add as many parameters as you need. Valid parameter types are: String, Number, Date, or Substitution (substitution replaces text before the query is executed). String, Number, and Date types are regular bind variables.

To print or export from the command line

1. From the Editor, enter your query and then design your report. See "Report Builder Wizard" (page 742) for more information.

2. Save the report definition to a .fr3 file.

3. In the lines before or after your query, enter the following comments:

--ParamName: *parameter name if you want to include parameters.*

--ParamType: *parameter type of the above ParamName.*

--ParamValue: *value of the parameter.*

--repeat Param options above if more than one.

--ReportFile: *full path to your .fr3 file.*

--Print (if you want to print).

--Save To File:*full path to the export file you want to create.*

--CloseToad (if you want Toad to close when you are done).

4. Save your query with the lines you added to a file.

5. Call from the command line as follows:

```
c:\toad\toad.exe connect=scott/tiger@orcl rep=c:\your_query_file.sql
```

Remember to change the connect string and filename.

Examples of SQL files for printing

One Parameter

```
SELECT *  
FROM SCOTT.EMP
```

```
where empno>=:x
order by 1
--Paramname:x
--ParamType:number
--ParamValue:7700
--ReportFile:c:\emp.frx
--Save To File:c:\emp.pdf
--CloseToad
```

Multiple Parameters

```
SELECT *
FROM * &y
WHERE empno>=:x
order by 1
--ParamName:x
--ParamType:number
--ParamValue7700
--ParamName:y
-- ParamType:subst
-- ParamValue:scott.emp
-- ReportFile:c:\emp.frx
-- Save To File: c:\emp.pdf
-- CloseToad
```

Report Builder Wizard

When you create a single dataset report Toad provides a report builder wizard to make it easier to create your report. You can then import this report into the Reports Manager and expand it into a Master/Detail report, generate it repeatedly on different schemas, and otherwise work with it. See "Reports Manager Overview" (page 733) for more information.

To create a report using the wizard

1. In the Editor, run the query you want to use for the report.
2. Right-click and select **Report**.
3. Complete the wizard.

To create a report without using the wizard

1. In the editor, run the query you want to use for the report.
2. Right-click and select **Report**.
3. When the Report Builder appears, click **Cancel**.
4. Create your report using Fast Report.

For additional help using the Report tool, see the Fast Report online [User Manual](#).

Spool SQL

Spool SQL

Database | Spool SQL command will either display all SQL to message boxes on screen or send it to a file (\temps\debug.sql) depending on your choice from the menu.

To spool SQL effectively

1. From the Database menu, select **Spool SQL** and where you want to send the code (to **Screen** or to **File**).
2. Select a function from Toad. The SQL Toad used to perform that task is spooled to either the screen or the specified file. See "Various Tabs" (page 879) for more information on Spool SQL to Screen.

Utilities

Archive

Access this window from the **Main Menu | Utilities | Archive**.

Alternately, set archive properties from the Action Palette | Archive action. See "Archive Action" (page 449) for more information.



Button	Command
	New archive
	Open archive - The dropdown lists the archives you have opened most recently.
	Add to archive - Use this to add a file to the archive that is currently open.
	Extract from archive - Highlight the file you want to extract and click this button to extract it. If no file is highlighted, no files will be extracted.
	Delete from archive - Deletes the highlighted file from the open archive.
	Create Project Manager Reference - Creates a link to an item in the archive and places it in the Project Manager. This lets you drag/drop the reference within the Project Manager without opening the archive, finding the file, and copying it to the destination folder. See "Project Manager Overview" (page 472) for more information about using files in the Project Manager.

Wrap Code

The Wrap Code command provides an easy way to access Oracle's Wrap Code utility. This window is connection independent so you do not need an open database session to use it.

To wrap code

1. From the Utilities menu, select **Wrap Code**.
2. In the **Input file** box, enter the file (of PL/SQL code) you want to wrap, including the full path, or click to browse for the file.

Note: The output file is, by default, named the same as the input file, but with the extension .plb.

3. Click **Wrap Code**.

Note: The wrapped code is automatically saved to the specified output file.

You can also right-click in either text area and copy that code to the clipboard.

Troubleshooting

To use Toad's wrap code interface, it must be able to find the Oracle Wrap Code utility. To assure that Toad can find the utility, check to see that one of the following is true:

- The Wrap Code utility is in a recognized Windows path.
- You have added the path to Toad's list from the **View | Toad Options | Executables** page. See "Executables" (page 654) for more information.

Service Manager

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Access this window by selecting the **Utilities menu**, then select **Service Manager**.

The Service Manager can maintain a static list of services on your local machine and other networked computers that you can batch start/stop easily. This list is stored in the *Services.ini* file.

Adding Services

You can add a new service to your service manager list.

To add from the local computer

1. Click **Add**.
2. Click **Search** without entering anything in the Computer Name box. A list of possible services appears.
3. Select the services you want to add to your Toad service manager. You can multi-select by using **SHIFT** and **CTRL+clicking**.
4. Click **OK** to add the selected services to the services list.

To add from a networked computer

1. Click **Add**.

Enter a computer name in the **Computer Name** box (for example, *testmachine*, or *\testmachine*) and click **Search**.

Note: You must have administrator rights to the remote machine for the services to display.

2. Select the services you want to add to your Toad Service Manager. You can multi-select by using **SHIFT** and **CTRL+clicking**.
3. Click **OK** to add the selected services to the services list.

Removing Services

To remove a service

- » Select a **service** from the service list and click **Remove**.

Refresh

To refresh the service list

- » Click **Refresh** to refresh the service list. If there has been a change in the status of a service (for example, a running service has stopped) the status column will be updated.

Starting and Stopping Services

Once the services are included in the services list, you can easily start and stop them.

To start services

- » Select the services you want to start and then click **Start**. Services will be started in the order they appear on the list.

To stop services

- » Select the services you want to end and then click **Stop**. The services stop in the order they appear in the list.

External tools

Configure Toad Tools

You can configure Toad to open external tools for you and then execute them from the Main Toolbar. See "Execute Toad Tools" (page 750) for more information.

Configure Tools List

To use Auto Add

In order to open an external tool from within Toad, you first need to add it to the Tools list. Toad can help you do this automatically for some basic applications. Applications supported by Auto Add include:

Windows Notepad	Quest DataFactory
Windows Wordpad	Quest Instant Messages
Windows Paint	Quest Knowledge Base

1. On the main toolbar, click the arrow on Select **Configure** from the dropdown menu.

Note: If you previously have executed an application from this icon, the above icon will not display. Instead, you will see the icon for the application you executed.

2. Click **Auto Add**.
3. Select the applications you want to add. You can multi-select by holding down CTRL as you click.
4. Click **OK**.
5. Click **Close** to use the list as it was automatically generated, or you can and move them in the list as described in the sections below.

To add a tool manually

In order to open an external tool from within Toad, you first need to add it to the Tools list.

Note: Adding a tool manually is the same as adding a shortcut. If the tool is included in the **Auto Add** feature, you should add it to your External tools in that way to ensure that it will work properly.

1. On the main toolbar, click the arrow on
2. Select **Configure** from the dropdown menu.

Note: If you previously have executed an application from this icon, the above icon will not display. Instead, you will see the icon for the application you executed.

3. Click **Add**.
4. Enter the **Title** of the tool. This is what will be displayed in the tool list, so choose something you will recognize. For example, enter **Notepad**.
5. In the **Program** box, enter the full pathname for the executable. You can enter the path directly or you can click and browse for the full pathname.

For example, enter the pathname for Notepad: C:\WINNT\system32\notepad.exe.

Note: This may not be the correct pathname on your system.

6. Enter the **Working Directory** for the tool. Click in this box and Toad automatically enters the directory where the tool is located. If necessary, you can change this directory.
7. Enter any **Parameters**. These specify configurations of the tool, and can be combined. Some standard parameters are listed in the macro box at the bottom of the window.
 - \$UID - enters the current Toad User ID
 - \$UPW - enters the current Toad User password
 - \$SID - enters the current Toad database ID
 - \$CWD - enters the current Toad working directory
 - \$TMP - enters the windows temporary directory
 - FIL - enters the file in the active editor

These parameters can be used individually, or combined. For example, if you wanted to automatically open Notepad with the current file in the active editor, you would enter the information to open Notepad as above, and enter \$FIL in the Parameters box.

You could also enter the command: `sqlplusw.exe $UID/$UPW@$SID` which starts sql plus with the current toad connection.

8. From the **Run** dropdown, you can opt to run the tool in a normal window, a minimized window, or a maximized window.
9. Enter any **Shortcut** keystrokes you want to use for the tool.
10. For example, typing **CTRL+ALT+F** displays **CTRL + ALT + F** in the box.
11. If an icon has not been chosen, click the **arrow**. Select an icon from the dropdown menu.

To delete a tool

1. On the main toolbar, click the **arrow** on .
2. Select **Configure** from the dropdown menu.

Note: If you previously have executed an application from this icon, the above icon will not display. Instead, you will see the icon for the application you executed.

3. Click the **name** of the tool you want to delete.
4. Click **Delete**. Confirm to delete.

To edit a tool

1. On the main toolbar, click the **arrow** on . Select **Configure** from the dropdown menu.

Note: If you previously have executed an application from this icon, the above icon will not display. Instead, you will see the icon for the application you executed.
2. Select the **tool** you want to edit and then click **Edit**.

3. Make desired changes to the settings (described above in Add a tool manually) and then click **OK**.

To change the order of the list

Tools display in the dropdown list in the order in which they are listed in the Tool Options dialog box.

1. On the main toolbar, click the arrow  Select **Configure** from the dropdown menu.

Note: If you previously have executed an application from this icon, the above icon will not display. Instead, you will see the icon for the application you executed.

2. Select the **tool** you want to move by clicking on its name.
3. In the right panel, click the green up arrow to move the tool up in the list, or the down arrow to move it down in the list. When the list is in the order you want it, click **Close**.

Execute Toad Tools

Toad can open external tools for you and then execute them from the main toolbar. Tools must be configured in order to use this feature. See "Configure Toad Tools" (page 747) for more information.

To execute a tool

1. Click the **dropdown arrow** on  on the main toolbar.

Note: If you previously have executed an application from this icon, the above icon will not display. Instead, you will see the icon for the application you executed (See below).

2. Select the **tool** you want to execute. The tool opens in a new window.

When you execute an external tool from the toolbar, the Toad Tools button changes to the icon for the tool you last executed. You can then click directly on the button to open that tool again, instead of choosing it from the dropdown list.

FTP

Server Settings

The server settings dialog is available in several locations.

To open the Server Settings dialog

- » Do one of the following:

- From the FTP Window, click the **Connect to an FTP server** button. See "FTP" (page 752) for more information.

- From the **Project Manager**, Add an FTP folder. See "FTP Folder Actions" (page 499) for more information.
- From the Unix Monitor, click **Connect**. See "Toad UNIX Monitor" (page 518) for more information.
- From the Unix Job Scheduler, Add a Server. See "Adding a Server" (page 766) for more information.

Additional Information

This topic only covers unfamiliar information. It does not include all step and field descriptions.

Option	Information
Use Default Port	<p>If this option is selected, Toad will use the default port to connect. The defaults are:</p> <ul style="list-style-type: none">• 21 for FTP/Rexec connections• 22 for SSH connections
Passive (for firewalls)	<p>If checked, this directs the server into passive mode. This feature is especially useful if the server is behind a firewall. Many firewalls do not let the FTP server open a connection from outside to the higher ports where the FTP client control expects them. So, if this box is checked, Toad will use the PASV command instead of the PORT command. This directs the server into passive mode, where only the client initiates connections.</p> <p>If this box is unchecked, the PORT command is used.</p>
Default FTP Directory	<p>If no directory is specified, Toad will use the root directory for the server.</p>
Private Key File	<p>If you have chosen a Secure FTP/SSH connection, enter your private key in this box. (You can also use the drill down button to navigate to the private key file.)</p>
Project Manager Items	<p>Project Manager items are available only when setting up an FTP folder in the Project Manager.</p>
Client Directory	<p>The client directory is the directory where downloaded files are placed during FTP operations requiring a file download. For example, when viewing a file on an FTP server, the file is first downloaded then opened in an editor. If a client directory is not specified, the Windows temp file directory is used.</p>
Filter	<p>Enter any filters that you want applied to the files on the server side. These are standard Windows filters: for example *.doc or *.*.</p>

Option	Information
OK	If you are using this to connect directly from the FTP window, clicking OK will begin the connection process. If Toad cannot connect, it will display Host not Found . If you are using this dialog from the Project Manager window, clicking OK will complete the creation of the FTP folder. You will still need to connect by double-clicking the folder as described in the Project Manager>FTP Folders topic. (See "FTP Folder Actions" (page 499) for more information.)

FTP

This window lets you transfer files using FTP or Secure FTP.

Note: Secure FTP only supports binary transfers not ASCII.

FTP (File Transfer Protocol) is the most common means of file transfer on the Internet. Toad has included FTP support primarily so that Oracle scripts can be sent over TCP/IP connections. Toad FTP can support a file size of up to 4GB.

To access **FTP functionality**

- » Select the **Utilities | FTP** menu item.

Connecting

To make a connection

- » Click  and make a connection to an FTP Server from the [Server Settings](#) screen.

Note: If Toad cannot connect, it will display a message to this effect in the Messages area at the bottom of the window.

To disconnect

- » Click .

Note: This button is disabled unless you have an active connection.

Reconnecting

To reconnect

- » Click  to reconnect to the last connected server and navigate back to the last path visited during the previous connection.

Local Panel

The left panel contains a file browser for the local computer.

- The dropdown allows you to type in a file path or select one that has been entered.
- The folder button lets you move up one level in the directory hierarchy.
- The Explore button opens a Windows Explorer-style dialog box that lets you select a local or network directory. The list view control lists the folder and files of the current directory.
- Compare -
- Delete - Deletes the selected file or directory.

CAUTION: Toad provides a recursive delete in FTP. If you choose to delete a directory that is not empty, the files will be deleted as well.

- Exec - Executes the selected file.
- Home - Resets the panel to the default directory.
- Mkdir - Creates a new directory.
- Refresh - Refreshes the file list. You can also refresh the file list by right-clicking and choosing Refresh from the menu.
- Rename button - Opens Rename Window which lets you rename the selected file in the FTP interface.
- View - View the selected file.

Remote Panel

The right panel displays a file browser for the remote FTP server. Commands displayed in this panel as buttons include:

- The dropdown allows you to type in a file path or select one that has been entered.
- The folder button lets you move up one level in the directory hierarchy.
- The Explore button opens a Windows Explorer-style dialog box that lets you select a local or network directory. The list view control lists the folder and files of the current directory.
- Compare -
- Delete - Deletes the selected file or directory.

CAUTION: Toad provides a recursive delete in FTP. If you choose to delete a directory that is not empty, the files will be deleted as well.

- Exec - Executes the selected file.

- Home - Takes you to the directory you have specified in [Toad Options | Network Utilities](#) for this connection.
- MkDir - Creates a new directory.
- Refresh - Refreshes the file list. You can also refresh the file list by right-clicking and choosing Refresh from the menu.
- Rename - Opens the Rename window which lets you rename the selected file in the FTP interface.
- View - View the selected file.

In addition, there are several other FTP commands accessible from the right-click menu on this side of the FTP browser.

Note: These commands are not available for SFTP.

- CWD - Change Working Directory - lets you specify a new working directory on the remote host.
- PWD - Print Working Directory - returns the name of the current directory on the remote host.
- HELP - Displays descriptions for ftp commands.
- SYST - returns a word identifying the system, the word "Type" and the default transfer type (as would be set by the TYPE command). For example, UNIX Type: L8.
- SITE - Executes a site-specific command
- QUOTE - Sends arguments verbatim, to the remote FTP server.
- LIST - lists remote files
- NLIST - name list of remote directory.

Bottom Panel

File Transfer Mode radio buttons

- Default - If selected, the default mode for the FTP server is used.
- ASCII - ASCII file transfer (faster transfer for text-only files).
- - This is used to transfer binary files.

Messages Panel

Connections and FTP server messages are displayed in the messages panel.

Transferring Files

You can transfer files between the local and remote computers. You can select files in either the local or remote panels and transfer them to the other machine by pressing the appropriate directional button located between the two panes ([<] or [>]). You can also use drag-and-drop to

transfer files between the two panes. If you double-click a file, it will be transferred to the other side of the connection.

Note: The FTP component Toad uses can handle file sizes of up to 4GB.

Rename File

This window renames a file in the FTP interface.

To access Rename File

- » You get to this window from the Toad FTP Window.

Java Manager

Java Manager Overview

If you are running Oracle 8i or above, Toad's Java Manager can help you easily access the LOADJAVA and DROPJAVA utilities. The Java Manager consists of two tabs: Load Objects and Unload Objects.

This makes it easy for you to load and unload java classes and resource files to and from the database. The LOADJAVA utility creates several tables used to track the objects and the options used. DROPJAVA cleans up these tables and unloads the code from the database.

To access the Java Manager

- » From the Utilities menu, select **Java Manager**.

Load Objects

The Load Objects tab in the Java Manager window lets you easily set options and load objects using Oracle's LOADJAVA utility. See "Java Manager Overview" (page 755) for more information.

To load objects

1. Select **files** to load.
2. Select loading **options**.
3. Click **Load**. The files are loaded using Oracle's **loadjava.bat** utility file.

Note: In order to load java objects, you must be running Oracle 8i or above, and the Oracle utility file **loadjava.bat** must be installed in your Oracle home directory.

Select Files to Load

The first step in loading java files is to create a list of the files you want to add to the database. You can both add files to this list and remove them from it before you commit to loading them.

Note: If you close the Java Manager after adding files to this list and before loading them, the list will be lost.

To add files

1. Click **Add**.
2. Select the files to add to your list and click **Open**.
3. If you have files in other directories, repeat these steps until they are all listed in the Files to load: area of the Load Objects tab.

To remove files

If you find you have put a file on the Files to load list that should not be loaded, you can still remove it at this point.

- » Select the **file**, and click **Remove**.

Select Loading Options

The options area at the bottom of the tab allows you to set options for loading the files you have selected. These options apply to all selected files.

Create public synonym

If this option is selected, a public synonym will be created when the Java code is loaded. You can check this by looking at the Synonyms page in the Schema Browser.

Resolve

The resolve option instructs Oracle to resolve all of the external references in the objects you load. This allows Oracle to mark objects valid if the references are resolved successfully. The Resolve option uses the specification defined in the [Resolver](#) box to look for references. If the Resolver box is blank, Oracle will look first in your schema and then look for public synonyms.

Definer

The Definer option creates the class to run with the privileges of the logged in user instead of the privileges of the user that owns the class. This is equivalent to the "-definer" option of LOADJAVA.

Force loading of classes whether or not they were previously loaded

If you load a class using Java Manager, then drop the class using the DROP JAVA statement, or from the Schema Browser, you must select this option when you reload the class again. This is because dropping the class from other than the Java Manager leaves entries in tables created by Oracle. Oracle sees these entries and believes that the class is already loaded.

Resolver

This box lets you enter the specification for where Oracle will look when it resolves external references for the objects being loaded. The resolver specification should be in the form:

"((name_spec schema_spec) [(name_spec schema_spec)]...)"

Encoding

This option lets you tell the java compiler what encoding is used for the source file being loaded. Select the appropriate encoding type from the dropdown. If this option is left blank, then Oracle assumes you are using latin1.

Schema

This option lets you specify which schema will own the objects to be loaded. If this option is left blank, objects will be placed in the connected user's schema. To load into your own schema, you must have **Create Table** and **Create Procedure** privileges. To load into another user's schema, you must have **Create Any Table** and **Create Any Procedure** privileges.

Grant access to other users

To grant execute on loaded objects to users other than the schema owner, include them in this list. Enter users as a comma-delimited list.

Drop Java Objects

Use the Java Manager to drop objects. If you have used the Java Manager to load your java, it is a good idea to also use it to drop the java objects. This is because when Oracle's LOADJAVA utility runs it creates several tables. Using the Java Manager to run the DROPJAVA utility will clean up these tables and leave your database more efficient. See "Java Manager Overview" (page 755) for more information about the Java Manager.

To drop java objects

1. Select **files** to drop.
2. Select drop **options**.
3. Click **Drop**. The files are dropped using Oracle's **dropjava.bat** utility file.

Note: In order to drop Java objects, you must be running Oracle 8i or above, and the Oracle utility file **dropjava.bat** must be installed in your Oracle home directory.

Select Files to Drop

The first step in dropping java files is to create a list of the files you want to drop from the database. You can both add files to this list and remove them from it before you commit to dropping them.

Note: If you close the Java Manager after adding files to this list and before dropping them, the list will be lost.

To add files

1. Click **Add**.
2. Select the files to add to your list and click **Open**.
3. If you have files in other directories, repeat these steps until they are all listed in the **Objects to drop:** area of the Drop Objects tab.

To remove files

If you find you have put a file on the Files to load list that should not be dropped, you can still remove it at this point.

- » Select the **file**, and click **Remove**.

Select Drop Options

The options area at the bottom of the tab allows you to set options for dropping the files you have selected. These options apply to all files on the Objects to drop list.

Drop synonym

If this option is selected, any public synonym that relates to the Java object will be dropped as well. You can check that this has occurred by looking at the Synonyms page in the Schema Browser. See "Schema Browser: Synonyms" (page 1066) for more information.

Encoding

This option lets you tell the java compiler what encoding is used for the source file being dropped. Select the appropriate encoding type from the dropdown. If this option is left blank, then Oracle assumes you are using latin1.

Schema

This option lets you specify which schema owns the objects being dropped. If this option is left blank, objects will be removed from the connected user's schema.

Network Utilities

Network Utilities

The Network Utilities command allows you to access the Network Utilities window. From this window, you can work with IP Addresses, Telnet to another account, use RExec commands, or Ping a server from the various tabs.

To access the Network Utilities options

1. From the **Utilities** menu, select **Network Utilities**.
2. From the **tabs**, select the **Utility**.
3. Fill in any **required fields** and click the appropriate **command buttons**.

Telnet

Telnet (Telecommunications Network) is a protocol for connecting to another computer and establishing a session there, where you can issue commands. The protocol is specified in Internet RFC 854.

The Telnet tab is used to communicate with servers implementing the Telnet protocol. It provides telnet capability through a simple interface. It functions like a terminal emulator, although at this time only displayable characters and the <Enter> key are supported (control characters, including backspace, are not currently supported).

To use telnet

1. Select **Network Utilities** and click the **Telnet tab**.
2. Enter the **Host Name or IP address** in the dropdown box and click **Connect**.
3. Toad connects to the host computer.

Note: In the window, login information appears. After the word "Login:" enter your **login name**, press **ENTER**. The remote machine will then request your **password**. Enter it, and press **ENTER**.

When you are connected to the host computer, the top panel in Toad is a console that displays messages from the server and the commands that you type in. The lower panel shows the Telnet commands sent and received as part of the protocol.

The right-click menu lets you **Clear** the screen or copy information to the **Clipboard**.

The **Save Output** button allows you to save information using the Save As window.

RExec

The RExec command allows you to execute only one UNIX command at a time from a UNIX server. Instead of using telnet to log on for an extended period, you enter the appropriate information into the RExec tab and tell Toad to execute one command. Toad executes that command, provides the results to you, and closes your connection.

Note: The server must be running RExec in order to use this utility. In addition, some variants of UNIX may handle an RExec as an rlogin, which may automatically execute login files such as ".profile". In this case, extraneous output commands such as echoing "motel" (message of the day) may interfere with Toad's parsing of the output.

To use RExec

1. Select **Utilities | Network Utilities**.
2. Click the **RExec tab**.
3. Click in the **Host/IP** field and then enter the Host name or its IP Address.
4. Press **Tab** or click in the **Username** field and then enter the **username** you will use to connect.

5. Press **Tab** or click in the **Password** field and then enter your **password**.
6. Press **Tab** or click in the **Command** field and then enter a **UNIX command** such as LS or WHO.
7. Click **Execute**.

Toad logs in, executes the command, logs out and displays the results in the main panel.

Note: If the command you enter requires additional information, such as the command "bc", you will need to enter it in the results window and press **ENTER** to see results.

The right-click menu lets you **Clear** the screen or copy information to the **Clipboard**.

Large Commands in the RExec Box

If you have a very large command to enter in the RExec command box, you can double-click the box. This will open a small text editor that lets you see the entire command as you enter it.

Ping

The Ping tab allows you to check the availability of a server. This uses ICMP to contact other machines on the network and let you know whether it was successful or not.

The Ping tab is accessible from the Network Utilities menu item, or you can create a Ping action.

To ping a server

1. Enter the **Host name** or the **IP address** in the **Host name/IP** field.
2. Select the **interval** to check the server. This interval is in milliseconds.
3. Click **Start**. Toad pings the server you specified repeatedly, at the specified interval, until you click **Stop**. Results display in the lower portion of the window.

The right-click menu lets you **Clear** the screen or copy information to the **Clipboard**.

TNS Ping

TNS Ping is an Oracle utility that tries to determine whether a TNS Listener is running for one of the connection strings in the *tnsnames.ora* file. Given a connection string, TNS Ping looks in the *tnsnames.ora* file to determine the name or IP address of the machine running Oracle, connects and checks for the Listener. The TNS Ping tab allows you to check the availability of a server using the TNS Ping utility.

To use TNS Ping

1. To use this utility, open the **TNS Ping** tab. The TNS Ping tab is accessible from the **Network Utilities** menu item, or create TNS Ping action.
2. Select the **host name**.
3. Click **TNS Ping**. Toad pings the listener and the results are displayed in the window.

If the listener is found, **Attempting** and then **OK** appears in the results area. If no listener is found, **No Listener** appears.

The right-click menu lets you **Clear** the screen or copy information to the **Clipboard**.

IP Addresses

Use the IP Addresses tab to check the IP Address of a Host name/URL. Alternatively, you can check the Host name of a specific IP Address.

To find an IP address

1. The IP Addresses tab is accessible from the Network Utilities menu item. See "Network Utilities" (page 758) for more information.
2. Select the **IP Addresses** tab.
3. At the top of the tab, your **local host name** and **IP address** are displayed. These cannot be changed.
4. In the lower part of the screen enter a **host name**, **IP Address**, or **URL** in the **Host/IP/URL** box.
5. Click **Find**. The IP address for the server is displayed in the table below the box. If you entered an IP address, it is displayed in the same manner.

Right-Click Menu

You can right-click in any of the boxes and have access to often-used commands.

- Select **Clear** to clear the results.
- Select **Clipboard** to copy the contents of the box to the clipboard. You can now paste it in other parts of Toad or other applications.

SSH

Secure Shell allows you to log into another computer over a network, execute commands in a remote machine, and move files from one machine to another, utilizing password/id and data encryption. It provides strong authentication and secure communications over unsecured channels, and is a secure replacement for TELNET, RLOGIN, RSH, and RCP.

Secure Shell authenticates using one or more of the following:

- Password (the /etc/passwd or /etc/shadow in UNIX)
- User public key (RSA or DSA, depending on the release)

There are two versions of Secure Shell available: SSHv1 and SSHv2. They are two entirely different protocols, which encrypt at different parts of the packets, and are therefore not compatible.

SShv2 is more secure and is therefore the current development standard.

The SSH tab is located in the Network Utilities window. In addition to the setup area there are three panels on this tab. The top panel displays messages (not SSH commands) to you (the user) from the server. The second panel displays the command that you type in, as well as a Send button for the command that has been input. The bottom panel displays the SSH commands sent and received as part of the protocol.

To connect with SSH

1. From the Utilities menu, select **Network Utilities**.
2. Click the **SSH** tab.
3. In the Connection Properties area, enter the:
 - Host name
 - Port (the default is 22)
4. Select either SSH version 1 or version 2.
5. In the Authentication Properties area, enter the
 - User name
 - Password
 - Private key file for PUBLICKEY authentication type
6. Click **Connect**.

Task Scheduler

Task Scheduler

The Toad Task Scheduler is an easy-to-use interface to the Windows Task Scheduler. Using this interface, you can create, edit and run tasks.

For detailed information on the Windows Task Scheduler, please see your Windows documentation.

Task toolbar



Button	Command
	New Task - Opens the Windows Task Wizard to create a new Windows task.
	Delete Task - Removes the selected tasks from the Task Scheduler.
	Run Task - Executes the task immediately, regardless of scheduled time.

Button	Command
	Task Properties - displays the Windows properties of the selected task. You can then edit or add to them.
	Delete old tasks.
	Refresh Task list.

Add Task Wizard

Use the Add Task wizard to easily add tasks with multiple parameters to your Windows Task Scheduler.

To add a task to the Windows Task Scheduler

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. From the Utilities menu, select **Task Scheduler**.
2. Click  on the scheduler toolbar.
3. Refer to the following for more information:

Parameters	The command-line arguments you want to pass to the application when it starts.
Working Directory	If you do not enter a working directory, Windows will use the directory that contains the application executable.
User information	The user account is the account for the Windows Operating System, not Oracle user information.

4. Complete the wizard.

Viewing Task Properties

After you have scheduled a task, you may need to view or edit its properties. You can do this from the Task Scheduler screen in Toad. See "Task Scheduler" (page 762) for more information.

To View Task Properties

1. Select **Task Scheduler** from the Utilities menu.
2. Select a task from the task grid.

-
3. Click .
 4. Click the tab of the properties you want to view.
 5. When finished, click **OK**.

Scheduling a Task

To edit an existing task schedule

1. From the Utilities menu, select **Task Scheduler**.
2. Select the task you want to edit in the Task grid.
3. Click .
4. Click the **Schedule** tab.
5. Click the **Edit** button.
6. Make changes to your schedule, and then click **OK**.
7. Click **OK** again to save your changes.

Unix Job Scheduler

Unix Scheduler Overview

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Toad UNIX job scheduler allows DBAs to conveniently manage the installation, scheduling and execution of jobs on UNIX database servers using cron.

Once servers and databases are defined in the scheduler, tasks can be assigned and scheduled. All tasks for all databases can then be deployed to multiple servers. The crontab file is created and sent to each server to start the tasks.

The scheduler also offers the ability to track the success of each job through log files that can be managed for each server. Finally, the program allows the user to start or stop cron from the client and view the crontab file.

The Toad UNIX Scheduler includes many different tasks, housed in UNIX shell scripts. These are organized into four different categories: Database Backup, General DBA, Index Maintenance, and Table Maintenance. You can also write your own task files, and the Scheduler can generate a sample template to help with this.

Note: On some servers the user must be included in the cron.allow file for the UNIX scheduler to work properly. For more information, please see your server's help on cron.allow and cron.deny.

Caution: When you deploy, any other cron jobs for this user will be overwritten. If you are using an existing UNIX account, that already has a crontab file, you should back up your crontab config file on the UNIX server if you plan to use Toad to schedule db jobs.

To Access The UNIX Scheduler

- » From the Utilities menu, select **UNIX Job Scheduler**.

UNIX Scheduler Window

The UNIX Scheduler is composed of two panes. The left pane includes a tree structure of both servers and categories of available tasks. The right pane displays details that refer back to the item selected in the left pane, as follows:

Select in the left pane	To display in the right pane
Available tasks (tasks which have not been assigned to a sid)	The contents of the selected task file.
Available tasks node or a sub node under it (a "category")	The tasks for that category and the task description (parsed out of the file header). Selecting a task on the right and right-clicking offers a "Find/View". When selected, this will find that task and move to it in the tree view on the left.
Server node	SID information. A second tab, Log, displays an interface for managing the cron log files.
SID node	All the assigned tasks, a condensed view of when they are to be performed (this view corresponds with how cron sees the schedule) and the parameter values assigned.
Assigned task node	The assigned task property information.

Troubleshooting the Unix Scheduler

If you are having trouble with the Unix Scheduler, you might try one of the following to solve the problem.

- You must have your FTP and RExec access configured properly. For information on testing your connection, see [FTP \(page 752\)](#) and [RExec \(page 759\)](#).
- On some servers the user must be included in the cron.allow file for the UNIX scheduler to work properly. For more information, please see your server's help on cron.allow and cron.deny.

Scheduling and Deploying Tasks

Creating Servers and SIDS

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The first step to using the Unix Job Scheduler involves a typically one-time setup of the servers and their databases in the user's specific environment. The Scheduler eases this process somewhat by reading the Windows client hosts file and the default tnsnames.ora file. For each host found in the hosts file it tries to find HOST entries in the tnsnames.ora file. If any are found, it pre-populates the left-side tree view accordingly.

If no entries are found in the Windows hosts file, the tree view on the left will have only one node upon startup – **All available tasks**.

Caution: This feature should only be used on secure clients. The password for the UNIX server will be stored encrypted on the client, regardless of how the Toad option to store passwords is set. In addition, the password for the database is stored encrypted in the job datafile, and UNENCRYPTED in the actual files Toad deploys to the server. These files appear on both the client and the server. If you have a network install of Toad, these files appear do not appear on the Toad server.

Adding a Server

To create a new server

1. Click  on the toolbar.
 2. Enter the Server Name or use the drop down menu to select a host found in the Windows client hosts file.
- Note:** If you accidentally delete a pre-defined server, you can later use the drop down to recreate it.
3. Enter the Server connection information into appropriate boxes. All fields are required.

See "Server Settings" (page 750) for more information for more information about Server Settings.

Adding a SID

Once a server is defined, you need to define at least one database for the server in order to schedule a task for it.

To add a SID

1. From the tree view, Click .
2. Enter the SID parameters:

SID	Contains the name of the SID for the database. Do not confuse this with the server name in the tnsnames file. It is found in the tnsnames file line that begins with either: SID = or Service_Name = . This is the value of db_name for your database. Note: Toad does not support dots in the SID.
Oracle home	Contains the fully qualified directory on the server for the "Oracle home" of the database instance. For example, a default 9i home might be /home/oracle/product/9.0.1.
DBA user id and Password	Must contain valid DBA account information so jobs can be performed.
Note: All of the fields in the SID parameters group box are required.	

Enter TOAD User parameters for jobs that will access the Toad schema:

Toad **user id** and **password** - used only by jobs that access the Toad schema. They are required only if you are scheduling those jobs.

3. SYSDBA User parameters for jobs requiring access as SYSDBA:

SYSDBA **user id** and **password** - used by certain jobs that require SYSDBA level access, such as database startup and shutdown. They are required only if you are scheduling those jobs.

Assigning Tasks in the UNIX Job Scheduler

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Once servers and SIDs are defined in the Unix Job Scheduler, tasks can be assigned to SIDs. (See "Unix Scheduler Overview" (page 764) for more information about the Job Scheduler.)

There are a variety of ways tasks can be assigned to a SID. You can assign new tasks, or you can copy them from one SID to another. When you have assigned tasks to various SIDs, you must then set the task Properties for each task. See "Setting Task Properties" (page 770) for more information.

Assigning New Tasks

To assign one task to a specific SID

1. From the tree view in the left pane, select **All available tasks**, or a subcategory under that node. A list of tasks displays in the right pane.

Note: If you select a specific task from the tree structure, the script itself will appear in the right pane.

2. In the right pane, select one or more tasks and drag to the SID in the left. When the SID is highlighted, release the mouse button. The tasks are assigned.

To assign tasks to several SIDs at once

You can also assign one or more tasks to all the SIDS under a the same host.

1. From the tree view in the left pane, select All available tasks, or a subcategory under that node. A list of tasks displays in the right pane.
2. In the right pane, select one or more tasks and drag to the host in the left. When the hostname is highlighted, release the mouse button. The tasks are assigned to all the SIDs in that host.

In addition, you can assign tasks by dragging and dropping within the left side tree view.

To copy assigned tasks

Tasks that have already been assigned to a SID can be copied to other SIDs.

- Click the SID to see the assigned tasks under it. Select the task to copy and drag it to another SID.
- All of the tasks for a SID can be copied to another SID by dragging a SID that has assigned tasks and dropping it onto another SID. All tasks assigned to the source SID are copied to the destination SID. This does not overwrite tasks that have already been defined.

Deploying Tasks to Servers

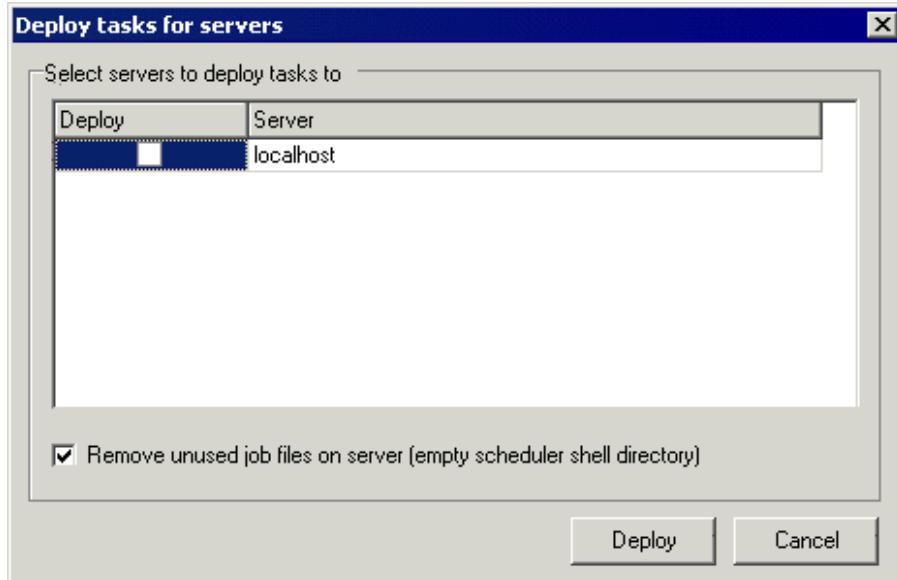
Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

When at least one task has been assigned and any parameters given values, you can deploy to your servers using the Unix Job Scheduler. The deployment process is a fast and efficient series of rexec and ftp commands. Deployment assumes your account information and server are properly configured for both rexec and ftp. If the servers are not properly configured, the deployment process may not complete, or errors may be returned. See "Unix Scheduler Overview" (page 764) for more information.

Caution: When you deploy, any other cron jobs for this user will be overwritten. If you are using an existing UNIX account, that already has a crontab file, you should back up your crontab config file on the UNIX server if you plan to use Toad to schedule db jobs.

To deploy tasks to servers

1. Click the **Deploy** button.



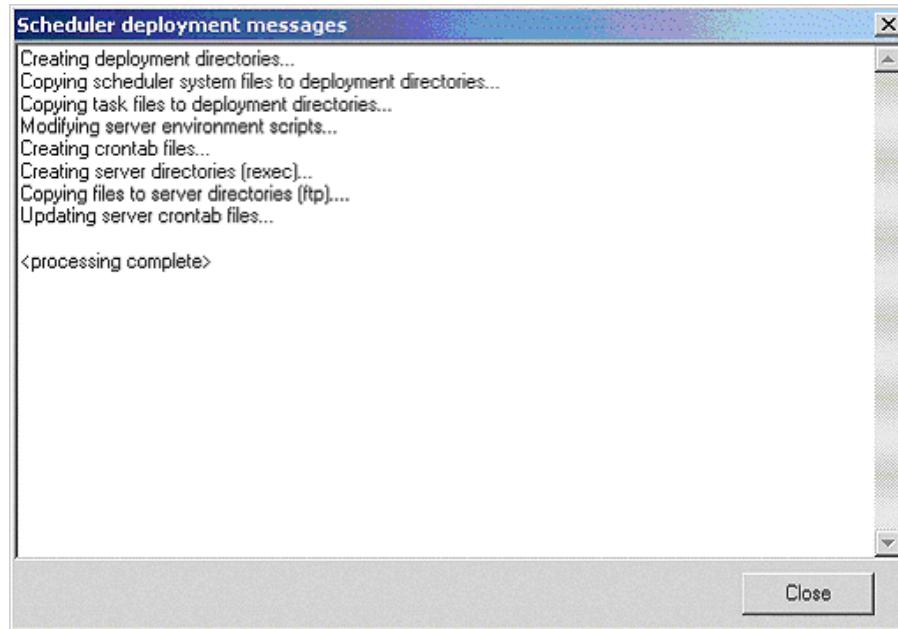
The grid in this dialog box is populated with a list of the servers with tasks assigned to them.

2. Select the servers containing tasks you are going to deploy. Choose whether you want to overwrite the previous Scheduler deployment data by checking the **Remove** check box.

Caution: When you deploy, any other cron jobs for this user will be overwritten.

3. Click the **Deploy** button.

A status window opens, showing the progress of the server deployments:



This status window shows precisely what occurs during a deployment:

- The necessary server directories are created using RExec. This includes the Scheduler root directory, as specified in server properties, as well as four subdirectories: dmp, log, shell and tmp.
- The shell subdirectory is where all task files are copied.
- The log subdirectory contains log files.
- The dmp and tmp subdirectories are used by the jobs themselves (dmp for exports, tmp for jobs creating temporary files).
- Scheduler system files are copied to the server's root Scheduler directory. These consist of the script engine used to run tasks, "tjs_run_job.sh," as well as the scripts used in creating log files: "tjs_start_log.sh" and "tjs_stop_log.sh".
- The assigned task files are sent to the servers by ftp, and their executable bit is set.
- The crontab files are then generated and sent to the servers. Cron is then told to use the new crontab file.

Task Properties

Setting Task Properties

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Once tasks have been assigned to SIDs in the Unix Job Scheduler, you must set their properties. This includes scheduling information, and setting any parameter values.

To view and set properties

1. Under a SID in the left pane, click an **assigned task**. Properties display in the right pane.
2. Click in the **value column** of a parameter and adjust as desired.

Scheduling Tasks

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Scheduling information for the Unix Job Scheduler is found in the Perform task area of the right details panel. See "Unix Scheduler Overview" (page 764) for more information.

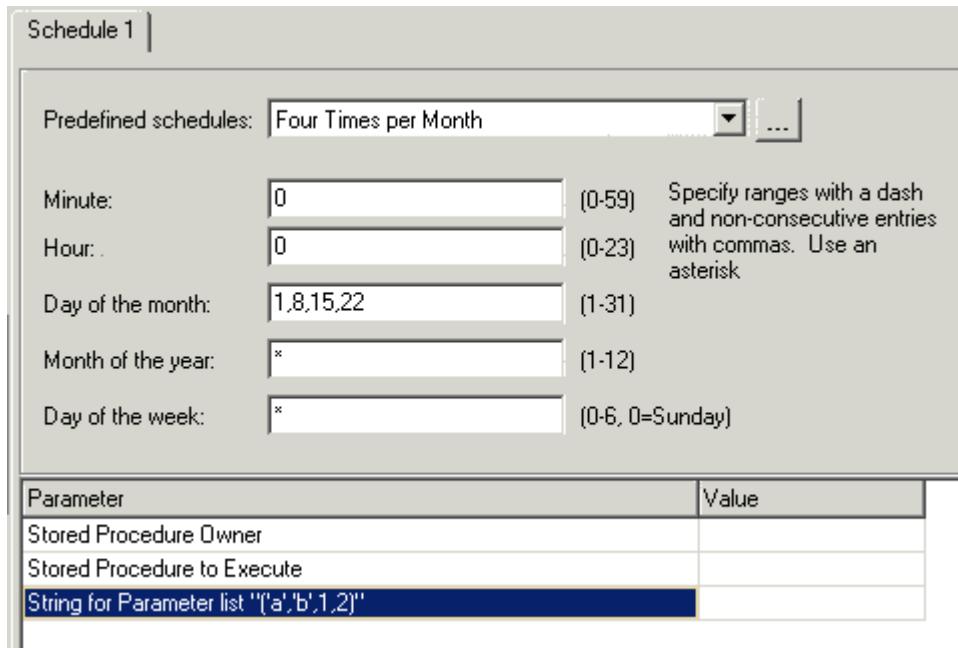
Each task provided with the Scheduler has default scheduling information contained in its header. This scheduling information is parsed out and assigned to the scheduling fields automatically when you select that task. For example, this is the header for a task that deallocates one index:

```
#-----
# File: deallocate_index_one_index.sh
# Desc: Perform Index Deallocate - Single Index
# Runs: Four Times per Month = 0 0 1,8,15,22 * *
# Parm: 1 - Index Owner
# Parm: 2 - Index to Analyze
# Parm: 3 - Megabytes to Keep (default 4)
#-----
```

Note: In the "Runs:" field the fields are parsed out and automatically assigned to the scheduling fields.

When you select this task, Toad parses the header and enters the default schedule into the appropriate fields in the details pane. All of the fields can be changed, and parameter listings that have no value listed need to have the correct parameter added.

The schedule below is from the built-in .sh file `execute_stored_procedure.sh`. You can change any of the schedules, as described below. In addition, the parameter grid for this shell needs to have the parameter values added. See "Setting Parameter Information" (page 774) for more information.



Pre-defined Schedules

For further convenience, a Pre-defined Schedules dropdown offers commonly used dates and times. Selecting a pre-defined schedule will populate the fields with the appropriate values for the selected time sample.

These Pre-defined Schedules are configurable. If you use a schedule regularly, and it is not already on the list, you can add it.

Click **...** to edit the list. You can add records, delete records, change the preset times, and so on. Changes in this window are stored in the TOAD.INI file. If you find you need to delete your changes, you can click **Restore Defaults** and the original Toad defaults will be restored.

Options for scheduling

The scheduling details consist of five fields: Minute, Hour, Day of Month, Month of Year, and Day of Week. Taken together, these fields represent an enormous range of date/time possibilities you can use to schedule a task. They also directly represent the fields used in a crontab file entry.

Basic Entries

Each crontab entry is a single line composed of these six fields separated by whitespace.

Entry	Contains
Minute	Digits 0 through 59
Hour	Digits 0 through 23 (0 being midnight, and 23 being 11 p.m.)
Day of the month	Digits 1 through 31

Entry	Contains
Month of the year	Digits 1 through 12
Day of the week	Digits 1 through 6

The different "day" fields (day of the month and day of the week) are present to let you use different scheduling algorithms. For example, you can back up a database every Tuesday, or perform index maintenance every 15th of the month.

- Enter an asterisk (*) in the day field you are not using.

Use both day fields if you prefer to have the task execute on, say, the fifteenth of the month *as well as* every Tuesday.

Additional Customization

To Specify	Use
Multiple Days	<p>The different "day" fields (day of the month and day of the week) are present to let you use different scheduling algorithms. For example, you can back up a database every Tuesday, or perform index maintenance every 15th of the month.</p> <ul style="list-style-type: none">• Enter an asterisk (*) in the day field you are not using. <p>Use both day fields if you prefer to have the task execute on, say, the fifteenth of the month <i>as well as</i> every Tuesday.</p>
Ranges	Specify ranges with a dash. If you want to specify the eighth through the fifteenth days of the month, enter 8-15 in the Day of the month field.
Non-consecutive entries	Separate non-consecutive entries in a field with commas. For example: 1,15 in the Day of the month field means the first and fifteenth of the month.
All values	Specify all values for a field, for example every month of the year, with an asterisk (*) in the field. Note: To specify every day you must enter * in both day fields.

Adding Additional Schedules

You can add additional schedule tabs to a task. Having additional schedules for the same task lets you run that task with different parameters, or at widely different intervals.

- Click + above the schedule tab. Another tab is added. Make changes to this schedule as desired and as described above. The task will now run on both schedules.
- You can remove a schedule tab as well. Select the tab you want to remove, and click - above the tabs. The tab is removed with no confirmation.

Setting Parameter Information

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Scheduling some tasks in the Unix Job Scheduler requires parameters. These parameters are described in the header of the task file. For example, this is the header for a task that deallocates one index:

```
#-----  
  
# File: deallocate_index_one_index.sh  
  
# Desc: Perform Index Deallocation - Single Index  
  
# Runs: Four Times per Month = 0 0 1,8,15,22 * *  
  
# Parm: 1 - Index Owner  
  
# Parm: 2 - Index to Analyze  
  
# Parm: 3 - Megabytes to Keep (default 4)  
  
#-----
```

There are three parameters defined here. The first is used to specify the index owner, the second describes the index to analyze, and the third specifies the number of megabytes to keep.

These parameters are parsed into the Assigned Task Properties panel. Each parameter for each assigned task must be assigned a value in the parameters grid in the bottom half of the assigned task properties panel on the right hand side.

If a parameter has a default value, the default value is parsed from the header and automatically placed in the grid.

To change parameter values

- » Click in the **value column** and enter the new value.

Checking Required Elements

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Before tasks can be successfully deployed to servers through the Unix Job Scheduler, many required elements may need to come together. These include user id's, passwords, task parameter values, and so on.

Before a deploy is executed, an automatic check is performed for all of these elements. You can also perform this check manually.

Unresolved issues must be resolved before deployment. If they are not resolved, the list will reappear when you choose to deploy.

To check required elements manually

- » Click  on the toolbar.

Advanced Features

Creating New UNIX Task Files

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can create new task files for tasks you want to schedule on a regular basis using the Unix Job Scheduler. See "Unix Scheduler Overview" (page 764) for more information.

A task file is saved as a text file with a .sh extension. If you are proficient with UNIX shell scripts you can use the "New task template" button to get a starting shell template. Or you can use an existing task file as the basis for a new script: just open it in a text editor, edit and save as a new file.

Toad Unix Scheduler requires the header of a task file to conform to its format. This allows the scheduler to parse the code and enter the appropriate boxes in the details pane of the window.

To create a task file from a template

1. Click .
2. Click **OK** to confirm.
3. Paste the template into a text editor.
4. Edit the template.
5. Save with a .sh extension.

Saving the Task File

The Toad Scheduler organizes its hierarchy from the \UnixJobs\Base\Shell subdirectory under the Toad executable directory.

To be sure the scheduler can find your new task, save it in this directory. Alternately, you can save it in a subdirectory under the Shell directory. The Scheduler searches the Shell subdirectory and any subdirectory under it for "*.sh" files.

Subdirectories are listed as separate nodes under the "All available tasks" node. You can create new directories in the Shell directory and Toad will recognize them.

Header

The Toad Scheduler expects the header to contain specific information, in a specific format. This is where Toad gets the information to fill in the details for default values. The header should be formatted as follows:

```
#-----  
# File: deallocate_index_one_index.sh  
# Desc: Perform Index Deallocate - Single Index  
# Runs: Four Times per Month = 0 0 1,8,15,22 * *  
# Parm: 1 - Index Owner  
# Parm: 2 - Index to Analyze  
# Parm: 3 - Megabytes to Keep (default 4)  
#-----
```

Working with Multiple Job Datafiles

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

All of the data defined for servers, their databases, and assigned tasks in the Unix Job Scheduler is stored in an INI file, called "Scheduler.jdf". This file is stored in the \UnixJobs subdirectory. See "Unix Scheduler Overview" (page 764) for more information.

Typically you will only work with one configuration datafile. However, there may be times when you want to establish two or more completely different environments where jobs are scheduled. You can move between different configurations by opening and deploying a different Scheduler datafile.

There are three toolbar buttons that facilitate this:

Button	Action
	Load job datafile...
	Save job datafile
	Save job datafile as...

To create a new datafile

- » Start with the default datafile and select **Save job datafile as....** You are now working in a new datafile with the name you just applied.

To load a datafile

» Do one of the following:

- To load a different datafile, assuming you have created a new one, simply click the **Load job datafile** button.
- If you want to save your current work before opening another datafile, click the **Save job datafile** button first.

The rightmost section of the status bar displays name of the datafile currently open.

Using the Logging Facility

Scheduler Logger Overview

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

When you have successfully started jobs running on your servers, you can use the Unix Job Scheduler logging facility to see the results of those jobs.

To access the scheduler logging facility

1. From the right side, select a **Server**.
2. On the right side, select the **Log tab**.

Fetching the Log File List

To view the current log files

» Click 

To view a subset of log files

» Click the  dropdown and then select one of the following:

All log files (this is the default)	Retrieve a list of all log files (potentially a very long process).
Last execution	Display the last log file created for each job.
Failures only	Display a list of all log files that have a status of failure.
Failures only, for last execution	Display the last log file created for each job that failed.

Viewing Log Files

To view contents of one of the log files

- » Double-click a grid entry. This will ftp the chosen log file and open it in the Toad default editor.

Deleting Log Files

To delete selected log files

1. Select or multi-select the files in the grid.
2. Click  and then click **OK**.

CAUTION: No confirmation is requested.

To delete all log files

- » Click . A confirmation request is given.

Viewing the Crontab File

To view the crontab file

- » Click .

Note: The crontab file (named crontab_file.txt) is ftped from the Scheduler directory on the server and opened in Toad's default editor.

Starting and Stopping the Cron program

To manually start or stop the CRON program

- » Click  button on the toolbar.

Note: This issues a "cron crontab_file.txt" or a "crontab -r" RExec command, respectively. A confirmation prompt is given, although the success of the command is not verified.

Source Control and Team Coding

Support for Version Control Products

Team Coding

Direct Support

Toad's Team Coding feature directly supports the following third party products:

- Microsoft Visual SourceSafe 5.0, 6.0, 2005 (8.0)
- Concurrent Versions System (CVS) 1.11.12
- PVCS (ChangeMan) 5.2, 5.3, 6.0, 6.6, 6.7, 6.8.1 7.5.0, 8.02, and 8.1

Note: PVCS 6.6.1 and 6.8.0 are specifically NOT supported with Team Coding

SCC Support

Team Coding also operates with products providing Microsoft's SCC API. The products tested with Toad's Team Coding through SCC include:

- Rational Clearcase 5.0 (2002)
- ComponentSoftware CS-RCS 2.5.140, 3.0.192, and 3.0.196 Workgroup mode only
- Quma QVCS 3.5 and 3.6 (only allows one code control group)
- Borland StarTeam 5.2 and 5.4 (need the SCC Integration component from Borland)
- Microsoft Visual SourceSafe 5.0, 6.0, and 2005
- PVCS VM 6.6, 6.7, 7.5.0, 8.0.2 and 8.1

Third Party File Based Source Control

Toad's Third Party File Based Source Control feature provides check in and check out of files through the SCC API. This source control is available only in the Editor and Project Manager, and it is not aware of database objects. Products tested with this feature include:

- Rational ClearCase 4.1
- ComponentSoftware CS-RCS 2.5.140, 3.0.192, and 3.0.196
- Quma QVCS 3.5 and 3.6
- Borland StarTeam 5.4 (need the SCC Integration component from Borland)

- Microsoft Visual SourceSafe 5.0, and 6.0
- PVCS VM 6.6, 6.7, 7.5.0, 8.0.2 and 8.1

Notes

- It is strongly recommended you use the native API's (not the SCC integration) for SourceSafe and PVCS when using Team Coding.
- Each product may require a custom installation to install the SCC interface. Please refer to the release notes for the latest information on version compatibility.
- Users of Version Control products that implement the SCC interface will find the following operational differences in this version of Toad:
 - The Toad Version Control Browser is not available; it is replaced by the third party product's own user interface
 - The display of the project tree when creating a new Code Control Group is replaced by the third party product's own dialog box.

CVS Support

See "CVS Requirements" (page 813) for more information about CVS Requirements.

Third Party File Based Source Control

Third Party File Based Source Control

Toad supports the Source Code Control (SCC), a Microsoft API. It defines a standard interface between development environments and source control products. The SCC API provides functions to perform the common source control operations such as check-out, check-in, and add file.

SCC is implemented in:

- Schema Browser | Favorites page
- Project Manager
- Editor
- Script Debugger

If you need more functionality than basic check-in and check-out functions, please consider using Team Coding. Team Coding and SCC are not mutually exclusive. See "Team Coding and SCC Interaction" (page 784) for more information.

See "Support for Version Control Products" (page 779) for more information about products that have been tested with Toad.

Each SCC compliant product will create an entry in the registry identifying it as an SCC provider and identifying the location of the DLL used to call the SCC functions.

Note: The client portion of the Source Control install must be run. You cannot run only the server piece of the Source Control install.

Setting up Source Control for the first time

To prepare source control for use

1. Install your client.
2. Confirm your client is configured to support SCC API. You confirm this by checking that the client or the client install has created the SCC API registry key.
3. From the View menu, select **Toad Options** and click Source Control.
4. Select your SCC provider and check/uncheck options as desired. See "Source Control Options" (page 682) for more information.
5. Open your file in the **Editor**. Remember that Toad Source Control is run through the Editor.
6. Right-click in the **Editor** and choose **Source Control**. Click **Select Project**.

Your SCC provider will display a dialog box asking you to select a project. Depending on the provider and the configuration, it may also ask you to log in or browse for a database. It may provide a place for you to set a working folder. Refer to your Source Control provider's documentation for further details.

Note: The working directory for the selected project must match the directory where you loaded the file.

7. If the file is already stored in Source Control, you can check it in and out. Otherwise, you can right-click and select **Source Control | Add File** to add it to the Source Control database. This assigns it a checked-in status. You will have to check it out to modify it.

Source Control Options

You must also have the interface to the SCC configured by selecting the Source Control options in the View | Toad Options | Team Coding page.

To set the Source Control Options

From the drop-down menu, select the **Source Control Provider** that you want to use with Toad. The Source Control Provider drop-down lists the SCC providers found in the registry. If you do not have a Source Control Provider installed, the drop-down menu will be empty.

Note: If you switch providers, you should restart Toad.

3. Select or deselect the appropriate **Prompt for Comment** check boxes. Selected, a prompt for a comment will display with the respective action.

See "Source Control Options" (page 682) for more information.

Source Control using Subversion

Subversion is integrated into Toad using Tortoise SVN as a GUI. Using the Third Party File Based Source control, you can install Tortoise on your machine and select it as your Source Control Provider from the dropdown list in Toad | Options.

Source Control Toolbar

The source control toolbar can be displayed in both the SQL Editor and the Editor. This toolbar covers basic source control only, and should not be confused with Team Coding. See "Third Party File Based Source Control" (page 780) for more information.



Icon	Command
	Check out from Source Control
	Check into Source Control
	Undo Checkout
	Get latest version from Source Control
	View differences between file and document in source control
	Add to source control
	Select active project of source control

Running Source Control

Source Control is run through the Editor. You can check-in or check-out files from the Editor toolbar. All other functions are accessible from the right-click menu as described below.

When you are working with Source Control, remember the following:

- Unless a file is checked-out it should have a read-only status. Read-only files cannot be edited.
- All SCC functions act upon the currently loaded file.
- Source Control functionality does not work with database objects; it only works with files.

The right-click menu

You can access the following functionality from the Source Control right-click option as well as the Toolbar:

Command	Description
	Check-out file is available both from the Editor toolbar and the right-click menu. When a file is checked-out, the file is reloaded from the source control file and made writeable. A file may only be checked-out by one person at a time. Be aware that this file will be the most current. It may be different from the read-only one you have stored locally.
	Check-in file is accessible from both the Editor toolbar and the right-click menu. When a file is checked-in, it is set to read-only again.
	This command discards any changes you have made and reverts to the original read-only version. This is useful if you make changes and then decide they are not applicable. Note: Any changes you have made while the file is checked out are lost.
	Get latest version refreshes the file from the source control and reloads the file to your local machine. The file remains read only. To make changes, you must check it out.
	If you have created a new file, you can use the Add File command to add it to source control and mark your local copy read-only. This should only be used for new projects (files).
	You can view the differences between a file you have been working on in the Editor and a file in Source control.
	This produces a provider-specific dialog box allowing you to select a source control project. The selected project is retained in the .ini file between Toad sessions.

Team Coding

Team Coding Overview

Team Coding is a cooperative source control feature. You can use Team Coding alone or in conjunction with a third party version control system. Team Coding works with the Editor to control access and development of functions, procedures, packages, triggers and types.

In addition, Team Coding supports scripts in both the Editor and the Editor.

Note: Team coding does not have to replace Toad's Version Control, but it provides more features in a more integrated environment.

Alone, Team Coding:

- Provides PL/SQL developers with the ability to develop stored programs without concurrently modifying the same objects
- Provides a built-in viewer to see item status
- Does this through a check in/out system that does not require a third party version control product.

Working with a third party version control product:

- Use of a version control archive, allowing a revision history to be kept for your code
- Ability to launch the third party VCS provider's browser (if not using VSS or PVCS) from within Toad
- User Mapping, allowing multiple Oracle users to work on a Team Coding controlled project in their own schemas
- Placing script files under code control
- Import/Export of Code Control Groups

Team Coding Built-in Features

Some highlights of the Team Coding built-in features are:

- Flexible Code Control Groups (CCGs) help you control objects from one or more schemas, using customizable groupings.
- You can organize objects into CCGs by using object masks representing both specific database objects and collections of similar objects (by using the Oracle % wildcard). You can also set up exclusion masks to exclude specific objects from a CCG.
- Even without a third party version control product, you can use CCGs, so you can track referenced objects through Team Coding (though without revision history).
- All configuration data is stored in the database under Team Coding control. Individual workstations do not need to be configured.

Team Coding and SCC Interaction

Team Coding Functionality and Source Code Control (SCC) can be used together. They interact as follows:

SCC Implemented In	TC for Files Implemented in
Schema Browser, Favorites page	Schema Browser, Favorites page

SCC Implemented In	TC for Files Implemented in
Project Manager	Editor (scripts)
Editor	Editor

When you enable Team Coding, Toad disables SCC functionality in the Editor, leaving it enabled elsewhere.

Using Team Coding in SQL Navigator Environments

Team Coding can use a Team Coding environment installed by SQL Navigator. This allows cooperative Team Coding between users of Toad and SQL Navigator on the same database.

Team Coding environment requirements

The SQL Navigator Team Coding environment that is installed on your database must be version 6. This was released with SQL Navigator 4.3. If an older version of the Team Coding environment is detected, Team Coding will be disabled until you update your environment. You can update your environment using the Toad Server Side Object Wizard.

Note: The SQL Navigator objects must be set up through SQL Navigator. You can direct Toad to use the SQL Navigator Team Coding Objects and you can update older versions through Toad so that Toad can use the environment.

Setting up Team Coding for use in a SQL Navigator environment

When you install Toad, if you have the SQL Navigator Team Coding environment version 6, you do not have to do anything to use Team Coding.

However, if you used SQL Navigator 4.1 or 4.2 to create your environment, you will need to use the Server Side Objects Wizard to upgrade it.

To upgrade your SQL Navigator Team Coding environment

1. From the Database | Administer menu, open the **Server Side Install** wizard.
2. Choose **Install, upgrade or remove objects for all users to share** and then click **Next**.
3. Select the third button (Install, upgrade or remove objects in a schema other than Toad) and logon as the SQLNAV user. Click **Next**.
4. In the Team Coding area, select **Upgrade to 6.0 objects**. Click **Next**.
5. Change Team Coding roles if desired. Click **Next**.
6. Do one of the following:
 - Click **Run Script** to upgrade your Team Coding objects.
 - Click **Save Script to Disk** to save the script and run it later.
7. Click **Finish**.

Troubleshooting

If you find that Toad is using its own Team Coding environment and you know that you should be using the SQL Navigator environment, then you can use one of two methods to remedy the issue.

To use the Server Side Install method

- » Use the Server Side Objects Install wizard to remove the Toad Team Coding objects from the database. See "Installing Server Side objects" (page 172) for more information.

To use the manual method

- » Modify the public synonym QUEST_COM_TEAM_CODING so that it points to the TC config table in the schema where their chosen TC objects are installed.

Caution: Ensure that you want to change environments before proceeding, as this change affects all users of the selected database.

To use the SQL Navigator version

1. Drop the Public synonym 'QUEST_COM_TEAM_CODING'.
2. Run the following in the Editor:

```
CREATE PUBLIC SYNONYM 'QUEST_COM_TEAM_CODING' FOR SQLNAV.SQLNAV4_
VCS_CONFIG
```

To use the Toad version

1. Drop the Public synonym 'QUEST_COM_TEAM_CODING'.
2. Run the following in the Editor:

```
CREATE PUBLIC SYNONYM 'QUEST_COM_TEAM_CODING' FOR <schema>.TC_CONFIG
```

where <schema> is wherever Team Coding was installed.

Installing and Enabling Team Coding

Installing Team Coding Options

Three basic steps must be taken for installation before you can use Team Coding.

To install Team Coding

1. There are objects required on the database for Toad to access Team Coding. You can install these scripts from the Server Side Objects Installation wizard, accessible from the **Database | Administer** menu. See "Installing Server Side objects" (page 172) for more information.

2. When you have finished installing the Server Side Objects, you can then grant Team Coding roles to users. You can do this from the **Users** tab in the **Schema Browser**.

Enable **Team Coding** in the Oracle Instance. Before using Team Coding features, the new features must be enabled in the Oracle instance by a user granted the Administrator role. See "Enabling Team Coding in the database" (page 788) for more information.

Note: These three steps provide basic source control. If automatic check in/out are selected, Toad will prompt you to check items in and out when opening and closing them. In addition, you can also set up Code Control Groups and use a third party VCS. The Version Control System is the source control archive for your projects. This can be the Team Coding Archive as described in the Version Control Browser topic, or the third party source control product.

3. Create Code Control Groups. When Team Coding is enabled, you can then begin organizing your projects into Code Control Groups. You do not have to use Code Control Groups unless you are using a third party system, but they provide a way to organize your work.
4. Export database objects to the from the database.

Team Coding Roles

Team Coding uses Oracle table and column privileges to control access. The roles are automatically set up when you create the Team Coding objects in the Server Side Objects wizard.

The following default roles were created using settings that represent the standard uses of these privileges:

Role	Privileges
Administrator (TC_ADMIN_ROLE)	Can configure the instance to define how Team Coding operates, which VCS (if any) is used, and so on. This role is automatically assigned to the Toad user.
Project Manager (TC_MGR_ROLE)	Can create and delete code control groups (CCGs) and relate them to a VCS project.
Team Leader (TC_LDR_ROLE)	Can modify CCGs, define the objects or scripts are included in the group, and freeze objects. Can also delete rows from the Team Coding Viewer.

Users not granted one of these three roles hold the assumed role of developer. They can view the status of objects with the Team Coding Viewer and check items in and out of source control.

After creating the roles, you need to grant them to users. See "Grant Team Coding Roles to Users" (page 788) for more information.

Grant Team Coding Roles to Users

Grant Team Coding Roles to users in the same way you would grant other roles.

Note: You must be connected as a DBA user to grant roles.

You can grant roles from the **Schema Browser, Users** page.

To grant roles to users

1. Select a **user** in the left panel
2. Click .
3. Click the **Roles** tab. Add or remove roles as desired.

You can also grant roles from the Editor. Enter the appropriate SQL and execute it. For example:

```
grant TC_ADMIN_ROLE to ARTHUR
grant TC_LDR_ROLE to SUSAN
```

Enabling Team Coding in the database

Before you can use Team Coding, it must be enabled within the Oracle connection. This must be done by a user with the TC_ADMIN_ROLE.

To enable Team Coding

1. Click  on the Team Coding toolbar.
 - The Team Coding Status dialog box displays the connection information in the title bar.
 - If Team Coding is enabled, the Permissions area will display a green check mark beside Team Coding Available and the permissions the current user has.
2. Click **Settings** to see and edit Team Coding status for this connection.
3. Check **Enable Team Coding**.
4. If you want to use Code Control groups, or 3rd party version control, select those as well. If you choose 3rd Party Version control, you will need to choose the appropriate Version Control System from the list below the check boxes.

Note: Only version control software you have installed will display in the selection box.

Team Coding Settings

The Team Coding Administrator can configure the way Team Coding works with the database. Individual users can configure individual options. See "Source Control Options" (page 682) for more information.

The three settings groups make Team Coding flexible and easily configurable to the way your organization works. Any team member can see the settings chosen for the database where they are connected. However, you must have the Administrator role to make changes. See "Team Coding Roles" (page 787) for more information.

To access Team Coding settings

- » Open the Team Coding Status dialog box and then click **Settings**. See "Team Coding Status" (page 790) for more information.

Configuration Settings

Configuration covers the basics of Team Coding on the current database.

You can:

- Enable Team Coding
- Enable Code Control Groups
- Enable third party version control (VCS)

File Extension Options

File extension options let you control the extensions Toad adds to files saved in the Version Control System. The default extensions are:

- Procedure PRC
- Function FNC
- Package PKS
- Package Body PDB
- Trigger TRG
- Type TYP
- Type Body TPB

General Settings

The General settings let you set user preferences and also adjust global settings. In addition, you can change or add script file extensions.

User Settings

User-specific settings can be set from the Toad Options page. See "Source Control Options" (page 682) for more information.

Global Settings

Setting	Result
Update Database after Check-in	Forces the database object to be updated after a check-in so that it is identical to the checked-in work file. This option is

Setting	Result
	useful when the version control product performs keyword-expansion when files are checked in.
Force Comment during Check-in	When selected, the Check-In dialog box requires that the user enter a comment before the dialog box can be closed.
Script File Extensions	Use this setting to customize the file extensions Toad uses when saving a script. The default is ".sql".

Team Coding Status

You can see the status of Team Coding functionality in the current database at any point. If you have the correct permissions (the Administrator role), you can make changes to the settings and permissions.

To display Team Coding status

- Click  on the toolbar.

The status page displays the parts of Team Coding enabled for this database and your permissions.

In addition, you can click **Settings** to see the settings for the Team Coding feature, or **Messages** to see any status messages for the current connection.

Using Team Coding

Team Coding Toolbar

The Team Coding Toolbar makes all Team Coding commands available with a click of the mouse. The Team Coding Toolbar is hidden by default.

To display the team coding toolbar

1. Right-click over any visible toolbar.
2. Select Team Coding from the list of toolbars.

Team Coding Toolbar



Button	Command
	View or Configure Code Control Groups dialog box. See "Code Control Groups Overview" (page 799) for more information.

Button	Command
	Open the Team Coding Viewer. See "Team Coding Viewer" (page 792) for more information.
	Open/Launch the Version Control Browser. See "Version Control Browser" (page 810) for more information.
	Get latest revision of selected object/file. See "Getting the latest Revision" (page 812) for more information.
	Check out selected object/file. See "Checking Objects and Scripts in and out" (page 795) for more information.
	Check in selected object/file. See "Checking Objects and Scripts in and out" (page 795) for more information.
	Undo check out of selected object/file
	Check in all objects locked by you
	View Team Coding status for this session. See "Team Coding Status" (page 790) for more information.
	Log onto VCS

Responding to the Different Files Dialog

When you open an object or script, Team Coding compares it with the latest revision in the Version Control Provider (VCP) repository (unless it is checked out, in which case Toad opens a read-only version of the file). If the database object or script differs from the version saved to the VCP repository, Toad notifies you.

Differences in objects could be due to a number of factors. For example:

- Another tool may have been used to edit the object
- A script may have been executed that modified the object
- The archive in the VCP repository may have been updated by some means other than Team Coding.

You can choose one of the following options in the Different Files dialog box.

Option	Description
View Differences	Launch the Differences Viewer so that you can compare the two objects.

Option	Description
Open Database Version	Load the database version into the VOE or Procedure Editor in Read Only mode.
Open VCP Version	Update the database with the VCP repository version and loads into the VOE or Editor in Read Only mode. Caution: Opening the version from the repository will cause the object in the database to be updated.
Make editable	Check the selected item out for editing.

Using Team Coding without Code Control Groups

Viewing Object Status

Team Coding Viewer

The Team Coding Viewer shows object details under Team Coding control, including which objects are checked out and when they were last checked in.

To access the Team Coding viewer

- » From the Team Coding toolbar, click .

Object details are listed in grid format. The grid column widths and sort orders are saved in the TOAD.INI file when you close the window.

Status icons are displayed in the status column as follows:

-  Available
-  Frozen (UserMapping)
-  Checked Out

You can check objects in or out from this window. With the appropriate privileges, you can freeze objects so other users cannot modify them.

The list of objects shown in the Team Coding Viewer can be limited to just those that you need. Use the Team Coding Viewer Filter dialog box to specify which objects should be shown. See "Team Coding Viewer Filter" (page 808) for more information.



Button	Command
	Refresh the list.
	Filter the list of objects. When a filter is in use, this icon turns red. See "Team Coding Viewer Filter" (page 808) for more information.

Button	Command
	Get latest revision of selected object.
	Check out selected object from source control. See "Checking Objects and Scripts in and out" (page 795) for more information.
	Check in selected object to source control. See Checking Objects and Scripts in and out for more information.
	Undo checkout. See "Undo Checkout" (page 798) for more information.
	Freeze selected object. See "Freezing an Object" (page 799) for more information.
	Unfreeze selected object. See "Freezing an Object" (page 799) for more information.
	Open selected object.
	Delete selected object from viewer.
	View differences between selected object/script and latest VCS revision. See "Viewing Differences Between Revisions" (page 812) for more information.
	View details of selected object.

Viewing Team Coding Object Status

There are several ways to view Team Coding status. Status is displayed in the status area at the bottom of the Editor and Editor and there is a separate status window for more detailed viewing.

Status in the Editor Status Bar or Team Coding Viewer Status Column

When you open an object or script under Team Coding control in an editor, the editor status bar (near the lower window border) shows the object's Team Coding status. In addition, the status of the object is displayed in the Status column of the Team Coding Viewer. See "Team Coding Viewer" (page 792) for more information.

Status	Meaning	Editable?	Actions Allowed
Uncontrolled	Not under Team Coding control	Editable	None

Status	Meaning	Editable?	Actions Allowed
Available	Available for check-out	Read-only	Check-out Freeze
Checked Out	Checked out to you	Editable	Undo check-out Check-in Freeze
Locked	Checked out to another user or locked using a user-mapping check-out	Read-only	Freeze
Frozen	Frozen	Read-only	Unfreeze
Disabled	Disabled due to a Team Coding specific error	Read-only	None

Detailed File Properties

Also from the Team Coding Viewer, you can right-click on an object and select **Properties**. Doing this displays detailed information about the object.

Version Control

Checking Objects and Scripts in and out

You can check objects and scripts in and out from the Team Coding menu, the Team Coding Viewer toolbar and, if you are using VSS or PVCS as a third party VCS provider, the Version Control Browser toolbar.

Using Automatic Check-in and Automatic Check-out

If the Automatic Check-In and Automatic Check-Out features are enabled, then you are automatically prompted to check out the item when you open it and to check it in when you close it. These prompts can be bypassed by un-checking the "Prompt for comment options". See "Source Control Options" (page 682) for more information.

Manually check-in or check-out

Alternately, you can manually initiate the check-in or check out using commands on the Team Coding menu.

To check out an object or script when Automatic Check-Out is enabled

1. Open an object or script from the database in the Editor.
2. When the Check-Out dialog box appears, follow the prompts to check the item out or choose **Cancel** to open it in read-only mode.

To check in an object or script when Automatic Check-In is enabled

1. Close the object or script in the Editor.
2. When the Check-In dialog box appears, follow the prompts to check the item in.

To check items in and out manually

1. Open the object or script in the Editor. Alternatively, select the object in any of the following Toad windows:
 - Schema Browser: Procedures, Types and Favorites tabs
 - Version Control Browser
 - Project Manager
 - Team Coding Viewer
2. From the Team Coding menu or toolbar, the Schema Browser, Project Manager, or from the shortcut menu, choose **Check In** or **Check Out**.
3. You can choose Undo Check Out to cancel the check-out and reverse any changes. See "Undo Checkout" (page 798) for more information.

Entering Comments on Check in or out

When you check objects in or out of Team Coding, you can enter comments about the modification you are going to make, or have made.

The most recent comment is visible in the Team Coding Viewer. When a third party VCS is in use, check-in comments are also logged against the new revision in the archive.

When using third party version control, the Force Revision option will be available during a check in operation. See "Global Settings" (page 789) for more information.

Note: The Force Revision option is not available for all third party providers.

The Force Revision option allows objects that are unchanged to be updated in the database, so that new or changed comments can be stored. The default value for this check box can be set from Toad Options | Team Coding/Source Control.

Check In All

You can choose to check in all or some of the items you have checked out from Team Coding.

To check in items

1. Click  on the Team Coding toolbar.
2. Select or deselect items by checking and clearing the check boxes to the left of the list. Selected items will be checked in.
NOTE: You can also choose to **Select All** or **Clear All** by clicking the appropriate buttons on the right.
3. You can choose to enter the same comment for all selected items. The default for this check box is unchecked.
4. Choose to **Force a Revision** of all items. If checked, a new version will be created for the selected items, whether or not they have changed.

Click **OK**.

Note: If you have chosen to apply the same comment to all items, the items are checked in and the dialog box closes.

5. If you have chosen to enter a new comment for each item, the check in dialog box appears with the first item from your list active. By clicking **OK** here you can proceed to each item in turn.

Undo Checkout

You can undo a check out in the same manner you would check an object into **Team Coding** source control.

To undo a checkout

- » Choose **Undo Checkout** from the menu

When you choose to undo a check-out, you are prompted to confirm that you want to restore the saved database version of the item (as it was prior to check-out.)

Caution: If you answer the confirmation **No**, and you have saved your changes, the result will be that the version saved in the VCS will be different from the version saved in the database.

Freezing an Object

Users with the TEAM LEADER role (or higher) can freeze and unfreeze objects in the Team Coding Viewer.

Freezing an object locks that object from revision. It cannot be checked out. It can be opened as a read-only file in the Procedure Editor.

The status in either the status column of the Team Coding Viewer, or the status bar in the Editor displays **Frozen**.

To Freeze an Object

You can only freeze an object if you have the Team Leader role.

1. From the Team Coding Viewer, select the object you want to freeze.
2. Click the **Freeze** button on the toolbar, or select **Freeze** from the right-click menu.

To Unfreeze an Object

You can only unfreeze an object if you have the Team Leader role.

1. From the Team Coding Viewer, select the object you want to unfreeze.
2. Click the **Unfreeze** button on the toolbar, or select **Unfreeze** from the right-click menu.

Using Code Control Groups

Code Control Groups Overview

Toad's Code Control Groups (CCGs) are the most powerful and flexible feature of Team Coding.

Conceptually, a CCG is like a project that developers are working on together, consisting of a collection of database objects. Configuring a Code Control Group gives Toad a name to call the collection and specifies a set of filters that Toad can use to determine which CCG an object belongs to. These filters are called DB Object Masks.

You can organize your controlled objects into groups associated with development projects using CCGs. For example, you can create multiple CCGs for a single Oracle instance, each containing references for all stored programs relating to a customer application.

- When CCGs are disabled, if Team Coding is enabled, then it is applied to every supported object in the database.
- When CCGs are enabled, Team Coding is only applied to objects that are members of a code control group.

You can also use CCGs with a third party version control provider. If a third party version control provider is used, there are additional features of code control groups.

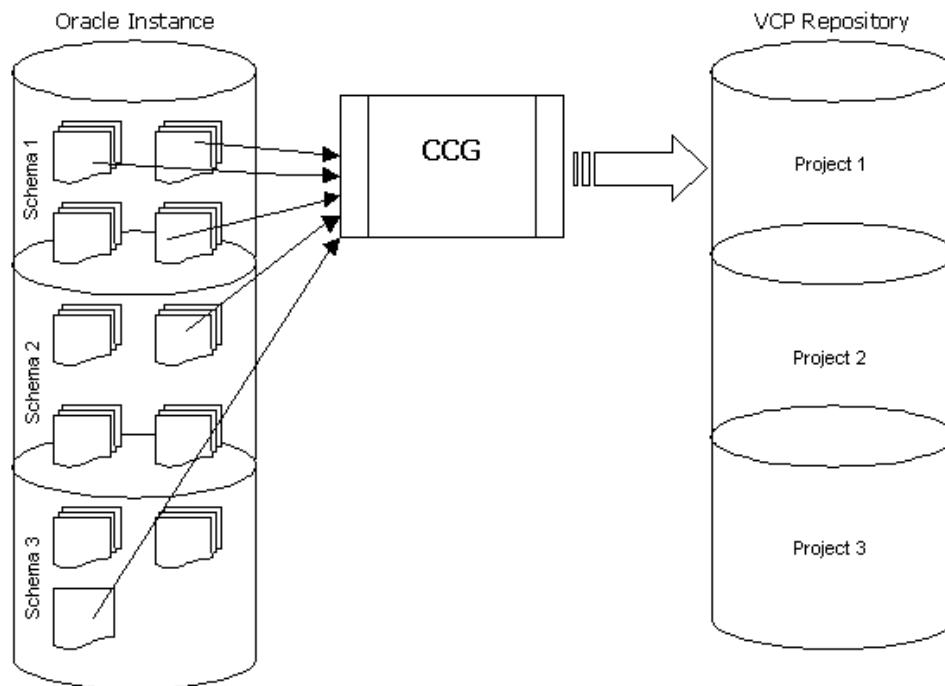
See "Using Code Control Groups Example 1 - a Single Application" (page 800) for more information about using a CCG for one project.

See "Using Code Control Groups Example 2 - Multiple CCGs" (page 801) for more information about using multiple CCGs for multiple projects.

Using Code Control Groups Example 1 - a Single Application

Suppose you have a schema containing stored programs that all relate to a single application on your Oracle instance. You can easily create a CCG in Team Coding that includes all objects in that schema and then map it to a Version Control System in your provider's archive.

Using CCGs to map objects from multiple schemas to one VCS Project



Including certain types and schemas

If your application contains some objects located in a different schema, it is easy to modify the CCG to include those objects. To take this a step further, you can also configure your CCG so that it contains any of the following:

- object masks based on a particular schema or schema mask (such as PROD%)
- stored programs of any type or a particular type (such as Trigger)
- objects of any name or using a name mask (such as ACC_%).
- certain types and schemas

Any object mask can be used to exclude as well as include, so you can readily include a group of objects, but exclude (for instance) all objects of name like `DBG %`

Excluding objects

If the schema also contains some objects that you do not want controlled (for example, you may have some test packages which don't form part of your application), it is a simple matter to add an exclusion reference (Object Mask) in your CCG. See "Specifying CCG Object Masks" (page 804) for more information.

Scripts

If your application involves ancillary scripts, you can include references to these scripts in your CCG. As with other objects, you can use wildcard masks and exclusions.

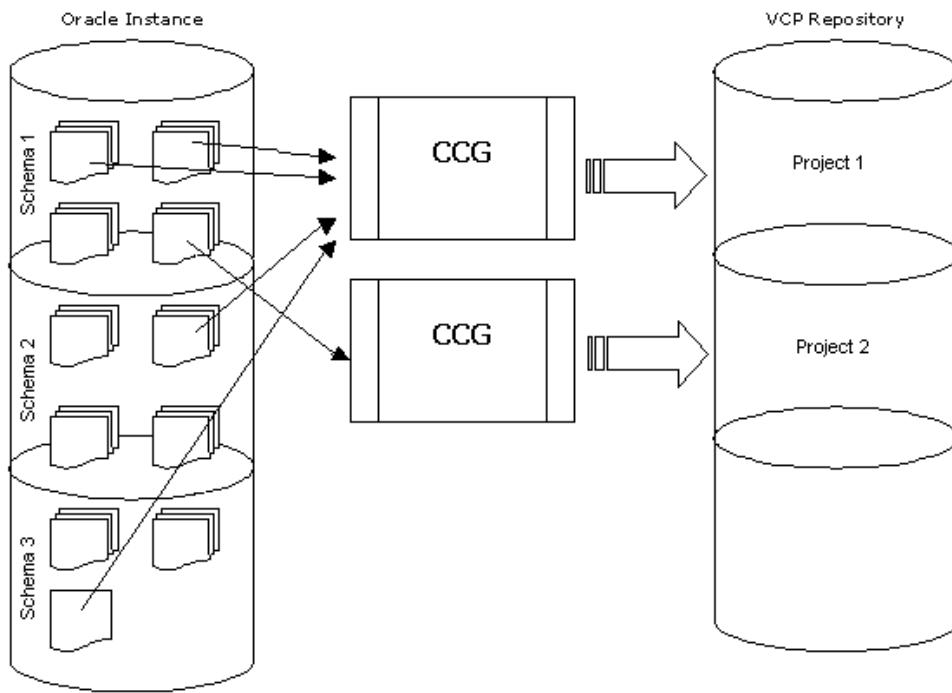
Using Code Control Groups Example 2 - Multiple CCGs

If you subsequently start development of a second application, using objects stored in the same schema as the one used for the first application, you can then simply create a second CCG in Team Coding. This new CCG would contain object masks for the stored programs that are related to your new application, and you would associate the new CCG to a different project in your version control repository.

For example, if a second application is made up of procedures whose names all begin with a common prefix such as "ACC", your second CCG would contain an Object mask for all procedures in the schema with a name like `ACC%`. Team Coding automatically recognizes objects with names matching the new object mask and maps them to the second VCS project rather than the first.

Note: Objects cannot be mapped to more than one CCG.

Using CCGs to map objects from one schema to different VCS projects



Code Control Groups Toolbar

This is the toolbar for the Team Coding Code Control Groups window.



Button	Command
	Create new Code Control Group. See "Creating a CCG" (page 803) for more information.
	Open Group to view settings or make changes
	Delete Group
	Remap Group. See "Remapping a Project Association" (page 808) for more information.
	Refresh List
	Export to VCS. See "Exporting Objects" (page 808) for more information.
	Import to Database. See "Importing Objects" (page 809) for more information.

Button	Command
	Map Current User to the Group. See "Mapping a User to a CCG" (page 806) for more information.
	List all Mapped users. See "To display all mapped users" (page 806) for more information.

Enabling Code Control Groups

When this option is used, if an object is not referenced by a CCG, it is not under Team Coding control.

Once CCGs have been configured, users may start using Team Coding features immediately, as objects or scripts will be automatically added to the Version Control System as they are modified.

To enable your CCGs

1. On the Team Coding menu, choose **Team Coding Status**.
2. Click **Settings**. The Team Coding Settings appear for this connection. In the Team Coding Features area, select **Use Code Control Groups**.
3. You now have the option to Use 3rd Party Version Control. The list will contain only the version control products you have installed for use. If you are using SCC API Team Coding, later choosing the Version Control Browser will launch the user interface of the third party product instead. See "Version Control Browser" (page 810) for more information.

Creating a CCG

You can easily create a Team Coding Code Control Group.

Note: Code Control Groups must be enabled to create a new CCG. See "Enabling Code Control Groups" (page 803) for more information.

To create a CCG

1. From the Toad menu bar, choose **Team Coding | Code Control Groups**, or on the Team Coding toolbar, click .
2. In the Code Control Groups toolbar, click .
3. If a login window appears, provide the needed information.
4. In the New Group dialog box, enter a **descriptive name** for the Group.

If you are using a third party Version Control System (VCS), select a VCS project by following the prompts in the dialog boxes that appear, which vary depending on the product in use. The Code Control Group window appears.

Note: If you are not using a VCS, the Code Control Group window appears immediately.

5. In the Code Control Group window, create **New Object** and **script mask** definitions for the current CCG.

Viewing and Modifying CCGs

You can view or modify Team Coding Code Control Groups (CCGs) that you have already created. See "Creating a CCG" (page 803) for more information

To view or modify a CCG

1. From the Toad menu bar, choose **Team Coding | Code Control Groups**, or on the Team Coding toolbar, click .
2. In the Code Control Groups window, select a group from the list and then click . From this dialog box you can create DBmasks, create script masks, delete DBmasks, and edit masks. See "Specifying CCG Object Masks" (page 804) for more information.

Specifying CCG Object Masks

Object masks are the references that define a Code Control Group (CCG). When Team Coding processes a CCG, it associates a certain ranking with object masks in order to determine which database objects belong to that CCG.

You can specify several different masks, and Team Coding will rank them when deciding what object to include in a specific CCG. See "Object Mask Ranking" (page 805) for more information.

Use the Mask Properties dialog box to specify an object or group of objects to be included in a CCG.

To specify a CCG object mask

1. From the Code Control Group window, select the group where you want to add masks.
2. Click .
3. Click .
4. Select from the following options:

Object Type	Choose from View, Procedure, Function, Package, Package Body or All.
Schema	Pick a user from the list, or type a schema name. You can use the % wildcard character
Object Name	You can type an object name, including the % wildcard. Alternatively, you can launch the Open

	DB Object dialog box to choose an object matching the Object Type and Schema settings.
Excluded	Select Excluded to exclude any objects matching this object mask from the CCG.

Object Mask Ranking

By ranking object masks Toad can resolve objects that fit duplicate matching masks into the correct Team Coding Code Control Group (CCG).

- Object masks are ranked based on the number of wildcards they contain.
- Highest ranking is given to the most specific mask.
- When there are duplicate masks of different ranking the highest-ranking mask takes precedence. When duplicate masks of the same ranking are encountered it is not possible to resolve the object to the correct CCG.

The mask rankings are, from highest to lowest:

Ranking	Examples
Specific object reference	Trigger SCHEMA.NAME
One wildcard only	Any Type SCHEMA.NAME Trigger SCHEMA%.NAME Trigger SCHEMA.NAME%
Two wildcards	Any Type SCHEMA%.NAME Any Type SCHEMA.NAME% Trigger SCHEMA%.NAME%
Three wildcards	Any Type SCHEMA%.NAME%

Specifying File Server Scripts

Use the Mask Properties dialog box to specify a group of file server scripts (or a specific script) to include in a Team Coding CCG.

To specify file server scripts

1. Click  to add a new script or group of scripts.
2. Select from the following options:

File Name/Mask	Type the path to a specific script file, or browse and select. You can use the * wildcard character to specify a group of scripts.
----------------	--

Include Path	Check this box to include the path name.
File Path	This option becomes active if you choose Include Path. If you browsed to the script file, the path is automatically entered. If you entered the file name without a path, Toad assumes you want to use your default working folder as the path.
Excluded	Select Excluded to exclude any scripts matching this object mask from the CCG.

Mapping a User to a CCG

You can associate a developer's schema to a particular Team Coding Code Control Group (CCG). This means, if you are the developer, that when you open an object in your own schema, Toad searches for the object in the mapped CCG and locks it as if you had opened it from the original schema. When you check an object out, the archive for the original schema is checked out and the object is locked in both your schema and the original schema.

This can be useful in cases where you often work in your own schema, but on projects containing objects that actually exist in another schema.

So when you map a user to a CCG, you basically create a new CCG identical to the first, but with all object masks referring to a particular user schema. The same VCS archive is shared between the user schema and the schema contained in the original CCG. See "Example of User Mapping" (page 806) for more information.

To map a user to a CCG

Note: You must be logged in as the user you want to map.

1. Open the Code Control Groups window (**Toad menu bar | Team Coding | Code Control Groups**)
2. Select the appropriate CCG
3. Click  on the toolbar.
4. If the CCG contains object masks for multiple schemas, follow the prompts to select the schema you want.
5. If required, perform an **Import** to update the objects in your schema.

To display all mapped users

- » In the Code Control Groups window, select a CCG and click .

Example of User Mapping

Developers can work on common code in their own schema through Team Coding's User Mapping.

As an example:

- You have a common schema containing all the code for your development environment.
- You prefer that your developers check code in and out of your source control product using their own schema.
- At an appropriate time, you would update your "master" schemas for testing purposes and move the code to Production.

User Mapping allows developers to work on their own copies of objects existing in a schema (the "master") that is controlled by a CCG (Code Control Group). This means that the objects in the master schema can remain unchanged during development, until the master schema is updated from the version control system using the Import function.

Note: The CCG must be exported to the version control system before it can be imported into the master schema.

This example shows how a developer can map to the REPORTS schema, for which a CCG has been created. See "Creating a CCG" (page 803) for more information.

To add copies of the master schema's objects to the developers' schemas, *each developer* must import the CCG.

Scenario

The Development Manager has set up code control groups and assigned the Developer Scott to work on the REPORTS functions. Scott needs to map himself into the CCG in order to add copies of the objects in the master schema to his schema for work.

To map a developer to a CCG

1. Log in as the developer.

Scenario: Login as the user **scott**.

2. From the Team Coding menu, open the Code Control Groups window and select appropriate Code Control Group.

Scenario: Select the **REPORTS** Group.

3. Click .
4. Click  in the Code Control Groups window.

In the Import into Database window, select the objects to import. Only those objects found in the VCS for this CCG are shown. When selection is complete, click **OK**.

5. In the Import Options window, select the **Update another schema** option. Click **OK** to begin the import.

Scott can now check out the **REPORTS** objects from his own schema. When a user-mapped object is checked out or checked in, the Team Coding Check Out/In dialog box will show the object's Master Owner.

When a developer has a copy of a user-mapped object checked out, all other copies are locked. Other developers cannot check out their copies and neither can the master owner.

Remapping a Project Association

With appropriate permissions you can change the association between a CCG and a VCS project. See "Team Coding Roles" (page 787) for more information about permissions.

For example, if you originally configured a CCG without a Version Control product (VCS) and then subsequently decided to use one, you can use the remapping feature to associate the CCG and the VCS project.

To remap a project association

1. From the main Toad menu bar, select **Team Coding | Code Control Groups**.
2. Click  in the Code Control Groups window.
3. Choose the VCS project to which you want to map the group and then click **OK**.

Team Coding Viewer Filter

The list of objects shown in the Team Coding Viewer can be limited to just those in which you are interested. Use the Team Group Filter dialog box to specify which objects should be shown.

To access the Team Coding Viewer Filter

1. Click  on the **Team Coding Viewer** toolbar.
2. Check or clear the boxes in the **Object Types** and **Status** areas to display or hide these items.
3. To filter the owner, name, or user, click in the **text** field and enter the text you want to include. The **%** wildcard character is an acceptable entry.

VCS Use

Exporting Objects

Use the Team Coding Export function to:

- Construct a first revision of an application development project in your version control archive.
- Create a new revision for all objects and scripts: for example, when you have completed your project and updated your production server.

In order to perform these operations, you should have access to all the objects referenced by the CCG. Otherwise, the process will need to be launched multiple times by all the different owners of the objects.

To export objects to your archive

1. On the Code Control Groups window toolbar, click the Export  button.
2. Use the Export dialog box to select (and exclude) objects and scripts for export.
3. In the Export Options dialog box, select from the following options.
 - Add objects not existing in the VCS

Allows new objects and scripts to be added to the VCS archive. Any object for which there are already VCS archives will not be updated
 - Create a new revision for existing objects

Forces all existing archives within the VCS to be updated, as well as adding new archives for any new database objects
 - Create a revision only if the object has changed

Compares the object in the database with the archive in the VCS, updating it only if it differs. This is useful when objects or scripts have been modified by a tool other than Toad's object editors.
 - Prompt individually for all existing objects

Prompts you to update or not for each object that already exists in the archive.
 - Comment

Enter a comment to be applied to all new revisions created in the archive.
4. If required, **save** or **print** the **status report** using the buttons provided.

Importing Objects

You can update your Oracle instance from the Version Control System for a selected Team Coding CCG using the Import feature.

To import objects

1. Click  on the Code Control Groups toolbar.
2. Use the Import dialog box to select (or exclude) objects for import. The Import listing is populated based on existing archives contained in the VCS (these objects do not have to exist on the Oracle instance), but filtered down to only those objects defined in the CCG.
3. Click **OK**.

Act on the original schema or another schema:

Update original schema	Create or update objects in the original location in the Oracle instance, as per the CCG and archive file names.
------------------------	--

Update another schema	Choose an alternate destination schema. All objects will be created in this schema regardless of the original object for which the archive was created.
Note: You must have the appropriate privileges to create objects in the destination schema.	

4. Select the action you want to perform:

Update database	Updates the database immediately.
Generate import script	Generates an import script and loads it into the Editor, so you can review and alter it before you execute it. The database is not changed until the generated script is executed.
Add new revision to VCS	You can select this box when you choose to update the database directly. This will add a new revision to the VCS archive. In addition, you can then add a revision comment for the new revision.

Version Control

Version Control Browser

You can view all version control archives in all projects using the Team Coding Version Control Browser.

You can also view differences between revisions and check out objects and scripts.

This browser is not available to users of SCC API Team Coding support; instead, selecting this option launches the user interface of the third party product in use.

Note: When using CVS, the VCS browser does not know whether the object has been checked out. Therefore, it will only allow you to check out files and will not enable checking in.

To browse version control

1. From the Team Coding menu, choose **Version Control Browser**.
2. Use the window controls to select any revision of any file, view revision histories, check files in or out, and view differences between revisions.

- To expand a node, click the plus sign or double-click the text portion
- To perform actions on the object, select a command from the shortcut menu or the Browser toolbar

To view differences between revisions

» When you choose View Differences from the Browser toolbar, you can select from the following options:

- View differences between two specified revisions
- View differences between the selected revision and the database object (using CCG mapping)
- View differences between the selected revision and any database object or file system script

To open an object in the tree

» Do one of the following:

- Right-click a node and choose **Open** from the shortcut menu.
- Select an item in the browser and click the **Open** button in the browser toolbar

TC Locks Option

On the Version Control Browser, there is an option of setting Team Coding locks. The setting on this option determines how Toad decides the status of the files under version control.

This option can significantly increase the time it takes to expand a project node. However, this option can be particularly useful when using CVS as the Version Control Provider, since CVS does not support locking of files. In this case, using Show TC Locks is the only way you can see what files Team Coding has locked under CVS.

Note: After selecting the **Show TC Locks** option, remember to refresh any project nodes which have already been expanded, as this does not happen automatically.

The state of the Show TC Locks option will be saved when the VCS Browser is closed.

TC Locks not selected

When this option is not selected, the VCS Browser determines which files are locked by querying the Version Control Provider; essentially it is just showing the status of each file as it would look in the provider's own GUI.

TC Locks selected

When Show TC Locks is selected, the VCS Browser will attempt to determine if a file is locked by Team Coding, through its association with an object. In this case, the file's icon is changed to

either a Team Coding checked out icon if the object is locked by the current user, or a Team Coding locked icon, if the object is locked by another user. These icons are the same as those used in the Team Coding Viewer.

If the VCS Browser does not determine that a TC lock affects the file, it will still show the usual Version Control Provider locks, using a different locked icon, where appropriate.

Browsing Version Control Archives

If you are using Team Coding Code Control Groups and a third party VCS provider, you can view all version control archives in all projects using the Toad Version Control Browser. You can check out objects and scripts using the Version Control Browser and open them in the Editor or Editor (if opening an earlier revision of an archive, it will always be opened in the Editor). You also can view differences between revisions.

Note: This browser is not available to users of SCC API Team Coding support; instead, selecting this option launches the user interface of the third party product in use.

Viewing Differences Between Revisions

You can view differences between two different revisions in Team Coding.

To view differences between revisions

1. Select the file you want to compare. You can select either one of the revision nodes, or the main file node.
2. Click .
3. Select how you want to view differences. If you want to compare revisions, select the revision numbers you want to compare.
4. Click **OK**. See "Viewing File Differences" (page 257) for more information.

Getting the latest Revision

Working in a Team Coding environment, it is often necessary for you to ensure that you are working with the latest version of an object or script that is held in the VCS. The Version Control System is the source control archive for your projects. This can be the Team Coding Archive as described in the Version Control Browser topic, or the third party source control product.

You can use the **Get Latest Revision** command to perform this action.

The Get Latest Revision command is available on the Team Coding menu and toolbar when objects are selected in the following windows:

- Editor
- Project Manager
- Schema Browser
- Procedures page
- Types (without the right-click) page

- Favorites page
- Team Coding Viewer
- Version Control Browser

You can select Get Latest Revision from the menu, or click  on the toolbar of the appropriate window.

Caution: The Get Latest Revision command overwrites the version of the object or script in the database, replacing it with the latest version held in the VCS.

Using Concurrent Versions System (CVS) with Team Coding

CVS Requirements

You can use Concurrent Versions System (CVS) with Toad's Team Coding feature.

To do this, you need to perform some basic configuration tasks. The following topics will explain the configuration process.

In addition, you must have a CVS client installed on your system (for example, WinCVS, CVSNT, TortoiseCVS).

Team Coding has been tested with:

- CVS clients 1.11.9 and 1.11.17 and CVSNT clients 2.0.8 and 2.0.41a with the pserver authentication method.
- CVS client 1.11.12 with pserver and ssh
- CVSNT clients 2.0.11, 2.0.26, 2.0.34, and 2.0.41 with sserver, pserver, and sspi.
- CVSNT client 2.0.14 with sserver, pserver, sspi, ssh, ext, and local

Setting up the Oracle Database

Before you can use Team Coding and CVS together, you must configure your Oracle Database to do so.

It is assumed that Team Coding has been installed on the database prior to setting up CVS. See "Installing and Enabling Team Coding" (page 786) for more information.

To set up the Oracle Database

1. Connect to your database as the Team Coding Administrator user.
2. Select **Team Coding | Team Coding Status**
3. Click the **Settings** button
4. Select **Enable Team Coding**.
5. Select **Use Code Control Groups**.
6. Select **Use 3rd Party Version Control**.
7. Under **Version Control Provider**, select **CVS (Concurrent Versions System)**.

Configuring Toad for use with CVS under Team Coding

To use Toad's Team Coding feature with CVS, you must be connecting to a database which has been correctly configured for use with CVS under Team Coding. The Team Coding Administrator must do this. See "Setting up the Oracle Database" (page 813) for more information.

To configure Toad

1. Connect to the database.
2. Select **View | Toad Options | Team Coding**.
3. Click the **VCS Provider Options** button.
4. In the CVS Configuration Options dialog box, enter the appropriate information. See "CVS Configurations Options" (page 814) for more information.
5. Click **OK** to complete the configuration and close the dialog box.

CVS Configurations Options

You can configure how Team Coding works with CVS using the options. See "Configuring Toad for use with CVS under Team Coding" (page 814) for more information.

Option	Information
CVS Area	
CVS Executable	<p>Enter the name of the CVS program file here. The default is CVS.EXE. If your file is different, you can enter it here.</p> <p>You can specify the full path to the file, such as <i>C:\Program Files\CVS\cvs.exe</i>. This will force Toad to use the specified program.</p> <p>If you enter only the file name, rather than the entire path, the location of the program file must be in your system path. Toad will then use the first occurrence it finds of the specified file name.</p>
Global Options	<p>Use this option to specify any global options you want Toad to pass to CVS whenever a CVS command is executed by Toad. For example, the default option of <i>-f</i> tells CVS to ignore your <i>.cvsrc</i> options file.</p> <p>The default is <i>-f</i>.</p> <p>You can use more than one option. Separate multiple options with a space.</p> <p>Note: Do NOT enter a <i>-d</i> CVSROOT option here. Toad adds this option automatically, using the CVSROOT you provide in the CVS Login window. See "Logging Into CVS" (page 817) for more information.</p>
Dates and Times in CVS Output	
Date Format/Separator Time Format/Separator	These options tell Toad how CVS will send dates and times. This lets Toad present correct revision date and time stamps in windows such as the

Option	Information																										
	<p>VCS Browser.</p> <p>The default for Date Format is: yyyymmdd</p> <p>The default for Date Separator is: /</p> <p>The default for Time Format us: hhnss</p> <p>The default for Time Separator is: :</p> <table border="1"><thead><tr><th>Format</th><th>Display</th></tr></thead><tbody><tr><td>d</td><td>Day as a number without a leading zero (1-31)</td></tr><tr><td>dd</td><td>Day as a number with a leading zero (01-31)</td></tr><tr><td>m</td><td>Month as a number without a leading zero (1-12)</td></tr><tr><td>mm</td><td>Month as a number with a leading zero (01-12)</td></tr><tr><td>yy</td><td>Year as a two-digit number (00-99)</td></tr><tr><td>yyyy</td><td>Year as a four-digit number (0000-9999)</td></tr><tr><td>h</td><td>Hour without a leading zero (0-23)</td></tr><tr><td>hh</td><td>Hour with a leading zero (00-23)</td></tr><tr><td>n</td><td>Minute without a leading zero (0-59)</td></tr><tr><td>nn</td><td>Minute with a leading zero (00-59)</td></tr><tr><td>s</td><td>Second without a leading zero (0-59)</td></tr><tr><td>ss</td><td>Second with a leading zero (00-59)</td></tr></tbody></table>	Format	Display	d	Day as a number without a leading zero (1-31)	dd	Day as a number with a leading zero (01-31)	m	Month as a number without a leading zero (1-12)	mm	Month as a number with a leading zero (01-12)	yy	Year as a two-digit number (00-99)	yyyy	Year as a four-digit number (0000-9999)	h	Hour without a leading zero (0-23)	hh	Hour with a leading zero (00-23)	n	Minute without a leading zero (0-59)	nn	Minute with a leading zero (00-59)	s	Second without a leading zero (0-59)	ss	Second with a leading zero (00-59)
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Time Zone	<p>This option tells Toad to adjust the time stamps read from the output of CVS commands. For example, to subtract eight hours from all timestamps, specify a value of -800. To add three hours, enter a value of 300.</p> <p>The default is 0000.</p>																										
Login	<p>These options control Toad's behavior when attempting to log into CVS. Toad creates a console window and executes the CVS Login command at the command prompt. When the password prompt appears, Toad sends the password you have specified</p>																										

Option	Information
Login Automatically	<p>When this option is checked, upon connecting to the database Toad logs in to CVS without prompting you. The most recently used CVSRoot will be used.</p> <p>To use this option, the following must be true:</p> <ul style="list-style-type: none">• The Team Coding option "Disable Login Prompt on Connection" is UNCHECKED• The TC=NO command-line option is NOT used• You have previously logged into CVS in Toad <p>The previous login used an authentication method not requiring a password</p> <p>or</p> <p>You checked the Save Password option on the login form.</p>
Password Prompt Timeout	<p>Enter the amount of time, in seconds, you want Toad to wait for the CVS password prompt. If the timeout expires before the password prompt appears, the login will fail.</p> <p>The default is 10.</p>
Login Timeout	<p>Enter the amount of time, in seconds, that you want Toad to wait for a login result to be returned after the password is sent. If the timeout expires before a result is returned, the login will fail.</p> <p>The default is 10.</p>
Time Between Keypresses	<p>This option controls the amount of time (in milliseconds) Toad pauses after sending each character of the password to the CVS password prompt.</p> <p>The default is zero.</p> <p>Note: If you find that CVS is returning "invalid password" errors, you may need to increase this number. A suggested figure is 100 milliseconds.</p>
Restore Defaults	Click Restore Defaults to restore all options to their default values.

Updating Working Folders

Toad requires that your working folders are up-to-date so that it can determine what files and folders are in your CVS repository for use with Team Coding. You must update your working folders manually.

To update your working folders

- » Perform a full checkout and update with your CVS client. You can do this from the CVS command-line client by issuing the following CVS commands in your root working folder:

```
cvs co .
```

```
cvs update .
```

Logging Into CVS

By default, when you have Team Coding with CVS set up, Toad will automatically display the CVS login prompt when you connect to the database.

If you do not want to connect automatically, you can activate the Team Coding option **Disable Login Prompt on Connection**.

Note: When you log into CVS from within Toad, Toad opens a command prompt window to send the password to the CVS server. This window may open in the background instead of the foreground causing the login to fail. If this happens, select **Log in to VCS Provider** from the Team Coding menu or toolbar and log in again.

To display the login prompt manually

- » From the Utilities | Team Coding menu, select **VCS Logon**.

Note: If the Team Coding menu is not visible on your menu bar, you can add it manually. See "Menus" (page 142) for more information.

To login to CVS

1. Select the root you want to use. You can choose one of two options:
 - Use \$CVSROOT Environment variable

Toad attempts to use your CVSROOT environment variable. When you select this option, your current CVSROOT environment variable is displayed in the first box.
Note: This cannot be edited in Toad; for instructions on changing environment variables, see you Windows Help.
 - Specify CVSROOT

Select this to specify which CVSROOT to use when issuing CVS commands. Toad passes this to CVS using the -d option. Up to ten of the most recently used CVS ROOT values will be remembered. You can select from these by clicking the arrow in the right of the box.
2. Enter a **path** to your chosen working directory in the Working Directory box. You can click  to select a directory rather than entering the entire path by hand.
Note: If you do not specify a value for the working directory, Toad uses the value supplied for Default Working directory under the Team Coding options. If you do specify a value here, it will override the default working directory.

It is recommended that you specify a working directory in this box, as Toad will remember the working directory specified for up to ten of the most recent unique CVSROOTs you use.

3. Enter your **password** for the specified CVSROOT in the password box. If you have specified a CVSROOT that does not use password authentication (for example, the :local:method) you can leave this box blank. In this case, Toad will not issue a CVS login command.
4. Select or clear the **Save Password** check box. If selected, Toad stores the password in an encrypted form in the CVS.INI file.
5. Click **OK**.

Note: Selecting **Team Coding | VCS Logon**, will log you out of CVS for the current connection, even if you click **Cancel** at the logon prompt. To reconnect, click **OK** without changing any values.

Multiple Connections and CVS Logins

From one Toad Team Coding instance, you can connect to multiple databases.

You can:

- establish different CVS logins for each database
- share the same login between several instances

After you have logged into CVS once, you will remain logged in, and Toad will not display the CVS Login dialog box as long as the first instance remains connected.

Note: Each time a new connection to the database is established in Toad, the CVS login of the most recently established connection will be used.

If you want to log into a different CVSROOT after initially logging in you can do so.

To log into a different CVSROOT after initial logon

- » Select **Utilities | Team Coding | VCS Logon**. Log in as described in Logging into CVS. See "Logging Into CVS" (page 817) for more information.

Authentication Methods and the CVS Root

Most CVS servers support several different authentication methods. The authentication method used to access a CVS server is specified in the first part of the CVSRoot. The CVSRoot contains the following sections

:authentication method:user@host:port:/path

All sections except path are optional. The following rules apply:

- A CVSRoot consisting only of a path will use the local authentication method. It is synonymous with:
:local:/path
- If the user section is omitted, the CVS client will use your Window login name.
- The host section must be included for all methods other than local.

- The port section is only necessary when the CVS server is listening on a port other than the default port, which is 2401.

CVS Authentication Methods tested with Toad

Toad has been tested with the following CVS authentication methods: pserver, sserver, ssh, sspi, ext, and local.

Using pserver and sserver methods

Using pserver and sserver is straight-forward.

- Both require a username and password.
- With both, Toad executes the CVS login command.
- With sspi, username is optional. If a username is supplied, Toad executes the CVS login command. If no username is supplied, Toad will not execute the CVS login command.

Using local and ext methods

The local and ext methods do not require a password.

- The local method is used to access a local CVS repository. This method is assumed if no authentication method is specified.
- The ext method is used for SSH authentication. See "SSH Authentication Using the ext Method" (page 819) for more informationon using SSH.

SSH Authentication Using the ext Method

Toad supports the use of SSH (Secure Shell) with the ext method in Team Coding as long as the following conditions are met:

- An external SSH client and SSH Authentication Agent must be installed and configured.
- SSH authentication must be transparent. Toad cannot respond to requests for private key or passphrase.
- The CVS_RSH user environment variable must be set to specify the SSH client program if the SSH client program is anything other than "ssh".

Example SSH configuration steps:

This configuration uses Plink as the SSH client and Pageant as the SSH authentication agent. Plink, Pageant and PuttyGen are parts of the PuTTy software package by Simon Tatham.

Note: This is just one sample configuration.

1. Install PuTTy (including Plink and Pageant)
2. Generate **public** and **private keys** using PuttyGen.
3. Upload **public key** to the CVS server, which must be running SSHD.

4. Load **Pageant** and register your private key with it. Keep Pageant running whenever SSH is being used.
5. Set CVS_RSH environment variable to the path to plink.exe (for example: c:\program files\Putty\plink.exe).
6. Set CVSRoot to :ext:user@host:port:/path, where
 - user = your SSH login name on the CVS server
 - host = the CVS server hostname or IP address
 - port = the CVS server port (optional)
 - path = the path to the CVS repository on the server (for example: :ext:smithj@cvs.toadrocks.com:2401:/usr/local/cvs/project) .

Missing CVS\Entries File Error

Toad determines which files and folders are in your Team Coding CVS repository by reading the file named Entries. This normally resides in a folder named CVS under each of your working folders. If Toad cannot find this file in any of your working folders, you receive the Missing CVS\Entries file error.

This can happen in one of two ways:

- If you have not yet performed a **cvs co .** to check out everything, your Entries and Repository files will not have been created automatically. This can be remedied by performing the **cvs co .** (remember to include the dot in the command).
- Some versions of CVS will not automatically create a CVS\Entries file in the root working folder. This does not affect normal CVS operation, but it does prevent Toad's CVS support from working.

To manually correct the problem causing a CVS/Entries file error

1. In your root working folder, create a new folder named **CVS**.
2. In the new CVS folder, create an empty file named **Entries**.
3. In the new CVS folder, create file a named **Repository** containing a single line with the single character **.** (the period) followed by a carriage return.
4. Log in to **CVS**.
5. In your root working folder, execute the CVS command: **cvs co .**
6. In your root working folder, execute the CVS command: **cvs update .**

Note: You may need to perform the "update" on individual files or projects instead of the whole repository.

Setting up your Entries file

Once created, you can set your Entries file to check out the files you want. You can check out the entire repository, or only a few projects.

To check out your entire repository

- » Leave the **Entries** file empty to check out the entire repository.

To check out a few projects in your repository

1. To keep only a few projects in the repository, enter the projects in your Entries file as described below:

D/Project1///

D/Project2///

D/Project3///

Where Projectn is the name of the project.

2. Check out and update each project one by one. For example:

>cvs co Project1

>cvs update Project1

>cvs co Project2

>cvs update Project2

Additional CVS Entries File Information

Setting up your Entries file

You can set your Team Coding Entries file to check out the files you want. You can check out the entire repository, or only a few projects.

To check out your entire repository

- » Leave the **Entries** file empty to check out the entire repository.

To check out a few projects in your repository

1. To keep only a few projects in the repository, enter the projects in your Entries file as described below:

Project1/Project2/Project3

2. Check out and update each project one by one. For example:

>cvs co Project1

>cvs update Project1

>cvs co Project2

>cvs update Project2

Working from the Command Line

Command Line Syntax

There are several ways in which you can control Toad from the command line.

- You can create ToadApps to run some commands in sequence and with more complicated structures. ToadApps are *not* interchangeable with other command line functionality, with the exception of connections. ToadApps must be called separately from other command line functionality. See "Running Actions from the Command Line" (page 835) for more information about running Actions and ToadApps from the command line.
- You can run some commands and features individually from the command line.
- You can activate some features directly from the command line, or group them together into a “command file” and call that from the command line, running the features in order as if they were a batch file.
- You can create Windows Shortcuts that include the command line functionality to make command line work easier. See [Command Line Shortcuts](#) for more information.

Command List

Syntax	Meaning
Commands to Open Toad and Connect to Oracle	
Toad.exe	Calls the Toad executable.
-c schema/password@db "schema2/password@db as sysdba"	Make connections. The second (and third and fourth and so on) connection should be within quotation marks. Actions are a special case. See "Running Actions from the Command Line" (page 835) for more information about running actions with connection overrides. Note: If you have AutoConnect set up, you do not need to enter the connection information unless you want to specify a different connection - Toad will autoconnect as specified.
Commands to Control the State of Toad	
-debug	Temporarily sets DEBUG=1 in the Toad.ini file. (Allows compiling with debug information.)
-f File1 File2 File3	Load files into editor. Accepts modifiers.
-min	Minimize Toad
-max	Maximize Toad
-scriptdebug	Temporarily sets the SCRIPTDEBUG=1 in the Toad.ini file. (Allows compiling with debug information.)
-tc=no	Disables the Team Coding login prompt.
Commands to Modify Files	
/EXEC	Triggers execution of the loaded file as a script. You may use only one of these in a command line. This is the equivalent of using F9 in the Editor.
/PRINT	Triggers printing the source code. You may use only one of these in a command line.
/SCRIPT	Triggers executing the loaded file as a script. You may use only one of these in a command line. This is the equivalent of using F5 in the Editor.
Activating Specific Toad Features	

Syntax	Meaning
These can be included in a Command File, or run directly from the command line. Each of the settings files for these features contain additional commands that are specific to the feature. See either the settings file you created or the help topic about the feature for more information.	
Note: In all cases below, filename refers to the settings file created from the Toad window, and when run directly from the command line should include the entire path to the file, and be enclosed in quotation marks.	
ANALYZE="filename"	Analyze DBMS_STATS objects.
CMDFILE="filename"	Opens and runs a command file, where filename is the name of the command file.
COMPDB="filename"	Database Comparison. See "Run Compare Databases from Command Prompt" (page 839) for more information.
DATACOPY="filename"	Copy Data between schemas. See "Run Copy to another Schema from Command Prompt" (page 842) for more information.
GDBS="filename"	Generate DB Script. See "Run Generate Database Script from a Command Prompt" (page 843) for more information.
GSS="filename"	Generate Schema Script. See "Run Generate Schema Script from Command Line" (page 845) for more information.
REP="filename"	Report.
RMI="filename"	Rebuild Multiple Indexes (legacy). See "Run Rebuild Objects from the Command Prompt" (page 846) for more information.
RMO="filename"	Rebuild Multiple Objects (including indexes). See "Run Rebuild Objects from the Command Prompt" (page 846) for more information.
RPTMGR="filename"	Report Manager. See "Run Reports Manager from the Command Line" (page 851) for more information.
Running CodeXpert from the command line	
-cx ="filename"	Open and run CodeXpert, where <i>file</i> is the control file. Note: CodeXpert parameters files work differently than other settings files, and must be run directly from the command line. See "Run CodeXpert from the Command Line" (page 834) for more information.

Syntax	Meaning
Controlling Toad from within a Command File	
Note: These commands are in addition to those that activate specific code features.	
CLOSETOAD	Close Toad at end of script execution
CMDFILE="filename"	Read and process another command file - This allows you to nest files for different purposes.

Examples

Enter on Command Line from directory containing toad.exe (example: c:\Program Files\Quest Software\Toad for Oracle>)	Performs the following task:
<pre>toad.exe -c scott/tiger@ora10gr2.example.com GSS="c:\examples\GSSFred.txt"</pre>	<ol style="list-style-type: none"> 1. Opens Toad 2. Connects to the schema scott on the db ora10gr2.example.com with the password "tiger". 3. Opens Generate Schema Script. 4. Runs the settings file GSSFred.txt from the Examples directory. 5. If the settings file includes the command "CLOSE TOAD" or "CLOSE GSS", Toad will do those as well after running .
<pre>toad.exe -c scott/tiger@ora10gr2.example.com CMDFILE="c:\examples\fred.txt"</pre>	<ol style="list-style-type: none"> 1. Opens Toad 2. Connects to the schema scott on the db ora10gr2.example.com with the password "tiger". 3. Opens the Command file named "fred.txt" in the examples directory. 4. Executes the commands in the Command file.
<pre>Toad.exe -max -c scott/tiger@db "fred/example@db as sysdba" -f somefile.sql /exec /print someotherfile.sql</pre>	<ol style="list-style-type: none"> 1. Opens Toad. 2. Connects to the schema SCOTT. 3. Connects to the schema FRED, as DBA. 4. Opens the somefile.sql in the Editor. 5. Executes as if you pressed F9. 6. Prints the contents of someotherfile.sql. 7. Leaves Toad open.
Command File Example	<p>Note: The following would be contained in a text file with its own name, and called as described in the example above. For example, "mycommandfile.txt" could contain the following commands.</p>

Enter on Command Line from directory containing toad.exe (example: c:\Program Files\Quest Software\Toad for Oracle>)	Performs the following task:
GDBS=c:\dbscript.txt RMO=c:\indrebuild.txt CMDFILE=c:\othercommandfile.txt CLOSETOAD	<ol style="list-style-type: none"> 1. Runs Generate Database script with the settings saved in dbscript.txt. 2. Runs Rebuild Multiple Objects with settings from "indrebuild.txt" 3. Calls and runs an additional command file. 4. Closes Toad.

Converting Old Settings Files to Actions

Several of the old-style command line have been added to the ToadApps utility. Because of this, old settings files may no longer work. If you attempt to use the old command-line methods, Toad will notify you that these have become actions. You can convert old settings files to new Action files using the conversion command. This conversion is not perfect, but it can help you reduce the time it takes to convert to ToadApps from command line settings.

To convert settings files to actions

1. From the window that created the settings file, do the following:

From this window	Do this
Data Import Wizard	Anywhere in the second step (Select Source), right click and select Import Settings from SMI file.
Health Check	In the options tree, press CTRL+SHIFT-ALT .
Schema Doc	In the Index File Name box, press CTRL+SHIFT-ALT .
Schema Compare	In the Target Schemas grid, press CTRL+SHIFT-ALT .

2. Open the settings file.
3. Click and save the settings as an action. See "Creating a new action from a Toad window" (page 437) for more information.

Command Line Passwords

Passwords saved in command line settings files in Toad versions 9.1 through 9.6 were optionally encrypted. The encryption key differs in version 9.7 and later, due to moving the User Files directories to the Documents and Settings folder.

Because of this, settings files that include passwords will need to be updated if you plan to use them without a previously established connection (such as through batch files when Toad is not connected). Actions are not affected by this change.

Note: Several Command line settings files have been converted to Actions in 9.7. See "Converting Old Settings Files to Actions" (page 827) for more information.

To update settings files

1. With the connection to Oracle made, from the appropriate Toad window, load the settings file you want to update.
2. Save the settings file. You can overwrite the settings file that already exists.

Export Tables, Views, SQL Queries from the Command Line

You can export tables, views, and SQL queries from a command line prompt using Actions and the Automation Designer.

Create the Action

Before you can run an export command from the command line, you must build the command file.

To export tables and views

1. From the Schema Browser, select the **Table** or **View** you want to export, right-click it, and select **Save As** from the menu.
2. Choose the settings you want the exported file to contain, and enter a directory name in the **Destination Directory** box.
3. Click .
4. Specify the ToadApp where you want the settings saved.

To export SQL queries

1. From the Editor, open the **Export Dataset** dialog box. See "Export Dataset" (page 390) for more information.

2. Choose the settings you want the exported file to contain, and enter a file name and path in the **Save to File** box.
3. Click 

Run from the Command Prompt

See "Running Actions from the Command Line" (page 835) for more information.

Errors

Errors do not interrupt the export. If there are errors, they will be written to a file called ToadError.log See "Properties Files" (page 163) for more information on location.

Run Analyze Objects from the Command Line

You may find you would like to analyze objects at regular intervals, or have them analyzed during off-hours. With a little preparation, you can do this from a command prompt. If commands are saved to a batch file, the batch file can be scheduled using the NT scheduler to execute when you are away from your desk. Results are saved to files.

To build the file to run Analyze Objects

1. Start **Toad**.
2. From the Database | Optimize menu, select **Analyze All Objects**.
3. Make all settings to perform the analysis, but do not click either Analyze buttonSee "Rebuild Index" (page 1015) for more information.
4. Instead, on the toolbar of the options tab, click . Click **Save** to save settings information. The settings are saved by default into the Toad folder, but you can save them wherever you choose.

Adjust the file

The file resulting from the above procedure can be edited with Notepad or any text editor. For it to be used in the command line, commands must be activated in the settings file to form a script.

The commands can be at the end or the beginning of the file, and they need to be in the order in which you want them executed. For your convenience, all of the available commands are written into the settings file and commented out. You can easily remove the comments and cut and paste the commands into the order you want them to execute. An abbreviated set of these instructions is also in the settings file comments.

Uncomment any or all of the command lines in the settings file for actions to perform. All file names and items in quotes are editable.

- Do not put more than one command per line.
- Do not leave spaces before the commands.

- Email settings are taken from **View | Toad Options | Email Settings**. See "Email Settings" (page 652) for more information.

Commands go in a logical order, as they are presented in the settings file. You need to load indexes before you rebuild them, and so on.

Comments

Any lines in the file that begin with # are comments, and commands contained within will not be performed. To activate a command, remove the #.

Commands

Command	Notes
Commands to Load the Table and Index Grids	
LoadUserIndexes('USERA', 'USERB', 'USERC')	Change usernames as necessary.
LoadTableIndexes(TableOwner='USERA')(Tables='TABA', 'TABB','TABC')	Change usernames as necessary.
LoadTablespaceIndexes('TABLESPACEA', 'TABLESPACEB')	Change tablespace names as necessary.
LoadUserTables('USERA', 'USERB', 'USERC')	Change usernames as necessary.
LoadTablespaceTables('TABLESPACEA', 'TABLESPACEB')	Change tablespace names as necessary.
ImportIndexesFromText('c:\MyTextFile.txt')	Change the path and filename as necessary.
ImportIndexFromBinary('c:\MyBinaryFile.bin')	Change the path and filename as necessary.
ImportTablesFromText('c:\MyTextFile.txt')	Change the path and filename as necessary.
ImportTablesFromBinary('c:\MyBinaryFile.bin')	Change the path and filename as necessary.
LoadTableColumns	
ImportColumnsFromText('c:\MyTextFile.txt')	Change the path and filename as necessary.
ImportColumnsFromBinary('c:\MyTextFile.txt')	Change the path and filename as necessary.
Commands to reload information about the currently loaded tables or indexes.	
You might use one of them after loading tables or indexes from a text or binary file to make sure all the information current.	
ReloadAllIndexes	
ReloadAllTables	Note: If you want to reload column info, call LoadTableColumns again)
Command and parameters to check or uncheck specific rows	
CheckRows(ObjType='TABLE')(Operation='CHECK')(Selection='ALL')	
OBJTYPE parameter	Can have values of 'TABLE', 'INDEX', or 'COLUMN'.
	It tells TOAD which grid you want to check on.
OPERATION parameter	Can have values of either 'CHECK' or

Command	Notes
	'UNCHECK'.
SELECTION parameter	<p>Specifies which rows to check or uncheck as follows:</p> <ul style="list-style-type: none"> • 'ALL' - all rows loaded in the grid • 'NONPART' - only nonpartitioned objects • 'PARTS' - all object partitions (but not subpartitions) • 'SUBPARTS' - all objects subpartitions • 'ANALYZED' - all objects and partitions subpartitions that HAVE been previously analyzed • 'UNANALYZED' - all objects and partitions or subpartitions that HAVE not been previously analyzed • 'UNUSABLE' - (indexes only) index partitions and subpartitions marked 'Unusable' by Oracle

Note : The CheckRows command is cumulative. For example, if you wanted to check only analyzed table partitions (and subpartitions), you could issue this series of commands:

```
CheckRows (ObjType='TABLE') (Operation='CHECK') (Selection='ANALYZED')
CheckRows (ObjType='TABLE') (Operation='UNCHECK') (Selection='NONPART')
CheckRows (ObjType='TABLE') (Operation='UNCHECK') (Selection='SUBPARTS')
```

Commands that execute the analysis using either ANALYZE or DBMS_STATS commands according to your save settings

AnalyzeIndexes	Can be used with either ANALYZE or DBMS_STATS
AnalyzeTables	Can be used with either ANALYZE or DBMS_STATS
AnalyzeSchemas	<p>Use with DBMS_STATS only. Does not require loading of any grid data prior to their use. If you use any of the LIST options output will be written to the error log file, ToadError.Log, which will appear in the same directory as TOAD.</p>

Command	Notes
AnalyzeDB	Use with DBMS_STATS only. Does not require loading of any grid data prior to their use. If you use any of the LIST options output will be written to the error log file, ToadError.Log, which will appear in the same directory as TOAD.
AnalyzeSystem	Use with DBMS_STATS only. Does not require loading of any grid data prior to their use.
Commands to transfer statistics from one schema or database to another (depending on the saved settings)	
CopyIndexStats	
CopyTableStats	
CopyDBStats	
CopySchemaStats	
CopySystemStats	
Commands to export specified statistics from the database to a table according to saved settings	
ExportTableStats	
ExportIndexStats	
ExportColumnStats	
ExportSchemaStats	
ExportDBStats	
ExportSystemStats	
Commands to import specified statistics from a table to the Database according to saved settings	
ImportTableStats	
ImportIndexStats	
ImportColumnStats	
ImportSchemaStats	
ImportDBStats	

Command	Notes
ImportSystemStats	
Commands to manipulate results	
ExportIndexesToHtml('c:\MyHTMLFile.htm')	Change the path and filename as necessary.
ExportIndexesToExcel('c:\MyExcelFile.xls')	Change the path and filename as necessary.
ExportIndexesToText('c:\MyTextFile.txt')	Change the path and filename as necessary.
ExportIndexesToBinary('c:\MyBinaryFile.bin')	Change the path and filename as necessary.
ExportTablesToHtml('c:\MyHTMLFile.htm')	Change the path and filename as necessary.
ExportTablesToExcel('c:\MyExcelFile.xls')	Change the path and filename as necessary.
ExportTablesToText('c:\MyTextFile.txt')	Change the path and filename as necessary.
ExportTablesToBinary('c:\MyBinaryFile.bin')	Change the path and filename as necessary.
ExportColumnsToText('c:\MyTextFile.txt')	Change the path and filename as necessary.
ExportColumnsToBinary('c:\MyBinaryFile.bin')	Change the path and filename as necessary.
Commands to close feature window or Toad after other commands completed	
CloseAnalyze	
CloseTOAD	Do not activate this command if you are in this settings file in the context of a COMM file, as once Toad is closed, further functions cannot be called.

Run CodeXpert from the Command Line

Note: This extended Toad feature is only available in Toad for Oracle Professional Edition and above.

You can run CodeXpert from the command line and create a CodeXpert report that you can access from any location, with or without Toad.

To run CodeXpert from the command line, you must first set up a parameter file. Then you can run CodeXpert. After completion, an html, an xml, and a bin subfolder are placed in the output directory you specify in the parameter file.

To run CodeXpert from the command line

1. Set up your parameter file as described in [CodeXpert Parameter File](#).

2. Run CodeXpert from the command line using the following syntax:

```
Toad.exe -CX C:\CMDLineCodeXpertINIFile.ini
```

3. View the html file located in the OUTPUT DIRECTORY you specified.

Note: The web page created (html file) is best viewed in MS Internet Explorer.

Scheduling CodeXpert

When you have created a CodeXpert ini file, you can create a small program to then schedule the scan. Your application should do the following:

1. Dynamically create the **Command Line CodeXpert INI** file.
2. Right-click in the **CodeXpert** window and select **Add to Task Scheduler**
3. Enter the INI file name in the **Command Line Parameter** field.
4. Select or enter an output directory in the **Output Directory** field.
5. Select one or more output type: **HTML**, **XML**, or **DB Inserts**.
6. Click **OK**.

Command Line Error Log

If there are errors running CodeXpert from the command line, Toad stores a log of these in User Files\CXCmdLineErrors.log. Any errors you would have received in the CodeXpert window are sent to the log file, as well as start and stop times. If no errors occurred, the log will state that as well.

You can use this log file to determine how and why the job failed, and also as documentation as to when and how it ran.

Running Actions from the Command Line

You can run [ToadApps and actions](#) from the command line with or without Toad active.

Command Line Syntax

You can run one action, multiple actions, or one or more ToadApps.

To execute Actions via the Command Line

» Use the **-a** parameter and specify the action, the ToadApp or a series of both.

If you specify only the action, the action name must be unique across all ToadApps. Otherwise an entry will be made in the Action Log about more than one action found, and the *action will not run*.

If there may be more than one action with the same name, fully qualify an action within an ToadApp: use `ActionSet->ActionName`.

Separate more than one action or ToadApp with a space and surround each item with double-quotes. See "Examples of command line syntax" (page 838) for more information.

Parameters in Command Line Syntax

You can use the parameter file to override some settings in an action so that you can run various permutations without creating multiple actions.

An action parameter INI file contains property=value pairs for the settings that can be overridden. When originally created, these will correspond to the properties saved within the actions.

See "Example" (page 439) for more information about creating and using parameter files.

Connections in the Command Line Syntax

Connection information is stored with the action, and passwords are looked up in the `connectionpwd.ini` file if the **Save passwords** option is selected in Toad.

Note: In Toad versions prior to Toad 10 (if the **Save passwords** option was selected), passwords were saved as part of the action itself, leading to needing to change passwords in all actions using connections where a password had expired. Looking passwords up in the `connectionpwd.ini` eliminates this problem.

However, on some actions (those with a connection dropdown) if you use a connection string: (`-c schema/password@dbname`) the connections you specify will be used **instead of** the connections stored with the action.

Note: Connection syntax does not require a password if a save password command exists for that connection within Toad.

Actions that work with connection overrides currently include:

- Execute Script
- Actionable Query
- ANSI join syntax
- Object Search
- HTML Schema Doc

Note: HTML Schema Doc works only with a *single* connection override at this time.

- Export DDL

- Export Dataset
- Import Table Data

See "Command Line Syntax" (page 822) for more information about connection strings.

If connections are included in a parameter file and/or the command line, Toad will use connections in the following order:

1. Connections specified on the command-line always override everything else.
2. If a connection is not present on the command line, then those specified in a parameter (ini) file are used.
3. If there are no connections on the command-line or defined from the Automation Designer's **Run with connections** option, then the connection bound to the action is used.

Examples of command line syntax

Command line	Notes
<code>Toad.exe -a "MondayQueries"</code>	Runs a ToadApp called “MondayQueries” and executes all actions within the ToadApp.
<code>Toad.exe - a "Email Mom"</code>	Runs an action called “Email Mom”. Only one action by that name in the entire datafile can exist.
<code>Toad.exe -a "CommonQueries->EmpQuery"</code>	Runs a fully qualified action, since there may be more than one action by the name “EmpQuery”, the ToadApp containing the action is included
<code>Toad.exe -a "App->Export Dataset1 c:\data files\ExportDataset1.ini"</code>	Runs a qualified action with a parameter file. See "Example" (page 439) for more information.
<code>Toad.exe -a "CommonQueries" "EmailSet->Email Mom" "SalesReports->MondayReport"</code>	Runs a series of actions and ToadApps.
<code>Toad.exe -c mlerch@ora10gr2.world -a "SalesReports->MondayReport"</code>	Overrides the connection assigned to the MondayReport Action and uses the mlerch connection instead.

Command line	Notes
<pre>Toad.exe -c mlerch@ora10gr2.world akrotzer@utf11gr2.world -a "SalesReports->MondayReport"</pre>	<p>Runs the MondayReport action twice, once for each of the connections specified. The connection assigned to the action within the Automation Designer will not be used.</p> <p>Note: Using more than one connection executes the action against all the connections.</p>

Run Compare Databases from Command Prompt

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

With a little preparation, you can run a database compare from the command prompt. Results can be saved to files or sent by email. Errors are logged to a file called ToadErrors.log in Toad's start directory. The file is written when Toad closes. If an error file is written, Toad will close with a non-zero exit code.

To build the file to run Database Comparison

1. Start Toad.
2. From the Database menu, select **Compare | Compare Databases**.
3. Make all settings to perform the comparison (See "Compare Databases" (page 247) for more information.), but do not click Compare.
4. Instead, on the Options tab, click the **Save All Settings to File** button. Click **Save** to save settings information.

Adjust the file

The file resulting from the above procedure can be edited with Notepad or any text editor. For it to be of use in the command line, commands must be activated in the settings file to form a

script.

The commands can be at the end or the beginning of the file, and they need to be in the order you want them executed. For your convenience, all of the available commands are written into the settings file and commented out. You can easily remove the comments and cut and paste the commands into the order you want them to execute. An abbreviated set of these instructions is also in the settings file comments.

Commands

Each of these commands must be entered exactly as shown (except capitalization can be however you like, and file paths and names may be changed). **No spaces** are allowed before or after the commands, or between the commands and their parameter lists. The file should contain NO BLANK LINES, except as comments or at the end of the file.

- **SaveInteractiveResultsAsText('c:\InteractiveResultsFile.txt')** - Saves contents of 'Interactive Results' Tab in a text format. Saving them in an RTF format is not available.
- **SaveRTFResultsAsRTF('c:\RTFResultsFile.rtf')** - Saves contents of 'Results(RTF)' Tab in RTF Format.
- **SaveRTFResultsAsText('c:\TextResultsFile.txt')** - Saves contents of 'Results(RTF)' Tab in Text Format.
- **SaveSummaryAsRTF('c:\RTFSummaryFile.rtf')** - Saves contents of 'Results(Summary)' Tab in RTF Format.
- **SaveSummaryAsText('c:\RTFSummaryFile.txt')** - Saves contents of 'Results(Summary)' Tab in Text Format.
- **SaveSyncScript('c:\SyncScript.sql')** - Saves the SyncScript (sql to transform the comparison source database into the reference source database) in the specified file. You can change the file path and name.
- **EmailInteractiveResultsAsText** - Saves contents of 'Interactive Results' Tab in a text format and emails the file to the address specified in View | Toad Options | Email Settings. RTF format is not available.
- **EmailRTFResultsAsRTF** - Saves contents of 'Results(RTF)' Tab in RTF Format and emails the file to the address specified in View | Toad Options | Email Settings.
- **EmailRTFResultsAsText** - Saves contents of 'Results(RTF)' Tab in Text Format and emails the file to the address specified in View | Toad Options | Email Settings.
- **EmailSummaryAsRTF** - Saves contents of 'Results(Summary)' Tab in RTF Format and emails the file to the address specified in View | Toad Options | Email Settings.
- **EmailSummaryAsText** - Saves contents of 'Results(Summary)' Tab in Text Format and emails the text file to the address specified in View | Toad Options | Email Settings.
- **EmailSyncScript** - Saves contents of the SyncScript and emails the file to the address specified in View | Toad Options | Email Settings.
- **CloseToad** - Closes Toad after the script finishes

- **CloseComparison** - Closes the database comparison window after the comparison has finished.
- **#** - This line is a comment and will be ignored.

Note: Any email settings are taken from View | Toad Options | Email Settings | Compare Databases

Run from the Command Prompt

One comparison only

Once your file is ready, you can run the comparison from a command line.

Open the command prompt and enter the command line in standard command line syntax. See "Command Line Syntax" (page 822) for more information. It should look similar to the following:

```
Toad.exe -c system/manager@mydb COMPDB c:\MYfile.txt
```

Note: You must either be in the same directory where Toad.exe is located, or you must enter the full path name in the command line.

- The characters after the **-c** command should reflect your user id and Oracle database.
- Change **c:\myfile.txt** to the path of the settings file you saved above.

Multiple comparisons

If you want Toad to do more than one comparison you can call Toad with this command line:

```
Toad.exe -c system/manager@myOraDB CmdFile c:\commandfile.txt
```

In this case, **commandfile.txt** will be a separate file containing specific commands. The file might look like this:

```
COMP=c:\Comparison1.txt  
COMP=c:\Comparison2.txt  
COMP=c:\Comparison3.txt  
CloseToad
```

Here, **Comparison1.txt**, **Comparison2.txt**, and **Comparison3.txt** are three separate database comparison settings files, and when Toad is called it will run the three database comparisons defined by these files. Toad will close itself when the comparison is finished.

Note: Even if you have a **CLOSEToad** command in any of the comparison settings files, Toad will not close until all database comparisons are executed.

Run Compare Schemas from a Command Prompt

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You may find you would like to compare schemas at regular intervals to monitor for unexpected changes made by others. With a little preparation, you can do the compare as an action from a command prompt or schedule a compare for a specific time when you are away from your desk.

For information about doing this, see the following topics:

- Creating a new action from a Toad window (page 437)
- Running Actions from the Command Line (page 835)

Run Copy to another Schema from Command Prompt

Build the file to run Copy Data to another Schema

1. Start **Toad**.
2. From the Schema Browser, Tables page, select one or several tables and right-click.
3. On the menu, select **Copy data to another Schema**.
4. Make all settings on all tabs (see Source/Dest and Options (page 1083)), but do not click Execute.
5. Instead, on the toolbar, click the **Save All Settings to File** button. A Save file dialog box appears. Click **Save** to save settings information. The settings are saved by default into the Toad folder, but you can save them wherever you choose.

Adjust the file

The file resulting from the above procedure can be edited with Notepad or any text editor. For it to be of use in the command line, commands must be activated in the settings file to form a script.

The commands can be at the end or the beginning of the file, and they need to be in the order in which you want them executed. For your convenience, all of the available commands are written into the settings file and commented out. You can easily remove the comments and cut and paste the commands into the order you want them to execute. An abbreviated set of these instructions is also in the settings file comments.

You may edit this file, but you must observe the following rules:

1. The **DestSchemaName** line should be commented out if source tables are from multiple schemas. It should NOT be commented out (as it is required) if source tables are all from

one schema.

2. If required, **DestSchemaName** should be specified AFTER connection info.
3. Line feeds in WHERE clauses must be represented by {NL} Not following this line feed representation will cause part of your 'where' clause to be ignored.

Run from the Command Prompt

Once your file is ready, you can run the Save from the command prompt.

Open the command prompt and enter the command line in standard command line syntax. It should look similar to the following:

```
c:\toad\Toad.exe -c system/manager@mydb DATACOPY c:\thisfile.txt
```

Your path to Toad may differ, along with your connect info. 'c:\thisfile.txt' represents the file you created.

See "Command Line Syntax" (page 822) for more information.

Run Generate Database Script from a Command Prompt

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To build the file to run Generate Database Script

1. Start Toad.
2. From the Database menu, select **Export | Generate Database Script**.
3. Make all settings on all tabs, but do not click Execute. See "Generate Database Script" (page 427) for more information.
4. Instead, on the toolbar, click the **Save All Settings to File** button. Click **Save** to save settings information. The settings are saved by default into the Toad folder, but you can save them wherever you choose.

Adjust the file

The file resulting from the above procedure can be edited with Notepad or any text editor. For it to be of use in the command line, commands must be activated in the settings file to form a script.

The commands can be at the end or the beginning of the file, and they need to be in the order you want them executed. For your convenience, all of the available commands are written into the settings file and commented out. You can easily remove the comments and cut and paste the commands into the order you want them to execute. An abbreviated set of these instructions is also in the settings file comments.

Commands

Each of these commands must be entered exactly as shown (except capitalization, which can be however you like). No spaces are allowed before or after the commands, or between the commands and their parameter lists. The file should contain NO BLANK LINES, except as comments or at the end of the file.

- CloseToad - Closes Toad after the script finishes
- CloseGDBS - Closes the Generate Database Script window after generate database script has finished.
- # - This line is a comment and will be ignored.

Run from the Command Prompt

Generate one script only

Once your file is ready, you can run the generate database script from a command line.

Open the command prompt and enter the command line in standard command line syntax. See "Command Line Syntax" (page 822) for more information.

It should look similar to the following:

```
Toad.exe -c system/manager@myOraDB COMP=c:\myfile.txt
```

Note: You must either be in the same directory where Toad.exe is located, or you must enter the full path name in the command line.

- The characters after the -c command should reflect your user id and Oracle database.
- Change c:\myfile.txt to the path of the settings file you saved above.

Multiple scripts

If you want Toad to generate more than one script, you can call Toad with this command line:

```
Toad.exe -c system/manager@myOraDB CmdFile c:\commandfile.txt
```

In this case, commandfile.txt will be a separate file containing specific commands. The file might look like this:

```
COMP=c:\script1.txt
COMP=c:\ script2.txt
COMP=c:\ script3.txt
CloseToad
```

Here, Script1.txt, Script2.txt, and Script3.txt are three separate generate database script settings files, and when Toad is called it will generate the three database scripts defined by these files. Toad will close itself when the command is finished.

Note: Even if you have a CLOSEToad command in any of the comparison settings files, Toad will not close until all schema scripts are generated.

Run Generate Schema Script from Command Line

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To build the file to run Generate Schema Script

1. Start Toad.
2. From the Database menu, select **Export | Generate Schema Script**.
3. Make all settings on all tabs, but do not click Execute. See "Generate Schema Script" (page 429) for more information.
4. Instead, on the toolbar, click the **Save All Settings to File** button. Click **Save** to save settings information. The settings are saved by default into the Toad folder, but you can save them wherever you choose.

Adjust the file

The file resulting from the above procedure can be edited with Notepad or any text editor. For it to be of use in the command line, commands must be activated in the settings file to form a script.

The commands can be at the end or the beginning of the file, and they need to be in the order you want them executed. For your convenience, all of the available commands are written into the settings file and commented out. You can easily remove the comments and cut and paste the commands into the order you want them to execute. An abbreviated set of these instructions is also in the settings file comments.

Commands

Each of these commands must be entered exactly as shown (except capitalization can be however you like). No spaces are allowed before or after the commands, or between the commands and their parameter lists. The file should contain NO BLANK LINES, except as comments or at the end of the file.

- CloseToad - Closes Toad after the script finishes
- CloseGSS - Closes the Generate Schema Script window after generate schema script has finished.
- # - This line is a comment and will be ignored.

Run from the Command Prompt

Generate one schema script only

Once your file is ready, you can run the generate schema script from a command line.

Open the command prompt and enter the command line in standard command line syntax. See "Command Line Syntax" (page 822) for more information.

It should look similar to the following:

```
Toad.exe -c system/manager@myOraDB GSS c:\myfile.txt
```

Note: You must either be in the same directory where Toad.exe is located, or you must enter the full path name in the command line.

- The characters after the -c command should reflect your user id and Oracle database.
- Change c:\myfile.txt to the path of the settings file you saved above.

Multiple schema scripts

If you want Toad to generate more than one script, you can call Toad with this command line:

```
Toad.exe -c system/manager@myOraDB CmdFile=c:\commandfile.txt
```

In this case, commandfile.txt will be a separate file containing specific commands. The file might look like this:

```
COMP=c:\script1.txt  
COMP=c:\ script2.txt  
COMP=c:\ script3.txt  
CloseToad
```

Here, Script1.txt, Script2.txt, and Script3.txt are three separate generate schema script settings files, and when Toad is called it will generate the three schema scripts defined by these files. Toad will close itself when the generate is finished.

Note: Even if you have a CLOSEToad command in any of the comparison settings files, Toad will not close until all schema scripts are generated.

Run Rebuild Objects from the Command Prompt

You may find you would like to rebuild indexes or tables at regular intervals, or have them rebuilt during off-hours. With a little preparation, you can do the rebuild indexes from a command prompt. If commands are saved to a batch file, the batch file can be scheduled using the NT scheduler to execute when you are away from your desk. Results are saved to files.

You can both check indexes and rebuild them from the command prompt.

To build the file to run Rebuild Multiple Objects

1. Start **Toad**.
2. From the Database | Optimize menu, select **Rebuild Multiple Objects**.
3. Make all settings to perform the comparison, but do not click either Rebuild or Examine indexes. See "Rebuild Index" (page 1015) for more information.
4. Instead, on the toolbar of one of the options tabs, click the **Save All Settings to File** button. A Save file dialog box appears. Click **Save** to save settings information. The settings are saved by default into the Toad folder, but you can save them wherever you choose.

Adjust the file

The file resulting from the above procedure can be edited with Notepad or any text editor. For it to be of use in the command line, commands must be activated in the settings file to form a script.

The commands can be at the end or the beginning of the file, and they need to be in the order in which you want them executed. For your convenience, all of the available commands are written into the settings file and commented out. You can easily remove the comments and cut and paste the commands into the order you want them to execute. An abbreviated set of these instructions is also in the settings file comments.

Uncomment any or all of the command lines in the settings file for actions to perform. All file names and items in quotes are editable. Do not put more than one command per line. Do not leave spaces before the commands. Email settings are taken from **View | Toad Options | Email Settings**. See "Email Settings" (page 652) for more information.

Commands go in a logical order, as they are presented in the settings file. You need to load indexes before you rebuild them, and so on.

Comments

Any lines in the file that begin with # are comments, and commands contained within will not be performed. To activate a command, remove the #.

Commands to load the grid

- `LoadUserIndexes ('USERA', 'USERB', 'USERC')` - This command loads the User indexes for the specified users. Change, remove and add users as necessary.
- `LoadTableIndexes (TABLEOWNER='USERA') (TABLES='TABA', 'TABB', 'TABC')` - This command loads indexes for the specified tables. Change, remove, and add tablenames as necessary. Note that you need to specify the tableowner, and then the tables.
- `LoadTablespaceIndexes ('TABLESPACEA', 'TABLESPACEB')` - This command loads tablespace indexes. Change, remove, and add tablespacenames as necessary.

- `LoadUserTables ('USERA', 'USERB', 'USERC')` - This command loads the User tables for the specified users. Change, remove and add users as necessary.
- `LoadTablespaceTables ('TABLESPACEA', 'TABLESPACEB', TABLESPACEC')` - This command loads tablespace tables. Change, remove, and add tablespacenames as necessary.
- `ImporTablestFromText ('c:\MyTextFile.txt')` - This command lets you import the settings for your tables list from a previously saved text file. You can edit the path and filename.
- `ImportTablesFromBinary ('c:\MyBinaryFile.bin');` - This command lets you import the settings for your tables list from a previously saved binary file. You can edit the path and filename.
- `ImporIndexesFromText ('c:\MyTextFile.txt')` - This command lets you import the settings for your index list from a previously saved text file. You can edit the path and filename.
- `ImportIndexesFromBinary ('c:\MyBinaryFile.bin');` - This command lets you import the settings for your index list from a previously saved binary file. You can edit the path and filename.

Commands to reload

- `ReloadAllIndexes` - This command is reloads information about the currently loaded indexes. You might use it after loading indexes from a text or binary file to make sure all the information is current.
- `ReloadAllTables` - This command is reloads information about the currently loaded tables. You might use it after loading tables from a text or binary file to make sure all the information is current.

Commands to Choose Tables/Indexes to Rebuild or Examine All

- `CheckAllIndexes` - This command marks all indexes with a checkmark. It is used with the ...Selected commands described below.
- `CheckAllTables` - This command marks all tables with a checkmark. It is used with the ...Selected commands described below.
- `CheckUnusable` - This command marks indexes and tables that have a status of Unusable with a checkmark. It is used with the ...Selected commands described below.
- `RemoveIndexConsiderationFailures` - This command checks settings under the **Consider Indexes for Rebuild Only If** section of the **Thresholds and performance options** tab. It removes indexes from the list that do not meet the configured settings. Use this to exclude indexes that are small or do not have very many extents.
- `RemoveTableConsiderationFailures` - This command checks Conditional Threshold settings for tables in the section of the **Thresholds and performance options** tab. It removes tables from the list that do not meet the configured settings. Use this to exclude tables that are small or do not have very many extents.

Commands to Rebuild or Examining Checked Indexes

- `ExamineSelectedIndexes` - This command examines all selected indexes and marks them if they are recommended for rebuild. It must be performed before a **RebuildRecommended** command can be performed.
- `RebuildRecommendedIndexes` - This command rebuilds all indexes marked as **Rebuild Recommended** by an Examine command.
- `RebuildSelectedIndexes` - This command rebuilds all marked indexes, regardless of whether they have been recommended for rebuild.
- `RebuildSelectedTables` - This command rebuilds all marked tables.

Use Results

This group of commands is for sending the results to file or email.

Note: There is an on-screen option to send results by email. This option is included in the settings file, so if it is checked, results will be sent by email, even if the settings are run from the command line. See "Email Notification - Rebuild Multiple Objects" (page 613) for more information.

- `ExportIndexesToHtml('c:\MyHTMLFile.htm')` - This command exports the results of the rebuild or examine indexes commands to an HTML file. The path and filename can be edited.
- `ExportIndexesToExcel('c:\MyExcelFile.xls')` - This command exports the results of the rebuild or examine indexes commands to an Excel file. The path and filename can be edited.
- `ExportIndexesToText('c:\MyTextFile.txt')` - This command exports the results of the rebuild or examine indexes commands to a text file. The path and filename can be edited.
- `ExportIndexesToBinary('c:\MyBinaryFile.bin')` - This command exports the results of the rebuild or examine indexes commands to a binary file. The path and filename can be edited.
- `ExportTablesToHtml('c:\MyHTMLFile.htm')` - This command exports the results of the rebuild tables command to an HTML file. The path and filename can be edited.
- `ExportTablesToExcel('c:\MyExcelFile.xls')` - This command exports the results of the rebuild tables command to an Excel file. The path and filename can be edited.
- `ExportTablesToText('c:\MyTextFile.txt')` - This command exports the results of the rebuild tables command to a text file. The path and filename can be edited.
- `ExportTablesToBinary('c:\MyBinaryFile.bin')` - This command exports the results of the rebuild tables command to a binary file. The path and filename can be edited.

Close

- CloseRMO - This command closes the Rebuild Multiple Indexes page after the previous commands are completed.
- CloseToad - This command closes Toad after all command line activities are completed.

Backwards Compatible commands

If you are using settings files created with older versions of Toad, the following commands apply to indexes only. Quest Software, Inc. strongly suggests using the most current commands available.

- ImportFromText('c:\MyTextFile.txt')
- ImportFromBinary('c:\MyBinaryFile.bin')
- ExportToHtml('c:\MyHTMLFile.htm')
- ExportToExcel('c:\MyExcelFile.xls')
- ExportToText('c:\MyTextFile.txt')
- ExportToBinary('c:\MyBinaryFile.bin')
- ReloadAll
- CheckAll
- CheckUnusable
- RemoveConsiderationFailures
- ExamineSelected
- RebuildRecommended
- RebuildSelectedInds
- CloseRMI

Run from the Command Prompt

One setting file only

Once your file is ready, you can run the examine/rebuild file from a command line.

Open the command prompt and enter the command line in standard command line syntax. See "Command Line Syntax" (page 822) for more information.

It should look similar to the following:

```
Toad.exe -c system/manager@mydb RMI c:\thisfile.txt
```

Note: You must either be in the same directory where Toad.exe is located, or you must enter the full path name in the command line.

- The characters after the -c command should reflect your userid and Oracle database.
- Change `thisfile.txt` to the path of the settings file you saved above.

Multiple setting files

You can call Toad with this command line to run the Rebuild Multiple Indexes function from a command file.

```
Toad.exe -c system/manager@myOraDB CmdFile=c:\commandfile.txt
```

You can also call the index rebuild from a command file like this:

```
c:\toad\Toad.exe Connect=system/manager@mydb CMDFILE=c:\mycommandfile.txt
```

In this case, `mycommandfile.txt` will be a separate file containing specific commands. The file might look like this if you are doing 2 index rebuilds, a schema comparison and finally building some html schema documentation.

```
RMI=c:\rebuild1.txt  
RMI=c:\rebuild2.txt  
COMP=c:\schemacomp1.txt  
GENHTML=c:\html1.txt
```

Here, `rebuild1.txt` and `rebuild2.txt`, are the index rebuilds. `Schemacomp1.txt` is the schema comparison settings file. When Toad is called it will run the two index examination/rebuilds defined by these files, then the schema compare, and then create the HTML files. Toad will close itself when the comparison is finished.

Note: Even if you have a `CLOSEToad` command in any of the settings files, Toad will not close until all commands from the command file are executed.

Run Reports Manager from the Command Line

You can easily export, print, or email reports from the Reports Manager using the command line. See "Reports Manager Overview" (page 733) for more information about creating reports.

This functionality allows you to batch reports together easily and run them at a convenient time.

Create the command file

To create the command file

1. Open the **Reports Manager**.
2. Select the reports you want to run: you can multi-select from multiple categories in the grid by holding down **SHIFT** or **CTRL** as you click.
3. Click  and save the file.

Adjust the command file

There is no need to adjust the file. Toad automatically puts the appropriate commands into the file when you select click OK. However, this file can be modified with notepad if you choose. The file contains information about how to use it in a command line.

Email settings are stored in the registry by FastReports. Because of this, you will need to send a report by email manually before using the command line interface. After the initial email, the settings will be saved and the command line will suffice.

To send email manually from Reports Manager

1. Preview any report.
2. In the Preview dialog, click **Export** and choose **Email**.
3. In the Send By Email dialog, click the **Account** tab to enter your email settings.

Comments

Any lines in the file that begin with # are comments, and commands contained within will not be performed. To activate a command, remove the #.

Running the command file

The path to Toad is taken from the connection you have open when you create your file, as are the username, database, and file. If you move the file you will need to change the filename.

Once your file is ready, you can run the Reports Manager from the command prompt or from a batch file.

Open the command prompt and enter the command line in standard command line syntax. (See "Command Line Syntax" (page 822) for more information.) It should look similar to the following:

```
C:\toad\TOAD.exe -c <username>/<password>@<database> RPTMGR "C:\thisfile.txt"
```

Your path to Toad may differ, along with your connect info. 'c:\thisfile.txt' represents the file you created.

Using Variables

Using Variables

There are many areas within Toad where variables are appropriate and useful. From the Options | Variable window, you can set user variables, and also view a list of system variables that are usable in various areas within Toad.

Variables can be included in filenames from some windows (such as Compare Databases, Compare Schemas, and Generate Schema Script), allowing you to specify date and timestamps for your generated definition files. Doing this means that the definition file can be generated with new timestamps whenever an action based upon its creation is run.

System Variables

System variables are variables that Toad uses that are system-related. These include variables relating to the active session, date, Toad's working directory and session username.

User Variables

You can also create user variables that Toad can use in the same manner. These can be changed from the Toad Options | Variables window, and can include items such as RMAN locations. You can add a variable of your own devising if you need to include something not listed in the system variables on a regular basis.

Working with Code

Editor

Toad Editor

The Toad Editor lets you edit many types of statements and code. You can code SQL and PL/SQL within the same tab and Toad can recognize each part of the code in the editor.

The editor will attach itself to the active connection in Toad, but if you do not have a connection you can still use it as a text editor. You can also change the active session from the Editor Toolbar. See "Missing Toolbars " (page 138) for more information.

The editor is organized into three areas: the navigator panel, the editor area, and the area below the editor, where Toad displays results, DBMS output, breakpoints, watches, and any other information necessary to better understand and work with the code. The desktop areas can be arranged and configured.

Navigator Panel

The Navigator Panel displays an outline of the editor contents in the active tab. You can click on the items listed to navigate to that statement in the editor. See "Navigation" (page 870) for more information.

Editor

The main editor window displays code in separate tabs. You can create tabs for different bits of code, or different types of code. SQL and PL/SQL can go in the same tab. Toad can tell where the cursor is located and compile PL/SQL or run SQL as required.

NOTE: If you have multiple statements in the editor, you must trail them with a valid statement terminator such as a semi-colon.

In addition, you can open tabs to edit and debug Java and Hex code.

Desktop Panels

The desktop panels contain many options for tab display, depending on what kind of code you are working with, and what you want to do with it. In addition, you can configure how these panels display to make Toad work for you. See "Configuring your Desktop" (page 858) for more information.

Note: Some of these desktop panels are available only with specific Toad editions.

Configuring the Editor

You can use the Toad editor in the main editor window to edit SQL text. The same editor is used in read-only mode on many other windows throughout Toad. This editor provides the following features:

- User configurable Syntax Highlighting (page 690)
- Bookmarks (page 873)
- Menu hotkeys (page 129) for common editing commands.
- Auto Replace Substitutions (page 702) (replaces as you type)
- Code Completion Templates (page 700)
- Undo/Redo (from the Edit menu)
- Editing (page 874)
- Find Closing Block (page 875)
- Find and Replace Text (page 966)
- Printing (page 705) with configurable options
- Word Wrap, Auto Indent, and all other common editor functions

Altering Editor Options

Editor Options can be altered from the **Toad Options | Editor nodes**.

Troubleshooting the Editor

Missing Panels

If you cannot see a pane it has probably been removed from the desktop, or hidden inadvertently.

To restore a missing pane

1. Right-click in the editor window and select Desktop.
2. Make sure the pane you are looking for is marked with a check. If it isn't, select it now.

Hidden Panels

Sometimes, a pane will appear to be visible: it will be marked with a check as described above. However, it will still be hidden. Hidden panes are generally hidden because they have been scrolled beyond the visible range.

To view a hidden pane

- » Click  in the area where the pane should appear.

Missing Toolbar buttons

The toolbars in Toad are configurable. The default toolbars in the editor are minimal, in order to leave plenty of space for editing. You may find that some of the buttons included are not commands you use regularly, and that there are some commands you do use that you would like on the toolbar. You can easily adjust the toolbars to reflect the way you work. See "Configurable Toolbars and Menus - Overview" (page 122) for more information.

Missing Toolbar

It is possible to delete all the toolbars in the toolbar area. If this happens, you can restore them.

To restore missing toolbars

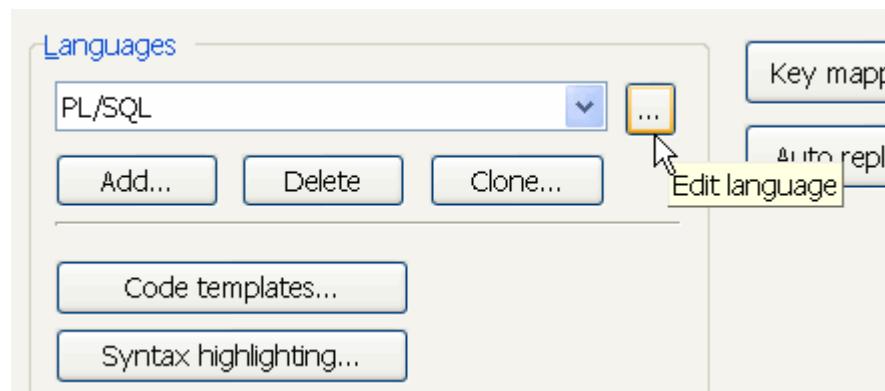
- » Right-click in the **Editor** and then select **Customize toolbars**. Select at least one toolbar to display.

Functionality doesn't work

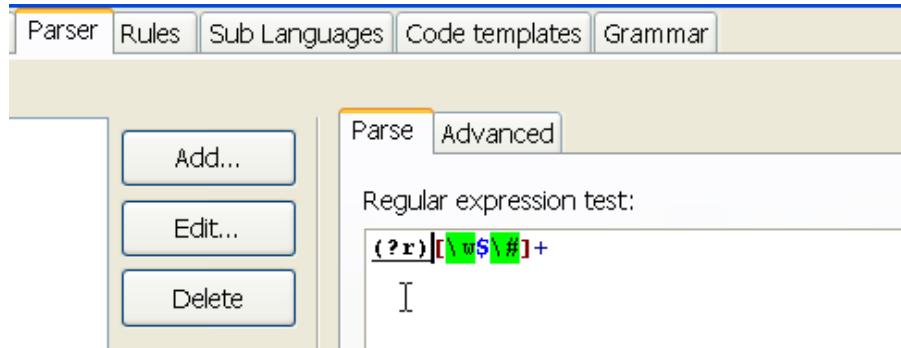
If you are an upgrading Toad user, some features in the Editor may not work properly (including CTRL-Click, and hover-over hints). So that you did not lose your customizations of the languages in this library, the lexlib.lxl file was not upgraded to include the Unicode notation.

You will need to make the following change to your LexLib for the Editor parser to work correctly with Unicode:

1. From the **View** menu, select **Options**.
2. Click the **Editor - Behavior** node.
3. Set the language dropdown to **PL/SQL** and then click .



4. Click the **Parser** tab and select **Any Name**.
5. Add **(?r)** to the beginning of the "Any name" parser rule:



6. Click **OK** or **Apply** to save changes.

Auto Backup

You can have Toad automatically create backups of your editor files using a temporary filename. If Toad closes abnormally, you will then be prompted to recover or discard backups when you next open Toad. Auto backup is automatically enabled, with a backup interval of every 3 minutes. You can change this from the View | Toad Options | Editor | Behavior page. See "Editor - Behavior" (page 636) for more information.

You can also use the auto-backup to recover documents manually.

To recover documents from the menu

- » From the File menu, select **Recover Documents**.

Closing an Editor tab

You can leave Editor tabs open as long as you like. Toad is limited in number of tabs and size of the scripts you enter only by the memory of your machine.

To close an Editor tab

- » Right-click on the tab you want to close and select **Close Tab**.

To close all tabs

- » Right-click and select **Close all Tabs**.

To close all tabs except the active tab

- » Right-click and select **Close all Other Tabs**.

Code Snippets

Use this dockable window to look up or copy Oracle SQL functions into any of the editors within Toad.

The xml file associated with these items are located in the file: **Documents and Settings | Username | Quest Software | Toad for Oracle | versionnumber | User Files | Templates.xml**.

To use Code Snippets

1. From the View menu, select **Code Snippets**.
2. Select a **category of code** from the box at the top of the window.
3. Select the code from the list. You can:
4. View a description of the code in the area below the code list
5. Double-click the code to insert it into the active editor tab
6. Drag and drop code into the editor

To Edit Code Snippets

1. From the Toad Options window, select **Editor | Code Assist**.
2. In the Code Snippets area, select the category of snippets you want to edit and then click **Edit**.
3. Select the snippet you want to edit, and click **Edit**.
4. Edit the Oracle Function or the description and click **OK**.

To Add Code Snippets to an existing category

1. From the Toad Options window, select **Editor | Code Assist**.
2. In the Code Snippets area, select the category of snippets and then click **Edit**.
3. Click **Add**.
4. Enter the code in the **Oracle function** box.
5. Enter a description in the **Description** box.
6. Click **OK**.

To Add Code Snippets to a new category

1. From the Toad Options window, select **Editor | Code Assist**.
2. In the Code Snippets area, click **Add**.
3. Enter a category name in the **Category** box.
4. Enter the code in the **Oracle function** box.
5. Enter a description in the **Description** box.
6. Click **OK**.

Configuring your Desktop

You can easily configure which panels display on your Editor desktop, and where they display.

You can select panels to display one at a time, or in groups. When you have configured it, you can save the desktop with its own name, returning to it whenever the need arises. In addition, you can turn on Auto-save current desktop, and however you have the desktop set when you change tabs or close Toad will be how your desktop is defined the next time you open the editor.

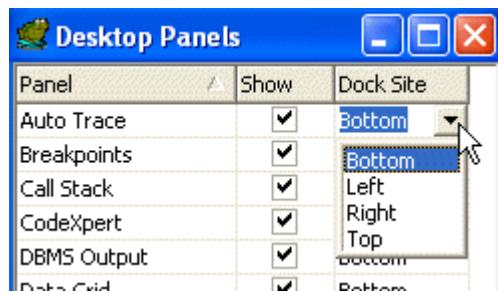
To display panels one at a time

1. Right-click in the panel area near the bottom of the window.
2. Select **Desktop Panels** and then select the panel you want to display or hide.

To configure your desktop at once

1. Right-click in the panel area near the bottom of the window.
2. Select **Desktop Panels** and then select **Configure Desktop**.

From the Desktop Panels dialog, select the panels you want to display in the Show column, and click the drop down menus in the Dock Site column to change where the panel is docked. By default, all except the Navigator will be docked below the editor.



3. When you have selected (or hidden) all the panels you want, click **OK** to save your changes.

To save your desktop

1. Click  on the Desktops toolbar.
2. Enter the name you want to use for this desktop.
3. Click **OK**.

To use a saved desktop

- » From the dropdown desktop menu, select the desktop you want to use.

Restoring the desktop

You can restore your desktops in one of two ways. If you have made changes to the desktop you can restore it back to the point when you first opened it. Alternately, you can restore it back to its default.

To restore a desktop

1. Click the dropdown arrow on .
2. Select either:
 - Revert to Last Saved Desktop.
 - Restore Default Desktop.

Describe (Parse) Select Query

Use this function to see what columns would be returned IF the query were executed.

To describe a query

- » From the Editor menu, select **Describe (Parse) Select Query** (CTRL+F9).

This will pop up a window listing all column names, data types, and data lengths of the columns that would be returned from the query IF it were executed. This is useful for tuning a LONG query before it is executed.

Execute as Script

This command executes the contents of the current Editor window as a script.

The Editor can process SQL Scripts that contain DDL statements, Insert statements, and more. Some SQL*Plus commands are ignored as Toad processes a SQL script. For scripts that contain other SQL*Plus commands, you can still execute your script using the **Editor | Execute using SQL*Plus menu item**.

In addition, you can click the dropdown beside the Execute as Script toolbar button. This will let you execute the script using **Quest ScriptRunner** or **SQL*Plus** instead of Toad.

To execute the contents of the Editor as a script

- » Select **Execute as Script** (F5) on the **Editor** menu.

Execute Snippet

The Execute Snippet command executes the current statement at the cursor in the Editor and executes the current source in the Editor for PL/SQL debugging.

To execute a snippet

- » On the Editor menu, select **Execute Snippet** (SHIFT+F9).

Execute SQL via SQL*Plus

This opens a DOS box and executes the contents of the Editor using SQL*Plus.

To access MS DOS for SQL*Plus

- » From the Editor menu, select **Execute SQL via SQL*Plus**.

Executing SQL Scripts

The Editor window can process simple SQL scripts that contain DDL statements, INSERT statements, and more. Some SQL*Plus commands are ignored as Toad processes a SQL script. See "SQL*Plus Syntax - Supported" (page 885) for more information.

An alternative, using Quest ScriptRunner to run long scripts can be useful. Because Quest ScriptRunner executes in the background, Toad is free to perform other tasks. See the Quest ScriptRunner Helpfile (In Quest ScriptRunner, press **F1**) for more information.

Note: Bind variables are not supported from the **Execute Current Window as Script** command.

To execute a SQL script in Toad

1. Load the script into the Editor window.
2. From the Editor menu, select **Execute as Script**.

Note: Linesize in Toad defaults to 80, just as in SQL*Plus. If you want to change this to a longer amount, you can do it using the SET LINESIZE command in your script.

Alternately, you can add the following lines *exactly* in the TOAD.INI file:

```
[SCRIPTS]
```

```
LineSize=300
```

(Or enter any linesize you want where we have included 300. Do NOT put a space after the number.)

Caution: If any changes have been made, the script in the current window is **automatically saved**, and then executed as a script.

To execute a SQL script in Quest ScriptRunner

1. Load the script into the Editor window.
From the Editor menu, select **Execute SQL via QSR**.

Note: Quest ScriptRunner opens using your current connection and the script executes.

To execute the current window as SQL Script

- » From the Editor menu, select **Execute SQL via SQL*Plus**.

Execute Statement

This command executes the statement at the cursor, or whatever part of it you have selected (highlighted).

To execute a statement in the editor

- » On the Editor menu, select **Execute Statement** (F9)

Note: F9 can handle only one statement at a time. If you highlight more than one statement and press F9, Toad will return an error. See "Execute as Script" (page 860) for more information if you need to include SQL*Plus commands.

Extract Procedure

You can extract a procedure from existing code, into a new stored procedure or locally defined procedure.

Creating the new procedure and call depend heavily on the parser to determine which identifiers in the text selection must be declared as parameters in the new procedure. If Toad cannot parse the code, no extraction occurs.

The new procedure and the resulting procedure call are created and inserted so that the code is syntactically correct. No formatting is done to the code.

To access Extract Procedure

1. From the editor, select the code you want to extract.
2. Right-click and select **Extract Procedure**.

Select a procedure type.

Note: If you select stored procedure, you can choose to either include the "CREATE OR REPLACE" in the DDL instead of just "CREATE".

3. Enter the procedure name.
4. Click **OK**.

Example

This is a small example to demonstrate:

1. Starting with the following procedure in the Editor window:

```
CREATE OR REPLACE PROCEDURE EXTRACTEDPROC(Y in out NUMBER) AS
BEGIN
  DBMS_OUTPUT.PUT_LINE ('The value of Y at ' || SYSDATE || ' is
  ' || Y);
END;
/
```

2. Select the line containing DBMS_OUTPUT.PUT_LINE.
3. Right-click and select **Stored Procedure** with replace option.

4. Name it **test** and click **OK**.

The new procedure is created in a new tab and looks like this:

```
CREATE OR REPLACE PROCEDURE Test(Y in out NUMBER) AS
BEGIN
  DBMS_OUTPUT.PUT_LINE ('The value of Y at ' || SYSDATE || ' is
' || Y);
END;
/
```

The original procedure now includes a call to the new procedure, and looks like this:

```
CREATE OR REPLACE PROCEDURE MYPROC (X IN NUMBER)
AS
  Y NUMBER;
BEGIN
  Y := X + 1;
  test(Y);
END;
```

Highlight Snippet

To highlight a snippet

1. Place your code in the snippet you want to highlight.
2. From the Editor menu, select **Highlight Snippet** (CTRL+H).

Load and Execute a Script File

To load and immediately execute a script file

1. From the Editor menu, select **Load and Execute a Script File**
2. Select a file to load into the Editor and execute immediately.

Moving Between Editor Tabs

There are several ways to move between tabs in the Editor. Some of them are dependent upon how you opened the tab, some are not.

To move between tabs:

- » Do one of the following:

- Click the tab you want to open.
- Press **ALT+PageUp** or **ALT+PageDown** to cycle through them.

Or

- » If you have opened them using the **CTRL+Click** functionality within the editor, click the navigation buttons in the Editor toolbar and select either scroll forward and back through them in the order they were opened, or select from a dropdown order.

Object Palette

The Object Palette can be docked to the main Toad window, so that it is available within any of your Toad windows.

When the active connection changes the Object Palette automatically refreshes to reflect the new active connection. Or, you can use the refresh button to refresh the list (this method queries the database).

To access the Object Palette

- » From the View menu, select **Object Palette**.

To view objects from a different schema

1. At the top of the Object Palette, click the **Schema** dropdown.
2. Select the new schema from the list. Objects from that schema now appear in the object list.

To change the style in which objects are listed

1. Click the drop down arrow beside .
2. Select the style in which you want to view objects.

To insert an object into an editor

1. Place your cursor in the editor in the location where you want the object.
2. In the Object Palette, double-click the object you want to insert.

To insert an object into an editor

1. Place your cursor in the editor in the location where you want the object.
2. In the Object Palette, double-click the **object** you want to insert.

To perform a DESCRIBE on an object

1. In the Object Palette, select the object you want to describe.
2. Press **F4** to display the DESCRIBE window.

To filter the Object Palette

1. In the Object Palette toolbar, click the appropriate filter button:
 - Project Manager filter
 - Filter tables. See "Schema Browser Filters" (page 989) for more information.
2. Enter the filter criteria to limit the objects shown.

To view columns

- » In the Object Palette, click  . Columns are displayed for the selected object at the bottom of the palette.

Opening Files

When opening files from disk, you can do one of several things.

- You can let Toad decide what format the file uses. This is the default.
- You can specify a format and force Toad to use it for that file.
- You can add a file to a Favorites list.

Forcing a format

You can force Toad to use a format other than the most obvious format. For example, if you have a file that has been misclassified as a procedure, but you know that it is a hex file, you can force Toad to open it as a hex file. The format defaults to Auto.

To force a format

1. Select the file you want to open.
2. In the file format box, select the format you want to use. For example, Hex.

Adding Files to Favorites

You can add files to your favorites list as well. This is useful for files that you must load from disk on a regular basis, rather than loading them from the database.

Note: Selecting a favorite does not change the File type. If it has been set to force to hex, your favorite will open as a hex file.

To add a file to favorites

1. From the Open window, select the file you want to add to your favorites.
2. Click the **Add Favorite** button.

Save All

The **Save All** button on the Editor toolbar lets you save changes to all open files quickly. If files are not named, you are prompted to provide a name and location. Names are requested in the order of the tabs in the Editor.

To save all files

- » Click  on the Editor toolbar.

Current Schema Drop down

The Current Schema drop down lets you work with a schema other than the one where you are connected. This can be useful if, for example, you have tested a SQL statement in your test schema and now want to execute it on several other schemas without disconnecting and reconnecting. To use this feature, you must have the ALTER SESSION privilege.

Button	Command
Current Schema: GMUELLER ▾	Use the drop down to set the schema.

By default, the current schema is set to your current connection. When you use this command Toad follows this procedure:

- Issues an ALTER SESSION SET current_schema command
- You can now execute the SQL statement against that schema
- Toad issues the ALTER SESSION SET current_schema command again to return to the connection schema.

Script Execution

This feature does not work with script execution or debugging commands.

However, because Execute as Script is designed to mimic SQL*Plus, you can use a set schema feature in scripts.

Using Set Schema in scripts

- » Include the following command at the beginning of your script:

```
ALTER SESSION SET current_schema = "USERNAME"
```

Toad Insight Pick lists

When you use Toad Insight to help you easily find objects and hints as you write your code, there are several ways to use the pick list. Options for toad Insight are described in the topic on Editor - Code Assist (page 641).

There is an [online video tutorial](#) for this feature. This opens a new browser window and requires an internet connection.

Command	Function
TAB	Make the selection and close the pick list.
ENTER	Make the selection and close the pick list.
SHIFT-TAB	Make the selection but do not close the pick list.
ESC	Doesn't make a selection, but closes the pick list.
LEFT ARROW	Moves the caret left and right while filtering the pick list.
RIGHT ARROW	
CTRL+T	Calls the pick list based on the caret position.
CTRL++	Calls the pick list based on the caret position.
. (a period, typed directly after character, with a pause	Looks up possible child nodes for the name typed before the period.
Click outside the pick list	Does not make a selection, closes the pick list.
Click a selection	Highlights the selection in the pick list, text is not added to the Editor, the pick list remains open.
Double-click the selection	Makes the selection and closes the pick list.

File Management

Save File

This saves your current file. If you have not selected a name it opens the Save As window, at which time you can select or type in a name. See "Save As dialog" (page 867) for more information.

To save a file

- » From the File menu, select **Save**.

Save As dialog

Use this dialog box to pick an output file for your Editor code.

If the destination file is marked with the read only file system attribute, Toad will not be able to save the Editor code to that file. Pick another file.

Note: You can also save the contents of your data results grid using the Export Dataset command. See "Export Dataset" (page 390) for more information.

To access save as

- » Select the **File | Save As** menu item.

Reopen File

Reopen file lets you open any of the last ten files you have had open. Toad displays a list of the last ten files that you opened. This list is saved and restored to the file SQLFILES.TXT in the Toad for Oracle\Temps folder.

To reopen a file

1. Open the **Editor**.
2. From the **File menu**, select **Reopen File**.

Print

This sends a print command to your printer.

File | Print works on all Toad windows, when a SyntaxMemo control is currently in focus. For example, Schema Browser, Tables tab, Scripts tab. Click inside the resulting script and choose **File | Print**. The table script is sent to the printer.

File: Page Setup

To access the Page Setup window

- » Click **File | Page Setup**.

Macros

Editor Macros

You can record and play limited macros in the editor with the built-in macro recorder and editor. Only commands that are Editor-specific can be included in a macro. Commands that are available for use in macros can be seen from the Macro Configuration dialog.

Use the macro toolbar to select macro functionality.

To record a macro

1. From the macro toolbar, click 
2. Perform the actions you want to compose the macro.

3. Click 
4. Enter a name for your macro.
5. Click **OK**.

Macro Configuration

You can edit your macros to add or delete commands or text. You can also use the macro editor to create new macros from scratch, and to delete macros that you have created.

The macro editor is divided into two areas: a list of Macros, and the Commands area, which provides the specifics for the selected macro. This second area is where you will do your editing.

To edit a macro

1. On the macro toolbar, click 
2. In the Macros list, select the macro you want to edit.

Add commands to the macro by clicking **Add** and then entering the appropriate information in the columns.

Note: Commands will always be added at the end of a macro. You can place them in the correct location by selecting them and then clicking the **Move Up** button.

3. Delete commands by selecting the column you want to delete and clicking **Delete**.
4. Move commands up and down in the list: Click the **Up** and **Down** arrows.
5. When you have finished editing your macros, click **OK** to save them and close the window.

Viewing Possible Macro Commands

Commands that can be used within macros are limited. You can view a list of these commands and select from them when editing a current macro or creating a macro from scratch in the Macro Configuration dialog.

To view macro commands

1. Click 
2. In the command grid of either a new macro or an existing one, click in the Description field of a command.
3. When the drop down menu appears, click the arrow to open the list of commands.

Select a command and it appears in the grid.

Note: This will change the command that is already in that box.

Navigation

Navigator

This pane displays an outline of the code in the active window. You can click on the items listed to navigate to that statement in the editor.

To access the Navigator

1. Right-click in the **Editor**.
2. Select **Desktop Panels | Navigator**.

The left pane contains the Navigator List, a list of statements, objects or package contents contained in the editor.

The list is displayed in a hierarchy, with each element broken out separately (if you want to hide some of these elements, you can right-click the hierarchy and select Configure Navigator Panel. See "General" (page 872) for more information. Elements in the code are broken out and indicated as follows:

Icon	Meaning
DDL	DDL statements
DML	DML statements
SQL	SQL statements
P()	Procedure
f()	Function
k	Constant
SQL	Cursor
!	Exception
FLD	Field
(x)	Parameter
REC	Record
Subtypes	Subtypes
i	Variable

Reload Object

The reload object options give you an easy way to synch your PL/SQL source with objects also existing on the database.

You can reload objects in one of several ways.

To reload an object from the Navigator

1. In the Navigator, select the object you want to reload.
2. Right-click and select **Reload Object**.

To reload all objects from the Navigator

1. In the **Navigator**, select the object you want to reload.
2. Right-click and select **Reload All Objects**.

To reload from the Toolbar

1. Place your cursor in the object in the Editor that you want to reload.
2. Click  on the toolbar.

Using the Navigator Panel

From the toolbar in the [Navigator](#) panel, you can:

Icon	Meaning
	Refresh the Navigator list
	Sort the Navigator list alphabetically (depressed, items appear alphabetically, up, the list appears in source code order)
	Pin the Navigator list open or let it slide open and closed
	Close the Navigator list

In addition to these, from the right-click menu you can also expand or collapse the entire tree.

To display the entire statement

- » Hover the pointer over an item in the Navigator. Information about it is displayed as a tooltip.

To jump to the statement

- » Click on the statement in the Navigator and the cursor jumps to that point in the Editor.

To refresh the navigator panel

» Do one of the following:

- Save the current file
- Click the Refresh  button.

Sorting Statements

You can sort statements within the Navigator panel.

Sort

Select Sort to sort the tree alphabetically. When unchecked the tree is sorted so that items in the tree appear in the same order as they appear in the script.

Navigator Options

In the Editor, you can configure the Navigator panel to only display declarations that you want to see. In addition, you can change the look of the panel to suit the way you work. See "Navigation" (page 870) for more information about the navigator panel.

To access the Configure Navigator Panel

» From the Navigation Panel, right-click and select **Navigator Panel Options**.

General

Initial Node Expansion

In this area you can choose how the hierarchy is expanded when first opened. You can choose to expand to one level, all levels, or no levels.

Lower-case text

With this option selected, declarations display in lowercase. If it is not selected, they display in uppercase. Lowercase takes up less screen space.

The default is checked.

Sort

When this option is selected, declarations are sorted alphabetically within the hierarchy. Unselected, declarations display in the same order they are declared in the code.

The default is unselected.

Font

Click the **Font** button to select the font you want to use in the Navigator tree.

Statements

In the Statements area, you can select the items you want to display in the navigator. By default, all statement types are included. These include packages, package bodies, functions, SQL*Plus,

anonymous blocks, and so on. In addition, you can rearrange the order in which they are displayed in the tree structure.

To rearrange the tree structure

1. Click the item you want to move.
2. Click the Up or Down button to move it up or down in the display.

PL/SQL Components

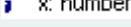
In the PL/SQL Components area, you can select the PL/SQL items you want to display in the navigator. By default, all types are included. These include constants, exceptions, subtypes, cursors, ref cursors, local subprograms and so on. In addition, you can rearrange the order in which they are displayed in the tree structure.

To rearrange the tree structure

1. Click the item you want to move.
2. Click the Up or Down button to move it up or down in the display.

Other configuration options

Beside the tree structure area are several other options you can use to configure your Navigator Panel.

Include parameter direction	Declarations appears differently if the parameter is an input or output parameter. If this is selected, labels on the tree will take up a bit more room. The default is selected.
Include Datatype	When this option is selected, the datatype is displayed beside the declaration. for example, a variable will display as follows:  When unchecked, the variable will display as follows: 

Bookmarks

Use bookmarks to help you manage files. They mark a position within the Editor so that you can easily jump back to that line. You can set up to ten separate bookmarks within one editor.

Note: All keystrokes assume you have not altered the default editor keys.

To set a bookmark

- » Right-click and select **Toggle Bookmark | Bookmark#** (CTRL+SHIFT+# where # is a number between 0 and 9).

The bookmark number displays in the editor gutter.

To clear all bookmarks

- » Right-click and select **Clear All Bookmarks**.

To clear one bookmark

- » Right-click and select **Toggle Bookmark | Bookmark#** (CTRL+SHIFT+# where # is a previously defined bookmark between 0 and 9).

To jump back to a bookmark

- » Right-click and select **Go to Bookmark** (CTRL+# where # is a previously defined bookmark between 0 and 9).

Note: The # must be called from the number row on the keyboard. Using the Number pad will not call the bookmark.

Editing

Comment/Uncomment Code Block

These commands add or remove comments from the selected block of text by adding or removing "--" from the beginning of each line.

To comment code

1. Select the code block.
2. Do one of the following:
 - Right-click and select **Comment Code | Comment Block**.
 - From the Edit menu, select **Comment Block**.

To uncomment code

1. Select the code block.
2. Do one of the following:
 - Right-click and select **Comment Code | Uncomment Block**.
 - From the Edit menu, select **Uncomment Block**.

Describe

This displays a popup window that describes the selected object. If the item is a procedure, it displays the procedure popup window.

To use describe

1. Select an **object** in the Schema Browser, Object Palette, or Editor window.
2. Do one of the following:

- Select **Edit | Describe**.
- Press **F4**.
- Right-click and select **Describe**.

Formatting Tools

You can format your code from the Editor in Toad.

Format multiple scripts at one time from the Project Manager. See "Formatting Files" (page 485) for more information.

Note: In Toad for Oracle 9.7, the Formatter component was replaced with a new component that supports Oracle 10g and 11g functionality. Some formatter options have moved or changed slightly. See "Changes in the Formatter" (page 622) for more information.

To format a SELECT statement

1. Highlight the **statement** you want formatted.
2. Click  on the Editor toolbar.

To format an entire script

1. Open the script in the editor.
2. Right-click and select **Formatting Tools | Format Code**.

Code Statistics

Toad can provide you with some basic statistics about your code.

Note: Because of the way the parser counts lines, the number of lines of code and blank or comment lines may vary. Use these statistics as an estimate rather than an exact count.

To view formatting statistics

1. Open the code in the editor.
2. Right-click and select **Formatting Tools | Profile Code**.

Find Closing Block

Closing blocks are controlled by the Language Management options. You can turn the staples (brackets) on and off to mark them. See "Rules Tab" (page 695) for more information about Draw Block Staple.

Pick list Dropdown

The pick list dropdown displays a list of columns in a selected table from which you can select columns to include in your code.

To activate the columns dropdown

- » Place the cursor on a table name and then click **Edit | Pick List Dropdown** (CTRL+T).

Popup Menus

You can access additional commands for a window or pane by right-clicking in the area.

You can also press **F10** to access these menus.

Edit: Swap This/Prev Lines

The **Edit | Swap This/Prev Lines** menu item switches the line your cursor is on in the SQL script with the previous line.

For example, if the cursor is on Line 8, then when you swap, what was on line 8 would now be on line 7 and what was on line 7 would now be on line 8.

Edit: Toggle Fullscreen Editor

You can expand the editor to fill the entire screen, hiding all other desktop panes. The fullscreen editor does not affect windows such as the Object Palette or Code Snippets.

To toggle the Fullscreen Editor

- » Select **Toggle Fullscreen Editor** (F2) from the **Edit** menu.

Undo/Redo

To undo a keystroke or command

- » From the Edit menu, select **Undo**.

To restore (redo) the last undo

- » From the Edit menu, select **Redo**.

Upper Case and Lower Case

To change the case of a selected block of text

To change the selection to Upper Case

- » Click the **Edit | Upper Case** menu item (CTRL+U).

To change the selection to Lower Case

- » Click the **Edit | Lower Case** menu item (CTRL+L).

Capitalization Effects that you have set up in the Toad Options can override your Upper Case and Lower Case conversions. See "Highlighting tab" (page 692) for more information on how to change your syntax highlighting settings.

Working with Results

SQL Results Grid

The SQL Results Grid is found in the Data tab in the lower portion of the Editor, and the Data tab in the right hand detail panel of the Schema Browser. Results are displayed in the Editor Data grid. There are many things you can do with the results of a query. See "Toad Grids" (page 948) for more information.

AutoTrace

AutoTrace is a mini version of SQL Trace that displays quick results directly on the client. In Toad, the results are displayed beneath the Editor or the Query Builder window.

Note: AutoTrace will force a read of all data from the result of the query. This can take some time. If a query will return a large number of rows, and time is a factor, AutoTrace is not advisable.

From the AutoTrace results area you can sort columns, print the grid, and copy the results to the clipboard.

AutoTrace is one of many optimization features Toad provides. For more of these features, see the [Optimization](#) topic. You will need access to certain V\$ views to use this feature: See [V\\$ Tables Required: AutoTrace](#) for more information.

To enable AutoTrace

- » Right-click in the **Editor** and select the **AutoTrace** menu option. A checkmark indicates it is enabled.

To disable AutoTrace

- » Right-click in the **Editor** and select the **AutoTrace** menu option.

To view AutoTrace results

1. In the **Editor** results area, click the **AutoTrace** tab.

If the AutoTrace tab is not visible, right-click and then select **Desktop | Autotrace**.

Note: Every statement issued in AutoTrace mode will have results generated.

DBMS Output to Debug PL/SQL Code

Oracle provides a specifically designed package called DBMS_OUTPUT with functions for debugging PL/SQL code. It uses a buffer that your PL/SQL code writes into and then a separate process queries the buffer out and displays the contents.

In Toad, output displays after the procedure has completed execution, not while you are stepping through the code. In nested procedure calls, all procedures must have run to completion before any DBMS Output content is displayed.

Troubleshooting

If you do not see DBMS Output:

- Contact your Oracle DBA to make sure the DBMS_OUTPUT package is enabled on your database.
- Open the DBMS Output tab by right-clicking in the panel area and selecting Desktop Panels | DBMS Output.
- Make sure the ON/OFF button is ON (green), in which case Toad will periodically scan for and display DBMS Output content. Set the interval in the Polling Frequency box.

To turn on polling

- » Click the **ON/OFF** button to turn off polling.

To view the DBMS Output window

- » In the lower pane, right-click, select **Desktop Panels** and then select DBMS Output.

Optimization

Toad offers several features to help you optimize queries or view the performance statistics for the server. Although Toad provides access to these statistics and/or Oracle utilities, this section describes only how to use the features within Toad: not how to interpret the results. For an excellent guide on SQL tuning, we suggest *Oracle SQL - High Performance Tuning* by Guy Harrison available from Prentice Hall Press.

Explain Plan

This is the most useful client-side facility within Oracle for tuning statements. Explain Plan shows the path and order in which Oracle will process your statement. By processing Explain Plan on variations of a statement, you can see how the adjustments will affect the execution. See "Explain Plan Overview" (page 716) for more information.

AutoTrace

AutoTrace is a mini version of SQL Trace that displays quick results directly on the client. In Toad, the results are displayed beneath the Editor window. See "AutoTrace" (page 877) for more information.

To enable AutoTrace

- » Right-Click in the Editor and select **AutoTrace**.

Note: AutoTrace will force a read of all data from the result of the query! If a query will return a large number of rows, AutoTrace is not advisable.

SQL Trace (tkprof)

[SQL Trace](#) is a server side trace utility that will show CPU, IO requirements, and resource usage for a statement. SQL Trace is a much more complete utility than AutoTrace; however, viewing the results can be difficult because the output file is created on the server. See "Trace Sessions" (page 567) for more information.

To enable SQL Trace

- » Right-Click Menu in the Editor and select **SQL Trace**.

Server Statistics

The server statistics window displays Wait, Latch, and derived (calculated) statistics using the Oracle V\$ tables. See "Toad Server Statistics" (page 517) for more information.

See "Hints and Tips: Table Does Not Exist Errors" (page 104) for more information if you have any problems accessing the required tables for this window.

Optimizer Mode

You can set the optimizer mode for the current session. This will affect all queries (including Toad's own) for the duration of the session or optimizer setting. See "Oracle Optimizer Hints" (page 668) for more information, and the *Oracle7 Server Concepts* manual.

Note: Optimizer mode is not available in Oracle 10g databases. Therefore Toad disables this option when it is connected to a 10g database.

SQL Tuning

If you have a Toad Edition that includes the SQL Optimizer package, you can use it to help you optimize your code. See "Using SQL Optimizer with Toad" (page 106) for more information.

Output Window

The output window appears whenever there are results of an action. The Output window can be sized however you want. By default it is docked at the bottom of your screen.

In addition, the output window displays error messages, and other general information Toad creates for you. Output is sent to various tabs as needed. Using the popup menu you can work with the messages displayed in the Output window.

Various Tabs

Output is sent to various tabs in this window as needed.

Tab	Contents
General tab	This tab provides general information.
<connection> tab	This tab provides information about what you have done during a connection. For example, if you end or begin a Debugger session for a specific connection a log of this will be displayed here.

Tab	Contents
Formatting Results tab	This tab displays results of the Format Files command from the Project Manager. See "Formatting Files" (page 485) for more information.
Syntax Check Results tab	This tab displays results of the Check Syntax command from the Project Manager. See "Checking Files for Syntax" (page 486) for more information.
Spool SQL tab	This is where SQL is displayed from the Spool SQL command. This is the SQL Toad uses to perform various functions.

Popup menu

From the right-click menu you can do several things.

Command	Result
Find in Files	Open the Find in Files dialog box to find specific information. See "Find in Editor" (page 965) for more information.
Clear	Clears all messages in the active output tab.
View Messages	Displays the selected messages in a dialog box. This is useful when a message is too long to view in the Output window, or contains linefeeds.
Copy	Copies the contents of the Output window to the clipboard.
Print	Prints the contents of the Output window.
Save to File	Saves the contents of the Output window to a text file.
Spool SQL to Screen	Toggles spooling.

Row Numbers

Toad will display row numbers in the Editor data grid if the option to do so is enabled. Make sure the **View | Options | Data Grids tab | Show row numbers in all grids** (applies to data grid on Browser also) check box is checked.

The total number of rows returned in the resultset will display in the status bar at the bottom of the window only after you have scrolled to the end of the resultset. This is because the resultset is fetched only as required, to improve overall performance. When the last row is fetched, Toad will display the total count.

To return the Oracle pseudo-column ROWNUM in the SQL Results grid, add "ROWNUM" to the query:

```
select rownum, emp.* from employee emp
```

Remember that rownum is an Oracle pseudo-column, not stored with the table definition or data, but derived when queried.

To return the ROWID in the query, specify the column and the datatype:

```
select rowidtochar(rowid), emp.* from employee emp
```

Note: You can also enable "Show ROWID in data grids" from **View | Options | Data Grids** tab by clicking in the check box. This will accomplish the same thing without resorting to coding.

Saving Toad Query Results

Any of Toad's window query results can be saved to the Windows Clipboard or to a file by the procedure below. Some dialog boxes do NOT have a "Copy to Clipboard" or "Save to Disk" function. This duplicates that functionality.

To save query results

1. Turn on spooled output to disk file: **Database | Spool SQL | Spool SQL To File**.
2. Run the desired Toad window (for example, the Schema Differences window) select each desired tab.
3. From the Toad TEMPS folder, open **DEBUG.SQL**.
4. Copy each **SQL** into the Editor window.
5. Run each **SQL** in the Editor window, substituting hard coded values for the bind parameter variables, or just enter them when prompted in the Variables dialog box.
6. Save the grid contents to clipboard or disk file, using **right-click, Export Dataset**.

Script Output Tabs

After you have run a script, Toad maintains a running list of system variables and user variables. This lets you keep track of what has been set. The list is refreshed execute it in its entirety.

If you have the debugging module, these tabs are also refreshed when you begin stepping through the code. Toad also maintains a history of breakpoints, and a call stack to help you through the navigation of various windows.

Environment Tab

System Variables

System variables are displayed under the System Variables node in the Environment area. System Variables include, but are not limited to:

- autocommit setting
- echo on/off

- linesize
- heading on/off

To view system variables

» Do one of the following:

- Double click the **System Variables** node
- Click + beside the System Variables node.

User Variables

User variables are displayed under the User Variables node in the Environment area. The user variables area describes the variables assigned by the user for the script.

To view user variables

» Do one of the following:

- Double click the **User Variables** node
- Click + beside the User Variables node.

Output

The output tab displays any output from the script you are running. This may include, but is not limited to:

- errors
- status of system variables (for example, AUTOTRACE ON, AUTOCOMMIT OFF)
- data in output format

Data Grids

Data grids display the data selected by the script. One grid will display for every select statement.

To view data grids

1. Run the script.
2. If it is not already selected, click the Script Output tab in the bottom panel of the Script Debugger.
3. Click a **Grid** tab to display the data grid.

History

History displays output for all the scripts run during this session, or until the history tab is cleared.

If history is not displayed, you can display the history tab as follows:

To display history

1. Right-click on one of the other two tabs.
2. Select **Show History tab**.

Time Values

When displaying times with dates, Delphi, and thus, Toad, will suppress the time values if they are 12:00:00 AM (midnight). The time portion of the date fraction is zero, so Toad adds no value to the display of the date.

Remember that Oracle stores dates as a big fraction number offset from January 1, 4712 B.C. It is then converted to a complete date and time. It is also good well past Y2K.

Performing the query "Select sysdate from dual" will display the time, and similarly, queries of DATE datatype columns will display the time if it is not midnight.

The time dropdown in **View | Toad Options | Data Grids** does not affect this output of time.

Working with Statements and Scripts

Creating a Script

When you first open the Editor, you are faced with a blank editing window, the tab of which is labeled "No Name."

You can begin typing SQL or PL/SQL code directly in this window. If you want to use any of the other editors, right click, select **New Tab | type of editor you want to use** and a new tab that is enabled for that type of code will open.

To save a script

- Click  on the Editor toolbar.

Sessions for Script Execution

In previous versions of Toad, scripts were executed by borrowing the main Toad session. Therefore any session operations executed in the main Toad session also affected scripts during execution.

In Version 9.0 and later, there has been a change in the script engine technology. Scripts are now executed in their own session by default. This means that operations which act on the active session (executing DBMS_SESSION procedures manually in the editor, and so on) were not affecting subsequent scripts during execution, because the commands were happening in different sessions.

The option **Execute Scripts in Toad Session** allows scripts to execute in the main Toad session. See "Oracle - Transactions" (page 669) for more information.

This provides considerably more flexibility for how scripts perform. For example, you can now execute a script with a DISCONNECT command in it:

- If the option is checked, it will act on the Main Toad session.
- If the option is unchecked, the disconnect will execute correctly in its separate session, having no adverse affect on the main Toad session.

In previous versions of Toad, the DISCONNECT command would simply have been ignored by the script engine.

Executing Statements

Toad supports query statements , DDL statements, blocks of procedure SQL, and so on.

In addition, Toad recognizes substitution variables in quotes as follows:

- If & is escaped, Toad will not prompt for a value.
- If & is the last character in a string, it is not considered a substitution variable.

Commands to execute code

F9

Pressing F9 runs the statement at the cursor, or compiles the PL/SQL at the cursor. This does not include the contents of the entire window, unless the entire window contains only the statement or script at the cursor.

Any values entered for substitution variables are remembered.

To execute the statement at the cursor

» Do one of the following:

- Press **F9**
- Click the **Execute Statement** button on the toolbar.

To process a portion of the editor text

1. Highlight that portion
2. Do one of the following:
 - Press **F9**.
 - Click the **Execute Statement** button on the toolbar.

SHIFT+F9

Pressing **SHIFT+F9** runs only the snippet at the cursor. This does not run or compile entire procedures, functions, or triggers. When you press SHIFT+F9 Toad runs everything between two of the following:

- ; (a semi-colon)
- a blank line

- / (a forward slash)
- End and beginning of file indicators

To execute a single statement among many statements (separated by at least one blank line)

1. Click or place the caret/cursor within the statement, or on the blank line after the statement you want to execute.
2. Do one of the following:
 - Press **SHIFT+F9**, or **CTRL+ENTER**.
 - Click the **Run Current Statement** button on the toolbar.

Highlighting Statements

Highlighting SQL Snippets

You can highlight bits of code so that an explain plan is run on only that code, or so that you can see what Toad is including as a part of the statement before you Execute it. Highlighting code uses the same logic as SHIFT+F9.

To highlight a SQL Snippet

- » Place your cursor in the code you want to highlight and then press **CTRL+H**.

SQL*Plus Commands

Toad does not support all SQL*Plus commands. The lists below describe the commands Toad supports, ignores, or does not support.

SQL*Plus Syntax - Supported

SQL*Plus commands supported by Toad include:

@ and @@

/ (slash) - Required as a separator between certain commands (anonymous blocks, PL/SQL, and Create Type statements)

This does not run the contents of the buffer, because Toad does not store a command buffer as SQL*Plus does.

& (ampersand)

&&(2 ampersands)

ACCEPT

BREAK/BRE

BTITLE/BTI

CLEAR

- CLEAR SCREEN not supported
- SQL not supported
- BUFFER not supported

COLUMN/COL

COMPUTE/COMP

- SUM, MIN, and MAX supported at one level of detail

CONNECT/CON and DISCONNECT/DISC

DEFINE/DEF and UNDEFINE/UNDEF

- CONNECT IDENTIFIER not supported
- SQLPLUS RELEASE not supported
- EDITOR not supported

EXEC/EXECUTE

EXIT/QUIT

HOST

MERGE

PAUSE/PAU

PASSWORD

PROMPT/PRO

PRINT

REM/REMARK

REPFOOTER

REPHEADER

SET APPINFO (only changes the module name when running scripts)

SET AUTOCOMMIT

SET AUTOPRINT

SET AUTOTRACE/AUTOT (default OFF)

SET COLSEP

SET DEFINE/DEF (default ON)

SET ECHO (default OFF)

SET ESCAPE/ESC
SET FEEDBACK/FEED
SET HEADING/HEA (default ON)
SET HEADSEP
SET LINESIZE/LINES (default 80, maximum 2000)
SET LONG
SET LONGCHUNK SIZE
SET NEWPAGE
SET NULL
SET NUMFORMAT
SET NUMWIDTH
SET PAGESIZE
SET RECSEP
SET RECSEPCHAR
SET SCAN (default ON)
SET SERVEROUTPUT/SERVEROUT (default OFF)

- ON and OFF supported
- SIZE supported

SET SHOW
SET SQLCONTINUE
SET SQLNUMBER
SET SQLPROMPT
SET SQLTERMINATOR
SET TERMOUT/TERM (default ON)
SET TIMING
SET TRIMOUT
SET TRIMSPOOL
SET UNDERLINE
SET VERIFY

SET WRAP

SHOW

SPOOL Filename and SPOOL OFF (also SPO).

- In Toad, non-pathed files are created in the Toad directory.
- In Quest ScriptRunner, non-pathed files are created in the same directory as Quest ScriptRunner.
- Supports relative spool paths
- Like SQL*Plus, passes SPOOL file to sub-scripts

START

STORE SET

TTITLE

VARIABLE

WHENEVER OSERRER

WHENEVER SQLERROR

SQL*Plus Syntax - Ignored

These commands are ignored, but do not cause an error.

SET ARRAYSIZE	SET DESCRIBE	SET MARKUP
SET AUTORECOVERY	SET EDITFILE	SET PAUSE
SET	SET EMBEDDED	SET SHIFTINOUT
BLOCKTERMINATOR		
SET CMDSEP	SET FLAGGER	SET SQLBLANKLINES
SET COMPATIBILITY	SET FLUSH	SET SQLCASE
SET CONCAT	SET INSTANCE	SET SQLPREFIX
SET COPYCOMMIT	SET LOBOFFSET	SET SUFFIX
SET COPYTYPECHECK	SET LOGSOURCE	SET TAB
		SET TIME

SQL*Plus - Unsupported

These SQL*Plus commands will cause a "Statement Ignored" error on the Script Output tab.

APPEND	COPY	LIST
ARCHIVE LOG	DEL	RECOVER
ATTRIBUTE	EDIT	RUN
CHANGE	GET	SAVE
CLEAR	HELP	SHUTDOWN
SCREEN		
CLEAR SQL	INPUT	STARTUP
CLEAR		

BUFFER

Code Folding

Code folding lets you collapse portions of your code so that you can see more of the code you need to see. Then you can expand it when you need to work with the folded code.

Language management is the basis of code folding. Although some standards settings for code folding are included with Toad, the strength of this feature is found in the ease of configuration. You can set Toad to fold code where you want it to fold.

To enable code folding

- » From Toad Options | Editors | Behavior, select Enable code folding.

To fold code selection

1. In the **Editor**, select the code you want to fold or unfold.
2. Right-click and select **Fold Selection**.

To fold (or unfold) all code in the editor

- » In the editor window, right-click and select **Fold all** (or **Unfold all**).

Marking Code to Fold

You can create new areas for Toad to fold code by creating new ranges within the Language Management area. When code folding is enabled, you can then fold the code within that range.

To set a code folding range

1. In Toad Options | Editors | Behavior | Language Management, select the type of code you want to fold, and then click .
2. Click the **Rules** tab.
3. Add a new Rule. When you name the rule, you may want to include Start in it, as in If start. Create another rule that will define where you want the range to end, such as If end.
4. Click the **Conditions** tab, and then select the starting condition you have just created.
5. Set up the conditions you want to use to define the start of your range. For example, Identifier = one or more tokens.
6. Click the **Properties** tab.
7. Select **Range start** in the rule type box.
8. Set the range end condition to the rule where you want to end the condition.
9. Set the style you want to display when the range is selected. In the case of If start, the default style is **Current block**.
10. Select any other options you want to activate. Make changes to the Advanced tab if you wish. See "Rules Tab" (page 695) for more information.

11. Set the **Range end condition** in the ending rule you have created in the same manner, only selecting Range End as the rule type.
12. Click **Apply** or **OK**.

Table Name Autocomplete

Toad can help you easily find a table name without excessive typing.

Toad will look through the list of tables matching the letters you type. If only one matches, the table name is automatically completed in the editor. If there is more than one match, a popup list appears for you to select the desired table.

Note: Table names must be loaded before this feature can be used. If table names have not been loaded, Toad will prompt you to do so.

To autocomplete a table name

- » Type the first few letters of a table name in your schema, then press **CTRL+.** (**period**).

Results Grids

At the bottom of the Editor are tabs that display results of your actions within the edit window.

Depending on your Toad Edition, any of these may display results:

- Data Grid
- DBMS Output area
- Script Output area
- Script Debugging area

Data Grid

The data grid displays fetched data. The results panel contains tabs for Data, Explain Plan, Auto Trace, DBMS Output, Code Statistics, and Script Output. If you have the debugger module, you may also have the Script Debugger displayed.

A horizontal splitter between the editor and results panel lets you size each component.

The data grid is user configurable. It includes:

- optional movable columns
- support for LONG and LONG RAW columns by popup windows
- support for exporting data to disk
- printing
- editing data

The grid also has a right click menu for quick access to grid configuration options. If the resulting dataset is editable, several of the buttons on the grid navigator will become enabled (insert, delete, post updates, and so on). See "Troubleshooting" (page 950) for more information.

DBMS Output

You can view the DBMS Output in the same area.

To see the DBMS output window

- » In the Results area, click the **DBMS Output** tab.

Aliases

Aliases

Setting up table aliases lets you create shortcuts to columns of a query. You can then use the alias in a SQL statement instead of a long column name or path.

Toad Table Aliases should not be confused with Oracle RDBMS table aliases. RDBMS table aliases are used to qualify columns in a multi-table SQL statement.

You can set up and edit Toad aliases with a text editor. Aliases are stored in the **aliases.txt** file. See "ALIASES.TXT file" (page 891) for more information.

Using Aliases

No ini changes are required to use aliases. Use them in the Editor by entering the alias instead of the full table name, for example:

```
SELECT DEPT.
```

and a column list will pop up for the correct Oracle table (in this case, DEPARTMENT).

If you set up these table aliases in ALIASES.TXT they will be presented on the Query Builder dialog box when you select that table to build your query.

To complete the SELECT SQL statement above, use Auto Replace Substitutions names similarly to the table aliases. These are accessible through the **View | Editing Options | Auto Replace tab**. See "Auto Replace Substitutions" (page 702) for more information for more information about substitutions. See "Auto Replace Substitutions" (page 702) for more information

See "Code Completion Templates" (page 700) for more information about options.

ALIASES.TXT file

Because aliases.txt is a text file, you can edit it manually using a text editor.

Caution: Do this when **Toad** is not running. Otherwise the file will be overwritten at shutdown, or whenever you save options.

You might want to manually edit the file to pre-build a list of aliases. Alternatively, you may want to edit it manually to perform maintenance on it and remove extraneous or multiple entries. Currently there is no way to do this from within Toad.

The text file that controls the alias list is found in `/Toad/User Files/aliases.txt`. The format of `aliases.txt` is as follows:

```
table_name=alias  
>for example:  
  
AAX_ACCESSSGROUP_APPLICATION=aax  
ADD_ADDENDUM=add  
ADT_ADDRESS_TYPE=adt  
AFP_ACTIVITY_FIRM_PARTIC=afp  
AGX_APPLICATION_GROUP_ITEM=agx  
DEPARTMENT=dept
```

Skippping Aliases

There may be times when you have an object name that also happens to be an alias for another table. If you try to use the normal Columns Select methods, Toad will return the columns for the table to which the Alias refers.

You can skip the alias and open the columns list for the object, rather than the alias.

To skip an alias

» From the Edit menu, select **Picklist dropdown no alias (CTRL+SHIFT+T)**.

Tracking Aliases

Toad will keep track of aliases for you as you create them using SQL. Toad scans the FROM clause of a select statement to check for tables and aliases.

Note: Toad only finds the first FROM clause in any one statement. So extra tables and aliases in complex statements such as unions or subqueries will not be found.

If a table alias is found in the FROM clause of a current SQL statement, Toad will do the following:

- For aliases already on the list, you do not need an alias defined in the FROM clause for Toad to use the columns dropdown feature.
- If an alias is identified in the SQL statement, and a Columns Select is used on the alias, it is automatically added to `aliases.txt`.
- If there is already an entry for that alias in `aliases.txt`, the pair defined in the current FROM clause replaces the old entry.

Editing Scripts and Statements

Opening a Script

You may want to open and edit a script that you have previously saved. You can do this easily from the Editor Main toolbar.

To open a saved script

1. Click  from the **Editor | File** toolbar.
2. Select the file from the **Load File** dialog and click **Open**.

To open a recently used saved script

1. Click the  drop down from the **Editor | File** toolbar.
2. Select the file from the list provided.

Variables Window

The Variables window appears when you execute a statement from the Editor window, if you have specified parameters in your SQL query. For example, execute the following:

```
SELECT * FROM EMPLOYEE WHERE EMPLOYEE_ID =:EMPID
```

or the following:

```
SELECT * FROM EMPLOYEE WHERE EMPLOYEE_ID = &EMPID
```

Once the variables window comes up, select each bound variable, select the data type, and enter the desired value. Click **OK** to complete running the resulting SQL statement.

Note: Bound parameter substitution is NOT supported in anonymous PL/SQL blocks.

To delete a bound variable

- » Select it and click **Delete**.

To add a deleted bound variable

- » Click **Scan SQL**. Toad will rescan the SQL and reenter the variables.

Strip Code Statement and Make Code Statement Functions

The Editor window contains two functions that simplify copying SQL statements from Toad to code development tools such as Delphi, VB, C++, Java, or Perl, and from those code development tools back to Toad. The functions

- Strip Code Statement (CTRL+P)
- Make Code Statement (CTRL+M)

are available from the **Editor** menu.

Strip Code Statement

Strips off the code development tool syntax from the SQL statement, ready to execute in Toad.

For example, taking this VB code from the VB development tool, copying it, pasting it into Toad, and running Strip Code Statement, changes the SQL statement from this:

```
Sql = " select count(*) as cnt"  
  
Sql = Sql & " from all_tables"  
  
Sql = Sql & " where owner = 'DEMO'"  
  
Sql = Sql & " and table_name = 'EMPLOYEE'"
```

to this:

```
select count(*) as cnt  
  
from all_tables  
  
where owner = 'DEMO'  
  
and table_name = 'EMPLOYEE'
```

Now the SQL is ready to execute in Toad.

If you have multiple SQL statements in the Editor, highlight the statement you want to strip before executing the Strip Code Statement function.

Make Code Statement

Adds the code development tool syntax to the SQL statement in the Editor and makes it ready to paste into the appropriate development tool.

When making code statements, rather than changing the code in the Editor window as the Strip Code Statement function does, the Make Code Statement function takes the currently highlighted SQL statement, translates it into the code development tool syntax, and copies it to the clipboard. You can now switch to the code development tool and paste in the results. A message appears in the status panel such as "VB statement was copied to the clipboard".

If you have multiple SQL statements in the Editor, highlight the statement you want to make before executing the Make Code Statement function.

Selecting the Code Development Tool

You select the code development tool in the **View | Toad Options | Editor | Code Assist | Make Code Format** box. The Make Code Format box lets you select a language syntax for Toad to convert a SQL statement into (Make Code Statement function) and out of (Strip Code Statement function). Currently, Delphi, VB, C++, Java and Perl are supported. The default selection is VB. You can also create your own language templates. See "Editor - Code Assist" (page 641) for more information.

Creating Make Code Templates

From Toad Options | Editor - Code Assist window, in the lower Make Code area, you can create your own Make Code Templates. See "Editor - Code Assist" (page 641) for more information about Make Code and other options.

To create a makecode template

1. From the Toad Options window, select **Editor | Code Assist**.
2. In the **Make Code** area, click **Add**.
3. Use the following variables to create your own language template:
 - %SqlVar% - this is the MakeCode variable entered in the Toad Options | Editor | Code Assist | MakeCodeVariable box. Using a variable here is optional.
 - %SqlLength% - This will be replaced by the number of characters in all selected SQL, on one or multiple lines.
 - %SqlText% - This is replaced by the first line of SQL you have selected.
 - %SqlTextNext% - This will be replaced by any subsequent lines of SQL you have selected. This is cumulative and includes ALL subsequent lines of SQL.

Note: For the best output result, it is recommended that the %SqlTextNext% variable be included on a separate line. Use the left and right brace for comments.

Remarks (such as template name) should be included in brackets.

4. Click **OK**.

Examples:

Using the following SQL:

```
Select *
```

```
from
```

```
Employees
```

and using the following code templates, you will get the results below.

Template	Result
{C# Language Template} <pre>string %SqlVar%& = "%SqlText%" + "%SqlTextNext%"</pre>	string SQL = "Select * " + "from " + "employees " ;
{C++ Language Template}	char SQL[23];

Template	Result
char %SqlVar%[%SqlLength%]; strcpy(%SqlVar%,"%SqlText%"); strcat(%SqlVar%, "%SqlTextNext%");	strcpy(SQL,"Select * "); streat(SQL,"from "); strcat(SQL,"employees");
{ Java Language Template } "%SqlText%" + "%SqlTextNext%"	"Select * " + "from " + "employees "

Quick Describe

You can place the cursor over a Table, View, Procedure, Function, or Package name in the code and see a popup window that completely describes the object.

To describe an object

1. Place select an **object name** in the code.

Press **F4**.

Note: In addition to the **F4** describe, you can also **CTRL+Click** over the object, or right click on it and choose Describe.

Keeping Popup Describe Windows on Top

If you want the popup windows to stay on top, see Toad Options Editor. You can place the results of "DESCRIBE TABLE" in either the SQL Results panel or the popup windows.

SQL Recall

SQL Statement Recall

The SQL Statement Recall window is dockable, and can be pinned or hidden.

Every statement executed in the Editor is added to the statement recall list. This list is organized with the most recent SQL at the top. You can select a statement from this list and run it, you can remove a statement from this list, and you can name your statements for easy recall. In addition, you can classify a SQL statement as either a Personal SQL or Named SQL.

To access SQL Recall

- » From the View menu, select **SQL Command Recall**.

All statements (to a maximum set in **Toad Options | Editor | Execute/Compile | SQL Recall**) are saved between sessions of Toad, in the file Toad for Oracle\User Files\SAVEDSQL.dat.

The SQL Recall window displays the following information:

- Name of SQL (if any)
- SQL statement

- Connection information
- Date and time of last connection

Saving only valid SQL statements

You can save only those SQL statements that executed successfully. This saves the list from containing misspelled column names, SQL clauses, etc.

To set Toad to only save valid SQLs

- » In the View | Toad Options | Editor | Execute/Compile window, select the **Save Only Statements that are Valid** check box.

Editing Saved SQL Attributes

You can edit Saved SQL statement attributes like Name, Type, and SQL within the SQL Recall grid.

To edit saved SQL attributes

1. Double-click the appropriate cell of the selected SQL statement.
2. Make any changes.
3. Click outside the selected cell, or press **ENTER**.

SQL Statement Recall Toolbar

The SQL Statement Recall toolbar has two parts, which you can hide or show individually depending on your needs.

Main Toolbar

The main SQL Statement Recall toolbar includes commands for working with the SQL statements Toad has archived.



Button	Command
	Save selected SQL statements to a file.
	Copy selected SQL statements to clipboard
	Remove selected SQL statements from the SQL list
	Copy selected SQL statements to the Editor.
	Previous statement

Button	Command
▶	Next statement
Show db and date	Display or hide connection information and date last executed.

SQL Filter Toolbar

The SQL Filter toolbar contains filtering options for your list of SQL statements.



Button	Command
SQL Contains	Filter the list by a character string contained within the SQL.

Viewing Recalled SQL

You can view recalled SQL Statements in groups or individually, and easily move them into editors to work. You can view SQL Statements in several ways.

To view a history of SQL statements

1. From the View >menu, select **SQL Command Recall | History**
2. At the bottom of the window, click the **All SQL** tab.

To view Personal and Named SQL

1. From the View menu, select **SQL Command Recall | Personal** or **Named**.
2. At the bottom of the window, click the **All SQL** tab.

To view individual SQLs

1. From the View menu, select **SQL Command Recall**.
2. Select the appropriate tab at the top of the grid.
3. Select one or more SQL statements.

At the bottom of the window, click the **Single SQL** tab.

Note: In the Single SQL tab, the operators of **F4**, **<CTRL>click**, and right-click **DESCRIBE** are available, as in the Editors.

Working with Recalled SQL

You can open SQL statements in the Editor, or drag them into the Editor or Text Editor.

To drag and drop SQL statements

1. Select one or more SQL statements in the SQL Recall window.
2. Drag to the editor and drop them in the editing window.

To edit SQL in the Recall window

1. Select one or more SQL statements in the SQL Recall window.
2. Right-click and select **Edit**.

To open SQL statement directly in the Editor

- » Double click on the desired SQL statement.

Add to Personal SQLs

This command adds the SQL statement that you have highlighted in the Editor to your personal SQLs.

To add a SQL statement to your personal SQLs

- » Click on the **Editor | Add to Personal SQLs** menu item.

All statements (to a maximum set in **Toad Options | Editor | Code Assist | SQL Recall area**) are saved between sessions of Toad, in the file SAVEDSQL.xml (See "V\$ Tables Required" (page 153) for more information and for specific location).

Add to Named SQLs

To add a SQL to your list of Named SQL statements

1. Highlight the statement.
2. Select the **Editor | Add to Named SQLs** menu item.
3. Type a name for this SQL statement, one that you can easily recall at a later time.

This differs from the list of favorite SQL statements, because favorites are not named, and the standard recall SQL statement stores the list of statements executed.

To recall a SQL statement from this list of named SQL statements

- » Press **CTRL+N**, or select the **Named SQL** tab.

Note: The name is case sensitive: you can store both "sql1" and "SQL1".

If you attempt to add a named SQL statement with the same name as one that already exists, Toad displays a dialog box asking you if you want to replace it. Click **Yes** to add it, and **No** to cancel. If you click **No**, Toad will notify you that the Named Statement was not created.

All statements (to a maximum set in **Toad Options | Editor | Execute/Compile**) are saved between sessions of Toad, in the file `savedsql.xml` (See "V\$ Tables Required" (page 153) for more information and for specific location).

Working with PL/SQL

Create New PL/SQL Object

Use this dialog box to use a template for your new procedure, function, package, or trigger.

To create a new PL/SQL Object in the Editor

1. Click  on the Editor toolbar. (If this button does not appear, you may need to add it. See "Adding sub-menus" (page 143) for more information.)
2. Select the type of object you want to create.
3. Enter the name of your new object in the New Object Name box, or leave this blank for now and enter a name when you save the object.
4. Select a default template.

To create a new PL/SQL Object from the Schema Browser

- » From the schema browser object pane for the object type you want to create (package, procedure, function, and so on), click .

Default Templates

Default templates are read from the Toad for Oracle\User Files folder. If you want to use a template you have created other than the default, choose it from the drop down menu. The following default templates are located in the Toad for Oracle\User Files folder:

NEWPROC.SQL	Create a Procedure
NEWFUNC.SQL	Create a Function
NEWPackage.SQL	Create a Package spec
NEWPackageBody.SQL	Create a Package body
NEWType.SQL	Create a Type spec
NEWTypeBody.SQL	Create a Type body
NEWTrigger.SQL	Create a Trigger spec

Note: In addition to the above templates, there are two others stored in the Toad/User Files folder and editable as described below. These are useable within a created package and include both Package Procedures and Package Functions. See [Using Templates within Packages](#) for more information.

Editing Templates

Templates can be edited using any text editor, or select the file from the Toad Options |Proc Templates page and click **Edit**.Delete, change, or add new files as desired. See "Proc Templates" (page 670) for more information.

You can load new templates from any network path. Specify where the files are located when you add them to the list. To change the path, you will need to add the new path and delete the old entry.

Auto Replace Keywords

There are several keywords in the templates for which Toad will automatically substitute in values when you open the templates. In addition to these, you can also specify custom keywords from Proc Templates (page 670).

KEYWORD RESULT REPLACEMENT

```
%YourObjectName% Object Name  
  
%SYSDATE% Workstation date, for example, mm/dd/yyyy  
  
%DATETIME% Workstation date and time, for example, mm/dd/yyyy hh:mm:ss am  
  
%DATE% Workstation date, for example, mm/dd/yyyy  
  
%TIME% Workstation time, for example, hh:mm:ss am  
  
%USERNAME% Username specified in Toad Options, Editor node  
  
%TRIGGEROPTS% Trigger Options for triggers only, for example, "Before insert  
on, for each row"
```

Note:

- "*YourObjectName*" is also supported for backwards compatibility.
- The keywords ARE NOT case sensitive.
- The date and time formats come from the Windows Control Panel settings.
- This feature is only in the Commercial version of Toad, not the freeware Toad.

Running SQL from within PL/SQL code

When you run something containing the @ command (such as `@whereami.sql`) as script in the Editor, Toad follows a hierarchy of where to look for the `whereami.sql` file to execute.

The hierarchy it follows is:

1. Parent script directory (If you load `scripta.sql` that has an `@scriptb.sql` command in it, Toad first looks in the directory where `scripta.sql` is located.)
2. Current Editor directory (File | Open in editor).
3. Toad dir/User Files.
4. SQLPATH environmental variable.

Using Templates within Packages

There are two template types that you can use only within packages. These are Package Function and Package Procedure. You can create and edit these templates from the **Toad Options | Editor | Proc Templates** page. See "Proc Templates" (page 670) for more information.

Using a package function or package procedure template from the Create PL/SQL Object Window

When you choose to create a package from the Create PL/SQL Object window, Toad automatically creates the one procedure and one function to the body using the default templates. You can add additional procedures and functions fusing the following procedure:

To use a package function or package procedure template within an existing package

1. In the Editor, load a **package spec** or create a new one.
2. Enter a new declaration for a package procedure or function into the spec.

Press **Ctrl+Shift+C**. The default package procedure or package function template is used to create a new procedure in the package body.

Note: If you have created multiple templates, the template you want to use MUST be designated the default. Any other template will not be used.

Load Database Object

Use this dialog box to load an existing object into the Stored Edit/Compile window for further editing.

To load an object from the database

1. Click  in the Editor window.
2. From the Schemas/Owners dropdown:
 - Enter the first letter of the schema to perform an incremental search of the list.
 - Select the **Schema/Owner** of the object you want to load
 - Select the **type of object** you want to load from the dropdown list.
 - For databases with few objects, just select **All**.
 - For databases with many objects, select a **type of object** and then **filter** to show a manageable list in the left hand panel below.
3. From the left hand panel, you can do one of the following:
 - Click an object to select it.
 - Enter the first few letters of the object you want to perform an incremental search.

Note: You can turn the preview off by using the **Show Source** check box.

Debugging

Debugger Overview

Toad's Debugger provides you with the functionality to easily debug PL/SQL procedures, functions, and triggers. In addition, you can debug SQL scripts using Script debugging, and Java using Java debugging.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

Note: There are minimum Oracle database requirements for using this feature. See "Minimum Oracle Database Requirements" (page 906) for more information.

Selecting Debug type

Debugging in Toad requires you to select one type of debugging at a time for all database instances open per instance of Toad. For example, if you have three database connections in one instance of Toad, they must all be in the same debugging state: PL/SQL, script, or Java. If you then opened another instance of Toad, with the same or different connections, they could be in a different debugging state.

To select Debug type

» From the Debug menu, select one of the following:

- DBMS Debugger
- JDWP Debugger
- Script Debugger

Toggling Compile with Debug Information

To use the debugger fully with the PL/SQL or Java packages, you need to compile your object with debug information. If you have not compiled with debug information, in databases in versions before 10g you can step into a unit, step over and so on, but you cannot see watches unless the object is compiled with debug. In a 10g database you cannot step into code or step over unless the object was compiled with debug. You can only execute.

To compile with debug information

» From the Session menu, **Toggle Compiling with Debug Information**.

Note: By default this option is selected when you open the Editor. If you want it to default to unselected, you can change it. See "Execute/Compile" (page 654) for more information.

Compiling Dependencies with Debug Information

In addition, if you are debugging an object that has dependent objects, you cannot step into the dependents unless they, too, are compiled with debug information. See "Dependencies & References" (page 911) for more information.

See "Enter the code in the Editor" (page 202) for more information and a tutorial on using Toad's debugger.

Debugging PL/SQL

The PL/SQL Debugger works within the Editor. Using the Debugger, you can set breakpoints, watches, see call stacks, and set parameters for your code. In addition, you can debug DBMS output.

Note: When using the PL/SQL Debugger and connecting to a RAC instance, you must have the TNSNAMES entry for the instance where the server directed the use connection or session here. Or, you must connect directly to an instance of the cluster without letting the server assign an instance.

Debugging Java

The JDWP debugger uses the same basic user interface as the PL/SQL debugger. Because it uses the Oracle package DBMS_DEBUG_JDWP in place of the DBMS_DEBUG package to access the debugging features, it is entirely Oracle-oriented. This means that there are Oracle-imposed limitations on the debugging procedures you can use through Toad.

Script Debugging

You can also debug SQL scripts. You can work with regular editor features, and in addition, can Set Breakpoints, Run to Cursor, Step Over, Trace Into, and Halt Execution of your scripts. This will help you troubleshoot your scripts quickly. When you are in the script debugger, the debugger toolbar will display with different icons than when you are in the PL/SQL or Java debugger.

Troubleshooting the Debugger

In any case of trouble with Toad not working as you believe it should, try checking the Toad Advisor for information. Toad is self-diagnosing and can warn you of missing privileges, as well as Toad settings that can make working much easier. See "Toad Advisor" (page 99) for more information.

General debugging problems

General debugging problems can often be avoided by double-checking that the database meets the Minimum Oracle Database Requirements. See "Minimum Oracle Database Requirements" (page 906) for more information.

Debugger menu is disabled (grayed out)

The debugger menu will be disabled if you do not have Oracle debugging privileges. You must have access to the DBMS_DEBUG Oracle package.

Debugger runs very slowly

The option "Show executable line indicators in gutter" places blue dots in the gutter beside every executable line of code and may slow down the debugger.

If your debugging is going slowly and these dots are displayed, go to **View | Toad Options | Editor | Debug** and uncheck this option. See "Debugger Options" (page 633) for more information.

Debugger highlighting comment blocks

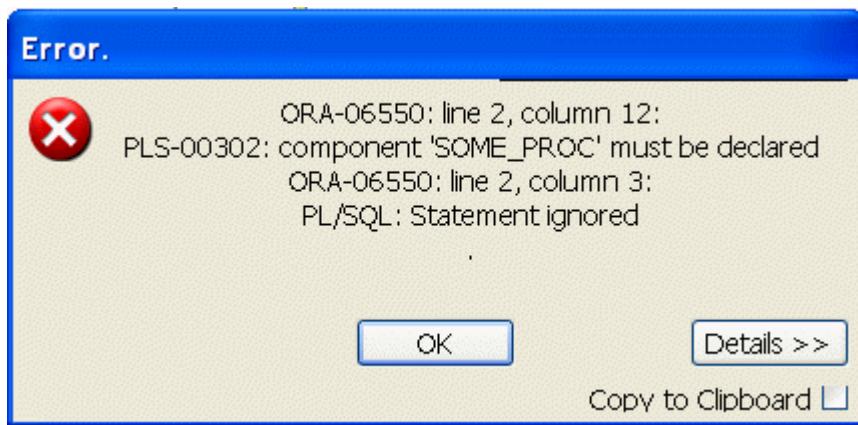
When you have a comment block **before** the CREATE statement, it is stripped out and not stored on the server. Therefore the code that is visible on the screen is not the code that is actually running.

If you want to preserve the comment block and have it work correctly with the Debugger, you need to move the comment block to *after* the CREATE statement.

Exception in Anonymous Block - PLS-00302 error

There is an Oracle limitation that causes the Debugger to fail if the user has an object named the same as their user name. So for example, if the user JSMITH has a table named JSMITH, he will not be able to debug it, or any other object named JSMITH.

When you attempt to step into code containing this situation, an exception in the anonymous block occurs that includes a PLS-00302 error. Toad displays an error message similar to the following:



Note: A public synonym that is the same as the user name could also cause this error.

Recommended actions (do one of the following):

- Rename or delete the object
- Edit the schema name out of the anonymous block in the Set Parameters window before debugging.

Debugger doesn't recognize complex datatypes

If you received a warning on startup that the **Formatter dll** wasn't found or that you have the wrong version of the Formatter dll, the Debugger's functionality will be impaired in this way.

Update the **Formatter dll** to the correct version.

Toad locks when debugging

When using both the Debugger and the small OCISPY utility at the same time, Toad will lock. Close OCISPY and run the Debugger alone.

Minimum Oracle Database Requirements

For all databases, you must have the Oracle Probe API v2.0 or later installed in order to debug PL/SQL using Toad.

To check the Oracle Probe API version

1. Make sure a package called **DBMS_DEBUG** exists in the SYS schema.

To find out what version of the Probe API you have, run the following anonymous PL/SQL block in the SQL editor with a DBMS Output window tab selected:

```
declare
  probe_major_ver varchar2(10);
  probe_minor_ver varchar2(10);
begin
  dbms_debug.probe_version(probe_major_ver, probe_minor_ver);
  dbms_output.put_line('MAJOR=' || probe_major_ver);
  dbms_output.put_line('MINOR=' || probe_minor_ver);
end;
```

If the DBMS Output window appears:

```
MAJOR=2
MINOR=2
```

Then the version of Oracle Probe API is 2.2.

Issues with Database versions

The Debugger works on the following database versions with the following caveats:

Database Version Notes

Oracle Version	Notes
Oracle 7.3.4	<p>For the Call Stack to display, you must set the BLANK_TRIMMING value to TRUE in the init.ora Oracle Initialization parameters file and restart your database. Otherwise, you will receive a load error invoking the Call Stack window.</p> <p>Refer to your Oracle documentation regarding the effects of the BLANK_TRIMMING setting.</p>
Oracle 8	BLANK_TRIM requirement also refers to databases 8.0.4 and 8.0.5. The PL/SQL Debugger works without issues on Oracle8 databases.
Oracle 8i & 9i	<p>No special privileges are required to debug PL/SQL in your own schema, but to debug objects owned by other users, your user must have been granted the following privilege:</p> <ul style="list-style-type: none">• CREATE ANY PROCEDURE
Oracle 9iR2	<p>In order to debug with Oracle9i Release 2, your user must have been granted the following privileges:</p> <ul style="list-style-type: none">• DEBUG ANY PROCEDURE• DEBUG CONNECT SESSION <p>Additionally, code must be compiled in INTERPRETED mode (not in NATIVE mode). Compiling PL/SQL in NATIVE mode is new with Oracle9i Release 2. This is set in the init.ora file, and INTERPRETED is the default mode.</p>
Oracle 10g & 11g	You must have the DEBUG CONNECT SESSION privilege, or Oracle will not let you use DBMS_DEBUG.

ADDITIONAL NOTES

- You cannot use the Evaluate/Modify window to change argument values.
- On Oracle 7 databases, if you receive "Debugger is not responding" message, comment out all DBMS_OUTPUT statements and then recompile, and use watches to display the values. Also uncheck Enable DBMS Output before every debugging session.
- Watches on package variables are only allowed for Probe v2.2 or higher.

Debugging on a RAC

During debugging, Toad creates two background sessions for handling debugger calls: target and debug sessions. These sessions MUST be on the same instance as the main Toad session.

Requirements:

- Have an additional entry in your TNSNames.ora file for the connected instance.
Or
- Connect directly to an instance of the cluster without letting the server assign one.

Toad accomplishes debugging as follows:

- Queries the data dictionary to find the current instance name
- Searches the TNSNames.ora file for the first entry that matches SERVICE_NAME or INSTANCE_NAME.
- Uses the secondary TNSNames entry when creating the background debugger sessions.

Starting the Debugger

Toad's Editor allows debugging of only one PL/SQL object per tab. When you open a complete package or type in the Editor, the Spec and the Body will open in separate tabs.

As both of these tabs have the same name, they are indicated with icons as follows:

Icon	Tab
	Spec
	Body

The options to control how objects are split, reassembled and saved are found in **Toad Options | Editor | Open/Save | File Splitting**.

To start the Debugger

1. Open the **Editor**.

Note: If you are running OCISPY to monitor your Toad session, close it before using the Debugger.

2. Load a **PL/SQL object** into the editor (either from a file on disk or an existing object from the database).
3. On the Editor toolbar, click (F9).

4. Press **SHIFT+F7** to start stepping through the code. This will automatically generate the symbol table required to obtain debug information for this procedure only.

If you intend to step into other procedures and view debug information in them, then you will need to compile them by ensuring Compile With Debug  button on the toolbar is in the depressed position.

Note: Using multiple editors while debugging is not recommended. However, if you do so, please be aware that the Debugger windows (DBMS Output, Breakpoints, Watches, and Call Stack) will apply to both Editors even if they are docked to one of the Editors.

Stopping the Debugger

If you are debugging a long procedure, you can stop the debugger while it is working.

To stop the Debugger while it is debugging

1. Click .

The status panel will reset from "Running" to "Idle".

2. When you have finished debugging your PL/SQL code, discard the debug symbol table: compile it again by pressing **F9**.

Toggle Compiling with Debug

Use this command to compile your code with debug information. Compiling with debug provides the information Toad needs to navigate the code using the Debugger.

To compile with debug

- » From the Session menu, select **Toggle compiling with debug**.

General Options

All these option settings are saved in TOAD.INI and restored the next time Toad is opened. See "Debugger Options" (page 633) for more information.

To change options for debugging

- » From the View menu, select **ToadOptions**, and click **Debugger** in the left panel. A list of options appears in the right panel.

Setting Parameters

Some PL/SQL has variable parameters that need to be set before you can run the code. If values for these variables are not set, running the code will result in an Oracle error.

To set parameters

1. From the Debug menu, select **Set Parameters** or click  on the toolbar.
2. Enter any necessary values in the **Arguments** grid.
3. Click **Output Options** to specify how you want output displayed. See [Debugger Output Options](#) for more information.
4. Click **Rebuild code** to see the variables entered in the code.
5. Click **OK** to return to the Editor.

Running in QSR

After you have set parameters, you can choose to run the code in Quest ScriptRunner. This button will be enabled unless you have selected the return REF Cursor results from memory option.

To run in QSR

- » Set parameters and click **QSR** at the bottom of the window.

Debugger Output Options

To access the Debugger Output options

1. With a PL/SQL object open in the Editor, on the **Debugger** toolbar, click .
2. In the Parameter window, click .

You can choose to set output options for Output Arguments and REF CURSORS as described below.

Print OUT arguments/RETURN values to DBMS Output

This option controls all printable datatypes other than ref cursors.

REF CURSOR/Collection Results area

Do not output results

Selecting this tells Toad not to output results to the DBMS Output window.

Print to DBMS Output (char/number columns only)

Checking this generates code to fetch data from the ref cursor and print it to DBMS output one row per line. A header row is also printed showing the column names.

Note: DBMS_output_print_line() will raise an exception if a line is more than 255 characters long. This option will only print values of char/number datatypes. For other datatypes, the name of the datatype is printed in square brackets.

RPAD columns to a width of N characters

This option allows simple formatting of output. Checking this will modify the generated code to apply the RPAD() function to all values printed to DBMS output, passing the user-specified width. This will not only right-pad values with spaces, but also truncate values longer than the given width. It is also applied to the column names.

Fetch no more than N rows per cursor

Limits the number of rows fetched. Applies to both DBMS output and table options.

Load into grid from memory (strong and weak)

When selected, output of REF CURSORS are loaded into a data grid where you can manipulate it.

Dependencies & References

You can use the Debugger to check for dependencies, and compile them.

Manually compiling dependent & referenced objects

To compile dependencies manually

- » Click  or its dropdown on the debug toolbar and select the appropriate option.

Automatically Compiling Dependent Objects

Toad can automatically compile any procedures that call the current procedure. See "Debugger Options" (page 633) for more information..

To set options to handle dependent objects

1. From the View menu, select **Options**.
2. In the left pane, select **Debugger**.
3. In the Compile Dependencies area, select one of the following:
 - Yes - Toad will always compile dependencies.
 - No - Toad will never compile dependencies.
 - Prompt - Toad will check for dependencies and ask if you want to compile them.

Viewing Dependencies and their Status

You can visually view dependencies and their status.

To view dependencies and references

1. From the Schema Browser, objects panel, click the **Procedures, Functions, or Packages** tab.

2. Select the procedure you are debugging, then in the details pane, click the **Deps(uses)** and **Deps (used by)** tabs. Status of the procedure is listed in the Status column in the details pane as **valid** or **invalid**.

Preparing PL/SQL Code for Production

When you have finished debugging your PL/SQL code, the debug symbol tables are left in the code. This makes your code larger and can slow performance. To eliminate this issue, compile the code and its dependencies and references one last time without debug information.

To compile without debug information

1. On the main toolbar, turn the debug toggle  button to the off position (not depressed).
2. Compile the code. This recompiles without the debug symbol tables.

Debugging Types

At some point, you may find you need to debug a type body. Although the Debugger does not support loading a type body into the Editor and pressing "Run" to debug it, you can debug type bodies indirectly as described below.

To debug type bodies indirectly

1. Call the **type body** from a procedure.
2. When you debug the procedure, step into the code for the type body as well.

Debugging Java

Java Debugger Overview

The JDWP debugger uses the same basic user interface as the PL/SQL debugger. Because it uses the Oracle package DBMS_DEBUG_JDWP in place of the DBMS_DEBUG package to access the debugging features, it is entirely Oracle-oriented. This means that there are Oracle-imposed limitations on the debugging procedures you can use through Toad.

With the Toad Java debugger, you can:

- Create Java Source in the Editor window.
- Step into Java code.
- Set breakpoints in Java code.
- Watch values of Java variables.
- Profile code.

Getting Started with the Java Debugger

Before you can work with the Java debugger, you need to configure Toad to work with Oracle's Java Debugger. See "Debugging Java" (page 912) for more information.

To prepare to debug Java code

1. Be sure you are running Oracle 9.2 or higher.
2. Confirm that the debug package DBMS_DEBUG_JDWP is present and in a valid state.

If it is not, then:

1. Logon as **SYS**
2. Run the **dbmsjdwpl.sql** and **prvtjdwpl.plb** scripts, located in the **\$ORACLE_HOME/rdbms/admin** directory.
3. From the Toad Main menu, select **View | Toad Options**, and in the left side, click **Debugger**.
4. In the Debugger area, select **JDWP**.

Include configuration information as described below:

Host	This must be an IP address (of any machine that has the Oracle client 9.2 or above installed) or the name of your local machine. It will function as the debugger host during a debugging session
Port	Choose a TCP port for the Toad Debugger to listen to. Leave this value as Use any available to make Toad pick one for you.
Allow stepping into Java Source	On some platforms stepping into Java code may cause the debugger to hang. This check box was introduced to prevent this from occurring. Uncheck this check box if you are experiencing such problem to continue debugging your PL/SQL code.
Enable DBMS_JAVA	By default, System.out.* java calls do not display locally. In

order to redirect this output to the DBMS_OUT, a call to DBMS_JAVA must be used with the appropriate buffer size. Check this option if you desire to send System.out.* java calls to the DBMS Output window.

Stepping into Java Code

Using the Java Debugger, you can step into Java code for debugging. See "Debugging Java" (page 912) for more information.

To step into code

Press **SHIFT+F7** to step through the code.

Troubleshooting

Determine that the Java debugger is selected

To determine if Java debugging is set

- » From the Debug menu, make sure that **JDWP debugger** is selected.

Oracle debugger hanging

On some platforms, stepping into code may make the Oracle debugger hang. If this is the case, you will not be able to step into Java code.

To continue debugging

- » From **Toad Options | Editor | Debugging**, uncheck the Allow stepping into Java Source box.

Troubleshooting Java Debugging

The Java debugger uses the same basic user interface as the PL/SQL debugger. Because it uses the Oracle package DBMS_DEBUG_JDWP to access the debugging features, it is entirely Oracle-oriented. This means that there are Oracle-imposed limitations on the debugging procedures you can use through Toad.

General Limitations

The Java debugger does not support triggers.

Oracle 9iR2 Issues

The debugger package (DBMS_DEBUG_JDWP) was first released with Oracle 9iR2. In this release there are some limitations.

Stepping into Code

When the debugger steps into Java source, sometimes ORA-03113 errors will be generated by the database.

To continue debugging

- » From Toad Options | Editor | Debugging, clear the **Allow stepping into Java Source** box.

Note: You will not be able to step into Java Source code with this box cleared.

Oracle 10g Issues

Debugger jumps over bulleted lines of code

On a Windows server, the debugger may jump over bulleted lines of code in the Java Source. There is no known work around at this time.

Debugger gutter line execution bullets not visible

In JDWP debugging, the line map cannot be retrieved until the debugger is called and initialized. This will keep the gutter bullets from displaying until debugging or execution starts.

Directing Output to the DBMS Output window

On a line that uses the dbms_java.set_output command, if you are using 9iR2 on a Windows OS, Oracle may return ORA-3113 errors.

When you trace into code that calls the DBMS Output window, errors are generated.

Tracing into System.out.println

Tracing into System.out.println can generate ORA-3113 errors.

Debugging Scripts

Script Debugger Overview

The Script Debugger is an extension to the Editor that you can use to debug short scripts.

To use the Script debugger

- » From the View | Toad Options window, select **Debugger | Debugger | Script**.

You can load multiple scripts; each will open in its own tab (See "Opening a Script" (page 893) for more information.)

Using the Script Debugger, you can do the following in addition to standard Editor functions:

- Set Breakpoints
- Run to Cursor
- Step Over

- Trace Into
- Halt Execution

To commit changes

» Click  on the main toolbar. This will commit changes in both sessions.

Quest Extensions

Quest Extensions are extensions to the scripting, used to control script output within Toad's Script Debugger.

Quest extensions reside within remarks, and are designated by \$QX. \$QX must be the first thing inside the remark. \$QX is not used in remarks in PL/SQL blocks or EXECUTE statements, only in separate script remark statements.

Show/Hide Grid

You can easily turn off display of grids within the Script Output tab by using a Quest Extension. See [Script Output Tab](#) for more information.

To hide grids

» In a **remark**, enter the following command:

\$QX \$GRID HIDE

All grids generated by the script from that line forward are hidden until after the line you display them again as described below.

To show grids

» In a remark, enter the following command:

\$QX \$GRID SHOW

All grids generated by the script from that line forward will be displayed.

Debugger Output

REF CURSOR Results Window

You can have Toad send REF CURSOR results to a tab in the Output area.

When a debug session terminates, this window displays each table that was created for REF CURSORS for the **Create and write to table** option described in Setting Parameters. (See "Setting Parameters" (page 909) for more information.) Each table is shown in a grid on a separate tab in the window.

The grid supports all the usual popup editors, but it is a read-only query.

To access the Ref Cursor tab

If you cannot see the Ref Cursor tab at the bottom of the editor, try one the following:

- In the bottom of the editor, right-click and select **Desktop Panels | REF CURSOR Results**.
- If REF CURSOR results is already checked, then you may need to scroll through the tabs by clicking one of the navigation arrows beside the tabs.

Troubleshooting

The REF CURSOR window has the following limitations:

- Works only with strongly-typed REF CURSORS.
- Works only when the REF CURSOR type is declared in a package belonging to the currently logged-in user.

Debug DBMS Output

When debugging in the Editor, a DBMS Output window automatically displays the results of "DBMS_OUTPUT.PUT_LINE()" statements in the editor.

Note: Output only displays after the procedure has completed execution, not while you are single stepping through the code. In the case of nested procedure calls, all procedures must have run to completion before any DBMS Output content is displayed.

Enabling or Disabling DBMS Output

You can enable or disable DBMS Output so that it does not display in the DBMS Output window.

To enable or disable DBMS output

- » At the top of the DBMS Output window, click the **Enable/Disable** toggle button:

DBMS Output Specific Commands

Use the right-click menu to access DBMS Output specific commands.

Editing DBMS Output Content

You can also edit the DBMS Output content to make comments, delete specific lines of output, and so on. The standard copy, cut, and paste keys also work in the DBMS Output box.

Breakpoints

Breakpoints Window

Breakpoints are markers in your code where you want to stop execution during debugging. The breakpoints window displays as a tab in the desktop panel beneath the main editor window. If you cannot see the Breakpoints tab, you may need to add it to your desktop.

From the Breakpoints window, you can easily work with your breakpoints. You can select from the toolbars on the window itself, or you can use the right-click menu to access more functions.

To add the breakpoints tab to your desktop

- » Right click in the desktops area and select **Desktop Panels | Breakpoints**. The breakpoints tab appears.

To open the breakpoints window

- » In the desktop area, click the **Breakpoints** tab.

Breakpoints Window Toolbar

The toolbar on the Breakpoints window has several buttons that allow you to easily access breakpoint commands.

Button	Command
	Edit Breakpoint – opens the edit window for the selected breakpoint
	Add Breakpoint – adds a breakpoint at the cursor
	Delete Breakpoint – deletes the selected breakpoint
	Enable Breakpoint – enables the selected breakpoint
	Disable Breakpoint – disables the selected breakpoint
	View Source - places the cursor on the line of source referenced by the selected breakpoint and marks it with a black arrow

Setting a Breakpoint

You can set (add) a breakpoint from several places.

To set a breakpoint in the Editor

- » Do one of the following:
 - Single-click in the Editor **gutter** to set or reset a breakpoint.
 - Press **SHIFT+F5** to set or reset a breakpoint on the current line in the editor.

The breakpoint is indicated by a stop sign in the gutter.

Note: It is recommended that you set your gutter width to 35. To do this, from the **Edit** menu, select **Editor Options** and then enter **35** in the gutter width field.

To set a breakpoint from the Breakpoints window

1. Click  on the toolbar (or double-click the breakpoint).
2. Fill in the appropriate information and click **OK**.

To set a breakpoint from the Breakpoints Tab

- » Press **INSERT**.

To set a breakpoint from the Debug Menu

1. Click in the **line** where you want the Breakpoint.
2. From the **Debug** menu, select **Add Breakpoint at cursor**.

Setting Breakpoint Properties

The Breakpoint Properties dialog box lets you to set standard breakpoints, conditional breakpoints, pass count breakpoints, or a combination of conditional and pass count breakpoints. Properties are changed on each individual breakpoint.

To change breakpoint properties

1. From the Desktop area, select **Desktop Panels | Breakpoints**.
2. Double-click the **breakpoint** where you want properties set.

Standard Breakpoints

When enabled, a standard breakpoint will break at the breakpoint when running or stepping through the code. A standard breakpoint has the Condition and Pass count lines of the properties dialog box left blank.

Conditional Breakpoints

You can set breakpoints that ONLY break if a certain condition is met when running the code.

To set a Conditional Breakpoint

1. In the Breakpoints window select a **breakpoint**.
2. **Right-click** and then select **Edit Breakpoint**.
3. Enter the condition for the breakpoint, for example, "salary_in > 5000". When running, the Debugger will stop on the breakpoint ONLY if the condition is met.

Format of a Conditional Breakpoint

The format for the "Condition" line is Variable Operator Value. For example "salary_in" (variable) ">" (operator) "5000" (value).

Supported Operators

Operator	Meaning
<=	Less than or equal to
<>	Does not equal
>=	Greater than or equal to
<	Less than
>	Greater than
=	Equal

Pass Count Breakpoints

You can set breakpoints that break ONLY after a certain number of passes in a loop has occurred.

In this case, the Debugger will NOT stop on the breakpoint line until just before the breakpoint line for the nth pass count. The pass could be a FOR loop, DO WHILE loop, IF/END IF, and so on. It is not dependent on any "COUNTER_VAR" value.

To set a breakpoint using a pass count

1. In the Breakpoints window select a **breakpoint**.
2. **Right-click** and then select **Edit Breakpoint**.
3. Enter the Pass Count for the breakpoint, e.g., 5. When running, the Debugger will stop on the breakpoint Just before the 5th pass through that breakpoint.

Combining Conditional and Pass Count Breakpoints

If both Condition and Pass Count are specified, the break will ONLY occur the **nth time the condition is met**.

Editing a Breakpoint

To edit a breakpoint

1. If it is not open, open the Breakpoints window. From the Desktops toolbar, select **Breakpoints**.
2. Select the breakpoint and open the properties dialog box.
3. Do one of the following to open the Breakpoints properties window:
 - Single-click to select the breakpoint, and click the **Edit Breakpoint** icon on the toolbar
 - Double-click the **breakpoint** in the Breakpoints window

- Single-click to select the **breakpoint**, right-click to display the menu, and select **Edit Breakpoint**

4. Make desired changes to the properties and click **OK**.

Enabling/Disabling Breakpoints

To disable breakpoints

» Use one of the following methods:

- Single-click to select the breakpoint, and click  on the toolbar
- Double-click the **breakpoint** and uncheck the **Enabled** check box
- Select the **breakpoint**, right-click, select **Debug** and then **Disable Breakpoint**.

Disabled breakpoints are grayed out in the Breakpoints window.

To enable breakpoints

» Use one of the following methods:

- Single-click to select the breakpoint, and click  on the toolbar.
- Double-click the **breakpoint** and check the **Enabled** check box.
- Select the **breakpoint**, right-click, select **Debug** and then **Enable Breakpoint**.

Deleting a Breakpoint

To delete a breakpoint

» To delete a breakpoint, do one of the following:

- Select the **breakpoint** in the Breakpoints window and press **Delete**.
- Put your cursor in the **line containing a breakpoint** in the **Editor** and press **F5**.
- In the **Editor**, click  in the gutter.

Breakpoints Right-Click menu

From the Breakpoints window, right-click to access the popup Breakpoints menu. This menu has the following options:

- Editing a Breakpoint (page 920)
- Setting a Breakpoint (page 918)
- Enabling/Disabling Breakpoints (page 921)

- Deleting a Breakpoint (page 921)
- View Source – places the cursor on the line of source referenced by the breakpoint and marks it with a black arrow
- Enable All Breakpoints – enables all breakpoints
- Disable All Breakpoints – disables all breakpoints
- Delete All Breakpoints – deletes all breakpoints

Watches

Watches Window

Toad supports watches on implicit and explicit variables, including some complex data types such as explicitly and implicitly defined records, %ROWTYPE records, and cursors. See "Explicit record declarations: " (page 924) for more information about supported types. See "Limitations to Watches" (page 926) for more information about unsupported types.

From the Watches window, you can easily work with your watches. You can select from the toolbars on the window itself, or you can use the right-click menu to access more functions.

Note: You can also hover your mouse over a variable to check the value without formally setting a watch.

To access the Watches window

- » Click the Watches tab in the **Output area**.

Note: If the watches tab is not visible, right-click and select **Desktop Panels | Watches**.

Watches Window Toolbar

The toolbar on the Watches window has several buttons that allow you to access watch commands.



Button	Description
	Edit selected watch.
	Add watch.
	Delete selected watch.
	Enable selected watch.

Button	Description
	Disable selected watch.
	Evaluate/modify watches.
	Flip watch window.

Smart Watches

Toad can automatically watch every variable in the active procedure or function. If you step into a new tab, the smart watches window refreshes with the values on the new tab.

Smart watches are disabled by default and display collapsed.

If the smart watch window contains cursors or records, the cursor/record is listed as a node and each individual item as an entry underneath it. These are, by default, displayed collapsed. You can expand them by clicking the + sign beside the node.

To enable smart watches

- » In the Watches window, select the **Enable Smart Watches** check box. See "Watches Window Toolbar" (page 922) for more information.

Configuring the Smart Watch window

By default, watches and smart watches are arranged side by side in the Watches desktop panel. You can also flip the watch window to show watches over smart watches instead of watches next to smart watches (the default).

To flip the watch panels

- » Click .

Moving Smart Watches to the Watch panel

Unlike standard watches, smart watches are not saved when you leave the window as they are created dynamically from the code you are actively using. However, if you want a watch to persist when you move into a different procedure or function, you can drag the watch from the smart watches panel to the watches panel. In the case of a watch that contains multiple parts, you choose to drag the node, which will copy everything under it, or only one of the items within the node.

To move a smart watch to the watch window

- Do one of the following:
 - Drag the smart watch from the smart watches panel to the watches panel.
 - Select a watch, right click, select **Add**.
 - Select a **Smart Watch**, click the **Add Watch** button on the toolbar.

Complex Datatype Examples

Toad can perform watches on several complex datatypes. Some illustrations are described below.

Note: A watch on a record variable must be set AFTER you step into the procedure through the Debugger. Toad needs the context of the variable before it can determine that it is a record.

Explicit record declarations:

In the example below, the declaration is explicit because the types of parameter *pow* and variable *rec* are explicitly declared as *pow_rec*.

```
CREATE OR REPLACE package powexample is

  TYPE POW_REC IS RECORD
  (
    NAME VARCHAR2,
    RANK VARCHAR2(),
    SERIALNO VARCHAR2(30)
  );
  PROCEDURE POWRECPROC(POW IN POW_REC);
end;
/

CREATE OR REPLACE package body powexample is
  PROCEDURE POWRECPROC(POW IN POW_REC) IS
    TMPVAR VARCHAR2(30);
    REC POW_REC;
  BEGIN
    REC.NAME := 'DAVID';
    REC.RANK := 'GENERAL';
    REC.SERIALNO := '555-00-0000';
    TMPVAR := POW.NAME;
    TMPVAR := POW.RANK>;
    TMPVAR := POW.SERIALNO;
  END POWRECPROC;
end;
```

/

Implicit record declarations:

In the example below, the declaration is implicit because the loop index variable rec is not declared.

Note: You cannot watch an implicit record with a variable in the select list of the corresponding query. Having a variable within this select list will return an empty watch. A variable in the WHERE clause is ignored when record structure is retrieved, and the watch proceeds normally.

This example includes both a record (REC) and a cursor (C1).

```
CREATE OR REPLACE PROCEDURE ForLoopProc IS
cursor; employee from * select is C1
BEGIN
for C1 in rec
loop
dbms_output.put_line(rec.empname);
end loop;
END ForLoopProc;
```

Example 2

```
CREATE OR REPLACE PROCEDURE CursorForLoopProc IS
BEGIN
for ) new_user from * (select in rec
loop
dbms_output.put_line(rec.first);
end loop;
END CursorForLoopProc;
```

%ROWTYPE records:

In this example, tmpVar will expand as a record.

```
CREATE OR REPLACE FUNCTION returnrowtype RETURN employee%ROWTYPE as
tmpVar employee %ROWTYPE;
BEGIN
tmpvar.empid := 1;
tmpvar.empname := 'DAVID';
tmpvar.salary := 100000;
```

```
RETURN tmpvar;  
END returnrowtype;
```

Collections Records

Toad also supports displaying collection results to the DBMS Output window.

When this option is enabled, collection results will be displayed in the DBMS Output window, and the row formatting will be applied.

Note: Row restrictions will not be applied in this case.

To enable collection results

» From Editor | Set Parameters | Options, select DBMS Output.

Adding a Watch

To add a watch from the Editor

Note: If the Watches window was not open, you will need to open it to view watches.

1. Click a **variable** in the editor.
2. Do one of the following:
 - Click  in the toolbar.
 - Right-click in the **editor**, select **Debug** and then **Add Watch at Cursor**.
 - Press **CTRL+F5** to add the variable at the cursor to the list of watches. The watch is added but the Watch Properties dialog box does not display.

To add a watch from the Watches window

» Right-click and select the **Add Watch** menu item.

To add a watch from the Debug Menu

1. Click in the **variable** you want to watch.

From the **Debug** menu, select **Add Watch at cursor**.

Note: If text is selected when "Add Watch at Cursor" is chosen, Toad sets the watch on the selected text. If no text is selected it uses the text under the cursor. This change occurs so that if you have a recordname.fieldname, you can highlight only recordname to set a watch on it. If you have an expression like v_List(2), where v_List is a varray, then you can highlight the entire expression to put a watch on it.

Limitations to Watches

Because of limitations in the Oracle Probe API, there are some configurations that you cannot Watch.

- Oracle 7 does not support watches on package variables.
- Toad does not support arithmetic in watches. For example, you cannot watch the sum of two variables.
- You cannot watch a trigger **:new.column** or **:old.column value**.

Setting Watch Properties

You can set watch properties as you add a watch, or from an existing watch.

Some methods of adding a watch bring up the Watch Properties dialog box. (See "Adding a Watch" (page 926) for more information.)

To change the properties of an existing watch

- » From the Watches window, double-click the watch where you want to change properties.

To set watch properties

1. In the Expression field, type the **name of the variable** you want to watch.
2. Variables within a package body or package spec will be resolved automatically. You can also specify a variable as a **package variable** and refer to a different schema and package in the appropriate boxes.
3. In addition to the usual data types that you can watch (for example, date, number, varchar2). You can also watch array values and record types. If you have an array, e.g., MyArray(1..10), and set up a watch on MyArray(1), then you can also set a **Repeat Count** setting of 3 to examine MyArray(1), MyArray(2), and MyArray(3) all at the same time.
4. Enter the number of significant **Digits** to be displayed.

If you prefer to see the watch value formatted differently than the default, then select from the format options, e.g., floating point, scientific, and so on. You cannot format watches on records. If you are selecting a record to watch, this area will be disabled in the Watch Properties window.

Note: Non-printable characters (ASCII 0-31) embedded in strings can often cause confusing errors and are hard to debug because most fonts are unable to render them in a meaningful way. "String\Dec" will display non-printable characters, e.g., CR and LF, in decimal format, e.g., "This is a test.\013\010" "String\Hex" will display those non-printable characters in hexadecimal format, e.g., "This is a test.\\$D\\$A".

5. To set the Debugger to break when a value changes, check the **Break on value change** check box, and they type of break you want:
 - Never
 - Always
 - When a specific condition is met (x=4, for example)

Note: This feature is not available when the watch selected is a record, and will be disabled in the Watch Properties window.

6. Click **OK** to change or set the properties.

Enabling/Disabling Watches

Once a watch is set, you can temporarily disable it. You may want to disable some watches to improve the performance of the Debugger. As each line of code is run, each watch has to be evaluated. The fewer the watches to evaluate, the faster it will run.

To disable a watch

- » Do one of the following:
 - In the watches window, double-click the **watch** and clear the **Enabled** check box.
 - In the watches window, select the **watch**, right-click, and select **Disable Watch**.
 - In the watches window, select the **watch**, and then click .

To disable all watches

- » In the watches window, right-click, and select **Disable All Watches**.

To enable a watch

- » In the watches window, do one of the following:
 - Double-click the **watch** and check the **Enabled** check box.
 - Select the **watch**, right-click, and select **Enable Watch**.
 - Select the **watch**, and then click .

To enable all watches

- » In the watches window, right-click, and select **Enable All Watches**.

Editing Watches

To change an existing watch

1. Do one of the following:
 - Double-click the **watch** in the Watches window
 - Single-click the **watch** to select it, right-click to display the menu, and select **Edit Watch**
2. Make changes to the properties as described in Setting Watch Properties.

Deleting Watches

To delete a single watch

» Do one of the following:

- Select the watch you want to delete, and then click .
- In the watches window, select the **watch you want to delete** and press **DELETE**.

To delete all watches

» In the watches window, **right-click** and select **Delete all Watches**.

Evaluate/Modify

The Evaluate/Modify window lets you view the value of a variable on the fly, without having to set a watch. It also lets you change the value of a variable and continue executing. This is useful for advancing a loop variable to the end of a "FOR COUNTER_VAR IN 1..500 LOOP" loop. In this case, evaluate Counter_Var, and set its new value to 499. So, you do not have to step through the loop the extra 498 times. If you want to change a date variable, enter the new date in format DD-MON-YY or DD-MON-YYYY with single quotes surrounding the date: for example, '31-DEC-99'.

Check the **Package Variable** check box if the variable to evaluate is a package level variable, and not a local variable.

To evaluate or modify a watch

» From the Watches window, with an active watch, click the **Evaluate/Modify** button.

External Debugging

External Debugging Overview

When performing normal debugging, Toad does two things – in the first Oracle session it starts an execution of the procedure it is about to debug, and in the second session it traps the first session into a debugger.

External Debugging allows the user to debug PL/SQL code that is written and run from any client-server application including Visual Basic, Delphi, PowerBuilder, Developer/2000, etc. The external application does not need to exist on the same machine.

External Debugging works with the PL/SQL debugger. Currently this feature is not compatible with the JDWP debugger.

This feature is extremely useful when the client-server application calls a stored program with complex parameters, such as cursors, that are not easily simulated from Toad. Rather than trying

to simulate the complex environment within Toad, you can simply connect to the external application and then debug the code in its native environment.

Requirements for attaching to an external application

Before Initializing

Before initializing the debugger on the external session, disable server output by issuing the 'set serveroutput off' command. If server output capture is enabled, Oracle will freeze on calls to the DBMS_OUTPUT package so that these calls can be debugged. This will give the appearance that the application has frozen for no particular reason.

Initializing

To initialize Debug mode, the external application must execute three commands:

```
ALTER SESSION SET PLSQL_DEBUG=TRUE
id := dbms_debug.initialize('TOAD')
dbms_debug.debug_on;
```

where TOAD can be replaced by any ID string. If this parameter is omitted, the return value of initialize will be used as the Session ID. This ID string also must be entered into Toad from

Debug menu | Attach External Session.

The ALTER SESSION command (SQL) should be executed separately, while dbms_debug.initialize and dbms_debug.debug_off (PL/SQL) can be placed in the same PL/SQL block.

You can omit the ALTER SESSION command if you have all your procedures compiled with debug.

After running external application

After the external application is finished executing the code that needs debugging, it should execute the command:

```
dbms_debug.debug_off
```

Otherwise, all subsequent PL/SQL code that this application submits for execution will be run in debug mode. This will cause the application to hang until Toad attaches to it again.

Attaching an External Session for Debugging

In the following procedure, Step 5 can be done before Step 4, but it may then be difficult to pass the Session ID (unless it is hard-coded). The important thing is that the application and debugger are synchronized at the point when:

- the application runs PL/SQL code in debug mode
- AND
- the ATTACH command has been issued from Toad.

NOTE: Before initializing the debugger on the external session, disable server output by issuing the 'set serveroutput off' command. If server output capture is enabled, Oracle will freeze on calls to the DBMS_OUTPUT package so that these calls can be debugged. This will give the appearance that the application has frozen for no particular reason.

To attach an external session for debugging

1. Connect the external application to the database.
2. In Toad, connect to the same database instance as the external application. The code you want to debug must be displayed in the Editor.
3. In Toad, from the **Debug** menu select **Attach External Session**.
4. Enter the same Session ID as passed to or returned by the initialize statement. Toad waits for the application to execute PL/SQL code.
5. From the application, execute the PL/SQL block that calls the stored program to be debugged. Toad enables all debugging commands.
6. Verify that, when execution of the PL/SQL code is complete, Toad displays the message Execution complete and the external application continues its normal work.

Call Stacks

Call Stack Window

The Call Stack window displays the chain of functions and procedures as they are called, in the order they are called, with the most recent function or procedure listed on the top.

At the end of each procedure name is the current line number in that procedure. So, if you step into procedure B from line 5 of procedure A, then the call stack will look like this:

Procedure B(1)

Procedure A(5)

To access the call stack

- » From the Desktops area, click the **Call Stack** tab.

To add the call stack tab to the Desktop

- » Right-click in the **Desktops** area and select **Desktop Panels | Call Stack**.

Triggers

Setting Parameters in Triggers

When a trigger is executed, a preprogrammed operation occurs on a table. You'll notice that debugging triggers is different from debugging procedures or functions. First, the values entered in the Set Parameters window are for the column values, not the argument values. See "Setting Parameters" (page 909) for more information.

Before you can run a trigger, you have to set the parameters for that trigger. Each type of trigger has a different set of parameters that are required.

Note: When you have entered a value into the Value column of the grid, if you want to make it NULL again, type **NULL**. If you simply delete the value, the value will revert to an empty string.

INSERT

When you are debugging an INSERT trigger, the values you enter are used as the values to be inserted. The record you insert is then rolled back so that no changes are made to the database during debugging.

To debug an insert trigger

- » In the Value field, enter a **value** to be inserted.

Note: The `INSERT INTO...` code is not valid until you enter column values.

UPDATE

Enter values for the SET... clause AND the WHERE... clause. The UPDATE TABLE... code is not valid until you enter the column values.

To debug an update trigger

1. In the Value field, enter **values for the SET...** clause.
2. In the WHERE value field, enter **values for the WHERE...** clause.

Note: The updated record will be rolled back so that no changes are made to the database during debugging.

DELETE

When debugging a DELETE trigger, you must enter values for the WHERE... clause.

To debug a delete trigger

- » Enter the **WHERE...** values in the Value field. The `DELETE FROM...` code is not valid until the column values are entered.

Multiple Trigger Priorities

In the case of multiple BEFORE or AFTER actions, trigger types take priority and will be performed as follows:

- INSERT
- UPDATE
- DELETE

Query Builder

Query Builder Overview

There are two ways to access the Query Builder:

- On the Database menu, select **Report | Query Builder**.
- Click  on the main Toad window toolbar.

The Query Builder window provides a fast means for creating the framework of a Select, Insert, Update, or Delete statement. You can select Tables, Views, or Synonyms, join columns, select columns, and create the desired type of statement.

Area	Description
Table Model Area	Use the upper pane to graphically lay out a query. See "Model Area" (page 935) for more information.
Tree View	Current query in tree view.
Generated SQL Query	Automatically generated SQL as a result of the model appears in the results grid below the Model Area. The Query Results tab displays the results of the created query.
Query Builder Toolbar	Contains the most frequently used functions. See "Query Builder Toolbar" (page 933) for more information and descriptions of toolbar items. Additional functions can be found on the popup menus.

Navigating the Query Builder

Click on items or use the keyboard:

- Up and down arrow keys move you around in lists
- SPACE checks and unchecks boxes
- TAB moves forward one area (table, menu, list, etc)
- SHIFT+TAB moves back one area.

Query Builder Toolbar



Button	Command
	Change active session. In the drop down list, the active session is denoted

Button	Command
	by a check mark.
	Execute SQL Statement
	Create New Model
	Open Model from...
	Save to Disk
	Save Model as...
	Print Model (select zoom for print from the dropdown menu beside the button)
	Edit Current Model Info
	Add Calculated Fields
	Set Global WHERE condition
	Set Global HAVING conditions (must have Group By condition)
	View joins
	Find joins automatically
	Generate a query Statement (has dropdown to create different types of queries)
	Run Explain Plan
	Load in Editor
	Toggle Object Palette
	Percentage of zoom for modeler pane

Quick Start

Follow this procedure to quickly get started using the Query Builder.

To use the Query Builder

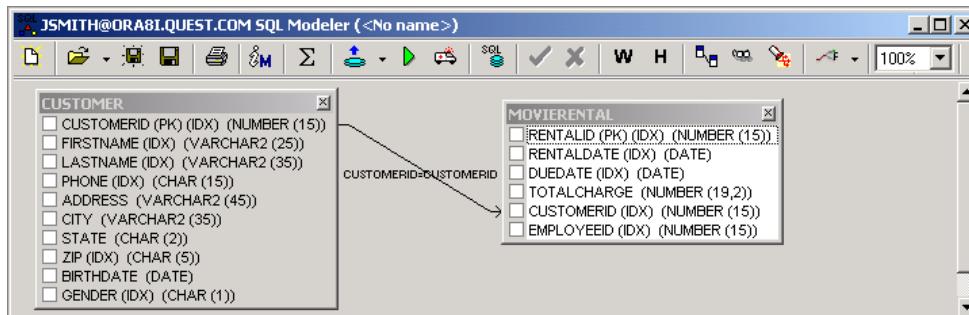
1. Drag-and-drop **Tables**, **Views**, or **Synonyms** from the Schema Browser, Project Manager, Object Palette, or the Object Search window to the modeling area.

Click in the check box by a column to select or clear it.

Note: Clicking this box adds the column to the main query. Columns must be added to subqueries by dragging.
2. Drag-and-drop **columns** from one table to another to create joins between the tables.
3. Add any WHERE clauses, or GROUP by clauses by right-clicking on the column in the tree view node and select **Add to n clause**. Right-click and adjust properties for clauses where necessary.
4. Click  on the toolbar to save the model to disk.
5. Click the **Generated Query** tab to view the generated query, and then click  to copy the query to the Editor.

Model Area

Use the model area to visually join or manipulate the Tables, Views, or Synonyms. You can click in a table header and drag the table to anywhere in the model area.



To establish your own joins

- » Drag a column from one table to another table column. When the line is drawn, you can double-click the line to adjust its properties such as Inner Join vs. Outer Join, or Join Test. For example, equal (=), less than (<), greater than (>), and so on.

To specify columns for the query

- » Click in the check box for each desired column. A checkmark will be displayed in the box. The selected column's information will appear in the navigation tree, and the column will be included in the query.

Note: If no table columns are selected, then all columns will be included in the query.

F4 Describe

You can use the F4 key to describe a selected table, as explained in the Describe topic. If a table is not selected when you press F4, the last selected table will be described. See "Describe" (page 874) for more information.

Explain Plan

Click the **Explain Plan** button on the Query Builder toolbar to generate and display an Explain Plan output.

The right-click menu includes the following functions:

- Copy to Clipboard - Copies the explain plan statement (in text mode) to the Clipboard
- Optimizer Mode - Allows you to select the query optimizer mode from Choose, Default, Rule, First Rows, or All Rows

Query Builder Options

Many Query Builder options can be set or changed in the Toad Options window. From this window you can:

- Set general options, including color of join lines.
- Add or remove Functions usable in the Query Builder.
- Control behavior of the Query Builder.

To access Query Builder options

1. From the View menu, select **Toad Options**.
2. In the left hand side, click **Query Builder**.
3. Change options as desired, and then click **OK**.

Viewing Joins

To view joins

- » Click  on the toolbar, or double-click a **join line** in the **Modeler** itself.

Populating the Where Clause

There are two ways to populate the WHERE clause in SQL generated by the Query Builder: as an individual WHERE, or as a global WHERE.

To populate the where clause

1. Do one of the following:

- Right-click on the column under the SELECT node and select **Include in Where Clause**.
- Drag a column from the select node to the WHERE node.

Add conditions and select or clear any outer joins you want to apply.

Note: To build a more advanced query, click the Expert tab and enter your code by typing it in the top box or double clicking on functions and data fields to enter them.

2. Click **OK**.

Repeat until all conditions are added.

Note: When you add multiple columns to a WHERE clause, they are automatically placed

3. If a condition should be an OR condition, rather than an AND, right-click on it and select OR.

To create a global WHERE clause

1. Right-click in the Table Model area.
2. Select SQL | Global Where Clauses.
3. Click .
4. Enter or build your condition.
5. Click **OK** to close the definition window.
6. Click **OK**.

Example

To construct the following query:

```
SELECT DEPT.DEPTNO, DEPT.DNAME, DEPT.LOC  
FROM DEPT  
WHERE (((UPPER (RTRIM (DNAME)) = 'SALES') AND (DEPT.DEPTNO < 40)) AND  
(DEPT.LOC = 'CHICAGO') OR ((DEPT.LOC IS NULL = '')))
```

Do the following:

1. Open the **Query Builder**.
2. In the **Object Palette**, select the Scott schema and double-click the DEPT table to add it to the model.
3. Right-click **DEPT** and choose **Select All**.

4. Drag the **DEPTNO** column to the **WHERE** node.
5. Select < in the operator box, click **Constant**, and enter **40** in the condition box.
6. Click **OK**.
7. Drag the **LOC** column to the **WHERE** node.
8. In the WHERE definition dialog, click the **Expert** tab. Click **OK** to confirm.
9. Double-click **IS NULL** in the SQL Operators area and then click **OK**.
10. Drag the **DEPTNO** above **LOC** in the tree view.
11. Right-click the **LOC** column and select **OR**.
12. Right-click on **OR | LOC** and select **Properties**. Select = in the operator box, click **Constant**, and enter **CHICAGO** in the condition box.
13. Click **OK**.
14. In the table model area (the area around the table images), right-click and choose **SQL | Global Where**. Click .
15. In the top edit box, enter **(UPPER (RTRIM (DNAME))) = 'SALES'**.
16. Click **OK** and then click **OK** again.

View the generated query. It should appear as described above.

Populating the Having Clause

You can automatically populate the Having clause in the SQL generated by the Query Builder in one of two ways.

Note: To create a HAVING clause, you must have added columns to the GROUP BY node.

HAVING entries should be in the form of <expression1> <operator> <expression2>.

To populate the HAVING clause

1. Do one of the following:
 - Right-click the desired column in the tree, and then select **Include in Having Clause**.
 - Drag a column from a table in the Table Model area to the HAVING clause.
2. Enter or build the condition.
3. Click **OK**.
4. Repeat until complete.

Global HAVING clauses

In order to include a global HAVING clause, there must be a GROUP BY clause as well.

To create a global HAVING clause

1. Right-click in the Table Model area.
2. Select **SQL | Global Having**.
3. Click the **Add** button.
4. Enter or build your condition.
5. Click **OK** to close the definition window.
6. Click **OK**.

Example

To construct the following query:

```
SELECT emp.empno, emp.ename, emp.job, emp.mgr, emp.sal,  
emp.comm, emp.deptno  
  
FROM emp  
  
GROUP BY emp.deptno, emp.comm, emp.sal, emp.mgr, emp.job,  
emp.ename, emp.empno  
  
HAVING ((emp.sal + NVL(emp.comm, 0) > 4000))
```

Do the following:

1. Open the **Query Builder**.
2. In the Object Palette, select the Scott schema.
3. Double-click the **EMP** table to add it to the model.
4. Right-click **EMP** and choose **Select All**, then clear **Hiredate**.
5. Drag DEPTNO, COMM, SAL, MGR, JOB, ENAME and EMPNO to the **Group by** node.
6. Right-click in the Table model area and select **SQL | Global Having**. Click  to add a new Global Having clause.

Enter the Having clause to say:

`EMP.SAL + NVL(EMP.COMM, 0) > 4000`

7. Click **OK** twice.

View the generated query. It should appear as described above. This query selects all the employees whose salary plus commission is greater than 4000.

The NVL command substitutes a null value in the specified column with the specified value, in this case, 0.

Creating a SubQuery

You can easily create a sub-query if desired, nested subqueries can also be created, simply by creating the new sub-query within the appropriate clause of the previous one. Subqueries can be created from the SELECT clause, the FROM clause, or the WHERE clause.

Columns must be dragged directly from the table area to be placed in subqueries, or from the current statement. Checking a column in the model area will add that column to the main query.

To create a sub-query in the WHERE clause

1. Drag a column into the **WHERE** or **FROM** node.
2. In the **WHERE** definition dialog, select **subquery** and select the type of subquery from the list below it.
3. Create the sub-query the same way you would create a normal query.

To create an EXISTS sub-query

1. Right-click the **WHERE** clause in the tree view.
2. Select **Include EXISTS subquery**.
3. Create the sub-query as you would a normal query.

To create a sub-query in the FROM or SELECT node

1. Right-click the **SELECT** or **FROM** clause in the tree view.
2. Select **Include subquery**.

Create the sub-query as you would a normal query.

Note: A sub-query based on the **SELECT** clause cannot have multiple columns: therefore there is no **ORDER BY** node.

Reverse Engineering a Query

Note: The query builder can handle only one query at a time.

To reverse engineer a query

1. Do one of the following:
 - Enter a query into the Editor
 - Open a file containing a query in the Editor.
2. Right-click in the query and select **Send to Query Builder**.

The query must be a query that originally could have been created in the Query Builder. If the Query Builder could not create the original query, the reverse engineered query may be flawed. This is because the Query Builder cannot visually display a query it cannot build. If the query

contains a calculated field, you will have to manually attach the calculated field to the table by clicking on the **Add Calculated field** button.

At this time, Toad cannot reverse engineer a query with nested sub-queries, although the Query Builder can create them.

Note: Although it was heavily tested throughout its development lifecycle, due to the vast array of possible queries there may be some queries it can create but cannot reverse. We encourage users to inform Quest if they discover such queries.

Toad can reverse engineer:

- Select
- Insert
- Update
- Delete

queries, one at a time.

Query Report Format

When you choose to "Execute as SQL*Plus Report" from the Query Builder, you can format the report from the Query Report Format window.

*To execute as a SQL*Plus Report*

1. After creating a model, right-click over either the **Criteria** or **Generated Query** tab and select **Execute as SQL*Plus Report**.
2. Set options in the tabs and then click  on the toolbar.

Note: The script is sent to the script tab, and any output is displayed on the output tab.

Generated Query

This tab lists the automatically generated SQL statement. Any changes made to the model or column Criteria will automatically regenerate this SQL statement.

To copy the query to the clipboard

- » Do one of the following:
 - Select a query and press **CTRL+C**
 - Click the **Send text to clipboard** button
 - Select the query, right-click and select **Copy**

To send the query to the editor

- » Click  in the Generated Query toolbar.

SQL*Plus Reports

You can also execute the SQL as a SQL*Plus report. Right-click in the SQL area and select Execute as SQL*Plus Report. See "Query Report Format" (page 941) for more information.

You cannot directly edit the SQL on the "Generated Query" tab dialog box.

Generating ANSI Syntax

You can convert a SQL statement from the generated query tab, or you can set the Query Builder to create ANSI syntax automatically from Toad Options | Query Builder. See "Query Builder" (page 671) for more information.

To convert a SQL statement in the Query Builder

- » In the Generated Query tab, select the query to convert and click the **ANSI join syntax** button.

Tuning the query

To tune the query

1. From the Generated Query tab, click the  dropdown.
2. Select either:
 - SQL Optimizer
 - Oracle Tuning Advisor

Query Results

This grid displays the results of executing the generated query. Insert, Update, and Delete queries can only be executed in the Editor window.

To access the Query Results grid

- » From the Query Builder, click the **Query Results** tab.

Making changes to the Tables or Columns, then clicking on the Query Results tab will prompt you whether or not to requery the data.

Removing columns from the Tree

As you model your code, you may need to remove columns from the model.

To remove columns from the tree

- » Drag the column you want to the trash can in the tree structure.

Working with Data

Column Names Supported

Column names containing the letters A-Z, the numbers 0-9, and the underscore character ("_") are the only column characters directly supported. Toad will surround any other characters with double quotes.

For example, a column named **this_is_a_test** will be created as entered. A column named **This is a test**, however, will be created as "This is a test".

Graph Properties

You get to this window from the Profiler Analysiswindow. See "Using DBMS_PROFILER" (page 602) for more information.

From this window you can adjust the properties of the pie chart/bar chart graph.

OPS\$ Accounts

Toad can accept system logins where the operating system validates the user and password. See "Server Login Window" (page 177) for more informationabout system logins.

Select the database alias and leave the Username and Password boxes empty. Oracle will prefix your workstation login and attempt a login.

In order to use OPS\$ accounts, the customer's database init.ora initialization parameters file must have these two entries:

```
remote_os_authent = TRUE
os_authent_prefix = OPS$
(or whatever prefix you select)
```

The user account must be created like this:

```
create user (username) identified externally...
```

Oracle verifies that the operating system username matches the database username specified in the **database** connection. Oracle takes the operating system username: for example, SCC14433, and places the "os_authent_prefix" value in front, to yield "OPS\$SCC14433", which is then used as the schema name in Oracle. For example, "select * from all_objects where owner = 'OPS\$SCC14433'".

Scenario

Joe Smith logs onto the ORA805 database, enters "ORA805" in the Database box, and leaves Username and Password empty. His NT login is "JSMITH" which gets prefixed with "OPS\$" giving a username of "OPS\$JSMITH". Oracle attempts a login and Toad starts up.

The next time you open the Server Login window, any previous logins that were O/S authentication logins will have username = "EXTERNAL". So, you do not need to type the word EXTERNAL in the username box when reconnecting.

Using "Create user ... identified externally..." lets a database administrator create a database user that can only be accessed from a specific operating system account. During a database connection, Oracle verifies that the operating system username matches the specified database username (prefixed by the value of the initialization parameter OS_AUTHENT_PREFIX). Basically, you are relying on the login authentication of the operating system to ensure that a specific operating system user has access to a specific database user. So, the effective security of such database accounts is dependent entirely on the strength of the operating system security mechanisms. This presents a security loophole on Windows 95 and 98, where specific users are not identified. Windows NT identifies each user with a specific username.

Viewing or Hiding Docked Windows

Many of the windows within Toad can be docked to the main window. These include, but are not limited to:

- Project Manager
- Output window
- Code Snippets
- Object Palette

When docked, these windows can be displayed at all times, or they can be hidden in the form of tabs unless you run your pointer over them.

To hide a docked window

- » In the upper right corner of a docked window is a thumbtack button. When visible, the thumbtack image will be vertical. Click  to hide the docked window.

Hidden Docked windows

When the docked window is hidden, a tab with the name of the window appears in its place, taking up less screen space.

To view a hidden docked window

- » To view the window, hover the pointer over the tab.

To show a hidden docked window

- » Click  in the upper right corner of a hidden window to show the docked window.

Viewing Source Surrounding a PL/SQL Error

You can use this query to see PL/SQL lines before and after the error line.

```
select decode(to_char(us.line), '1', ue.text) || '  
Pkg:' || us.name || chr(10) || chr(10) || '  
' || to_char(us.line,'99990')|| ' '|| us.text,  
to_char(ue.line-7),ue.text|| ' Pkg:'|| us.name|| ',  
to_char(ue.line-6),"  
to_char(ue.line+6),"  
to_char(ue.line),'-->'|| to_char(us.line,'99990')  
|| ' '|| us.text  
, ' '|| to_char(us.line,'99990')  
|| ' '|| us.text) outline  
from user_source us, user_errors ue  
where us.line between (ue.line-7) and (ue.line+6)  
and us.name = ue.name  
and us.type = ue.type  
and ue.text not like 'PL/SQL: Statement ignored'  
and ue.text not like 'PL/SQL: Declaration ignored'  
order by ue.name, ue.line, ue.text, us.line;
```

Sample output

Here is some sample output from the above query:

```
PLS-00103: Encountered the symbol "=" when expecting one of the following:  
  
:= . ( @ % ;  
  
The symbol ":=" was inserted before "=" to continue.  
  
Pkg:FOO  
  
20 LIMITATIONS:  
21 ALGORITHM:  
22 NOTES:  
23 *****  
24 BEGIN  
--> 25 tmpVar = 0;  
26  
27 EXCEPTION
```

```
28 WHEN NO_DATA_FOUND THEN
29 Null;
30
```

Dataset Operations

Dataset Operations

Note: The Export File Browser is only available in Toad Professional Editions, or with the optional DB Admin module.

In the Export File browser, you can work with the dataset on a selected object, such as a table. See "Viewing an Export File" (page 404) for more information about the Export File Browser.

To view the dataset

1. From the left hand side treeview, select the object whose dataset you want to view.
2. In the right-hand side, click the **Data** tab.

Dataset Toolbar

Note: The Export File Browser is only available in Toad Professional Editions, or with the optional DB Admin module.

You can manipulate how you see data via the dataset toolbar at the top of the Data tab in the Export File Browser.



Button	Command
	Filter grid
	Find first record
	Find previous record
	Find next record
	Find last record
	View in grid format

Button	Command
	View in single record format

Go to Row Number

Note: The Export File Browser is only available in Toad Professional Editions, or with the optional DB Admin module.

When you are working with a large dataset in the Export File browser, sometimes it is advantageous to jump directly to a specific row number within the data. See "Viewing an Export File" (page 404) for more information.

To go to a row number

1. Right-click over the data grid and select **Go to Row #**.
2. Enter the row number in the box.

Click **OK**.

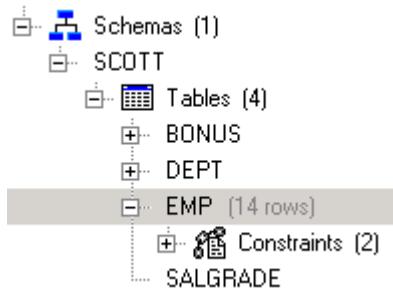
Note: If you have not performed a row count before you go to a row number, it will be performed now.

Get Row Count

Note: The Export File Browser is only available in Toad Professional Editions, or with the optional DB Admin module.

Toad can count the rows in a table for you in the Export File Browser. This can be useful when you want to know just how big the dataset contained in the table is. See "Viewing an Export File" (page 404) for more information.

When you first open a node that includes a dataset, there is nothing listed beside it. When you perform a Get Row Count on it, the number of rows in the dataset are listed in parentheses beside the node. For example:



To get the rowcount for a dataset

- » In the right hand side, right click over the **data grid** and select **Get Rowcount**.

Data Grids

Toad Grids

Throughout Toad, information is presented in grid format. Within grids, you can customize grid views, filter resultsets, print the grid contents, and other standard operations.

There is an [online video tutorial](#) for this feature. This opens a new browser window and requires an internet connection.

In addition, grids which provide query results have additional functionality specific to the location where they appear. In most data grids you can:

- [Access the calculator](#)
- [Delete selected rows](#)
- Set a Filter Condition (page 954) or use Excel Style Filtering (page 955)
- [Export the data](#) to a flat file
- [Fix Current Column](#)
- [Insert rows](#)
- [Preview/Remove Preview for Current Column](#)
- [Print the grid contents](#) to paper
- [Rearrange the order of the columns](#)
- [Set Sequence](#)
- [Set the column widths](#) to a custom width setting
- [Sort Data](#) in the Grid
- [View and/or edit the contents of a large column](#) in a Memo Edit popup window
- [View BFILE data](#)
- [View CURSORs](#)
- [View Nested Table Data](#)
- [View Object Data](#)
- [View VARRAY data](#)

Sort Data in Grid

If the query does not contain an "Order By" command, you can sort the grid manually. You can also group data by column header.

To sort grid by columns

1. Click a grid column header in either the Editor or the Schema Browser.

Note: If this dialog box does not display, right-click, select **Grid Options**, click **Visual** in the left hand tree, and make sure the "**Confirm sorts when clicking on column header**" option is checked.

2. Select the appropriate option, and click **Apply**.

Grouping Data by Column

To group by column

- » Drag the column header into the area just above the grid:



Export Data to Flat File

To export data to a flat file

1. Right-click and select **Export to Flat File**.
2. Enter options in the Flat File Export window. See "Export Table as Flat File" (page 409) for more information.
3. Click **Execute**.

Customizing Grid Views

Grid Navigator

The grid navigator bar displays at the bottom of the data grid.



Button	Action
◀◀	Move to first record.
◀	Move to previous record.
▶	Move to next record.
▶▶	Move to last record.
+	Insert a new record.

Button	Action
	Delete selected record.
	Edit selected record.
	Post changes (edit).
	Delete changes (edit).
	Refresh data
	Set bookmark in grid. Only one bookmark can be set at any one time. Clicking this button a second time will move the bookmark.
	Goto bookmark in grid.

Troubleshooting

To show the navigator toolbar

- » Right-click in the grid and select **Toggle Navigator**.

Single Record View

Use this dialog box to view and/or edit records from several results panel within Toad, including the SQL Results panel and the Explain plan.

To access single record view

- » Right-click in the grid and select **Single Record Viewer**.

Note: In order to edit the data in the records, using the Single Record View popup window, the recordset must be editable first. See "Viewing and Editing Data" (page 955) for more information.

To print the single record

- » Click .

Record View Options

The record view options dialog provides a way to order the single record view. Since the record view is simply a list of columns and their values, rearranging them may make it easier to find the data you want.

To access Record View Options

1. Click  on the **Single Record View**.
2. Select from the following options:

Field Order	Choose from column name or column position.
Direction	Each has slightly different effects based on the field order you have selected. For example, if your field order is by column name, ascending or descending will put the fields into alphabetical or reverse alphabetical order. If your field order is by column position, ascending will put the columns in the order they appear, and descending will reverse that order.
Left align field names	The default is to align them to the right with a standard amount of space between them and the fields.

Set Column Widths

To change a column width

- » Move the mouse pointer to the grid headings, over the border between 2 columns, and drag it left or right.

If the columns of a query are the same from query to query, Toad will retain these custom column widths. For example, you could add a WHERE clause, or an ORDER BY, and so on, re-execute the query, and the column widths would remain the same.

Set Sequence

You can apply sequences to the data grid by using an auto-increment column, utilized through a sequence and trigger.

To create a trigger/sequence pair

1. From the Schema Browser | Tables page, right-click and select **Add | Trigger/Sequence Pair**.
2. Enter the required information.
3. Double-check the SQL created, make any required changes, and then click **OK**.

Highlighting columns populated with a trigger/sequence pair

When the option to highlight affected columns is selected, the applicable column in the Schema Browser data tab will be highlighted in aqua, and the Seq/Trigger column will be checked in the Columns tab.

This option is only applicable in the Schema Browser data grids, not those in the Editor, although the trigger/sequence pair will still populate the column there.

If the option is enabled, Toad checks triggers on the selected table for the comment: "--For Toad: Highlight Column <column name>" and highlights the specified column. The comment is automatically added to triggers by the Create Trigger/Sequence Pair dialog, but you can manually add it to existing triggers to achieve the same effect.

To highlight columns populated with a trigger/sequence pair in the Schema Browser

- » From View | Toad Options | Schema Browser - Visual, select **Highlight columns populated by sequence/trigger pair**.

Note: The INSERT statement occurs when you click the **Post** button in Toad, or when focus moves to a different row. Therefore, the sequence value cannot and will not appear in the grid until this happens.

Fix Current Column

You can anchor a column on the left side of the data grid. This can make it easier to track information when doing a lot of scrolling.

Note: Row numbers automatically display as fixed columns. With the exception of Row numbers, fixed columns remain editable.

To anchor a column

1. Click in a column to select it.
2. Right-click, and then select **Fix Current Column** to fix the selected column. The selected column is anchored to the left.

To move a column out of the fixed area

- » Drag it to the right of the bold fixed column divider bar.

Select Columns

You can hide columns from the data grid after running a query.

When using this dialog, you can choose to view the columns list alphabetically. This makes it easier to find the columns you want to display or hide.

To select columns to display or hide

1. Click  in the upper left corner of a data grid.
2. Click in the check boxes beside column names to select and de-select the columns that display in the grid.
3. Click **OK**.

Date/Time

Use this window to select a date from a calendar picker, instead of typing it manually.

To pick a date from a calendar

- » From the SQL Results grid, double-click a **DATE datatype column**. See "Date Editor" (page 962) for more information.

Rearrange Column Order

You can rearrange the order of your columns by clicking and dragging. If, after changing the order, you copy the data to the clipboard or save it to a file, the data remains in the new column order.

To rearrange column order

- » Select the column you want to move by clicking on its header, and drag it left or right to rearrange them.

Filtering Results

Filters

Filters reduce the amount of data displayed and let you display only what you want to see. They work by modifying the query used to fetch the data.

To set a browser filter

- » Click  and set filter parameters.

Schema Browser Filters

Each schema/owner name has a set of browser filters. For example, you can define one filter for the schema DEMO and a different filter for PRODUCTION and the appropriate filters will be loaded when you view each schema in the Schema Browser. You can narrow the focus to the filter results and ignore all other objects in the schema. This is helpful if the schema contains many objects, because the fewer objects that Toad needs to load, the faster it executes.

Note: If you have multiple Schema Browsers open to the same connection, the filter may not be applied consistently.

Filter windows vary depending upon which Schema Browser list you have selected. The basic filter window contains:

- Dropdown - select how you want to filter the items (including **None** which means no filter or clear filter)
- Box - enter characters to include or exclude
- Buttons/filter check boxes - filter the items further

Note: If you are not sure what the filter you have created will do, view or edit the filter before you run it. See "Edit Browser Filter Query" (page 990) for more information.

IN clause

When entering the IN clause, keep the following in mind:

The select statement is formatted as follows:

```
SELECT * FROM user_tables WHERE table_name IN (n) where n is what you enter  
in the filter box.
```

Therefore, to enter a table name, you must enclose it in single quotes. ('TEST'). This lets you enter multiple table names in this box, for example: 'TABLE1', 'TABLE2', 'TABLE3'. Or you can enter a subquery, such as:

```
SELECT SOMECOLUMN FROM SOMETABLE.
```

Filters in the View | Toad Options | Files dialog

This dialog box lets you customize the file extensions that display in the system dialog box windows. To add another filter, begin typing in a blank row.

Default filters include:

File	Filter
SQL	*.sql
Text Files	*.txt
Query Files	*.qry
All Files	*.*

Filter Condition

You can use the **Filter Builder** dialog to apply filter criteria to the SQL Results panel. See "Sort Data in Grid" (page 948) for more information about other ways to filter the grid.

To set a filter condition

1. From a grid, right-click and select **Filter Data**.
2. The default grouping is an AND clause. You can change this to OR by clicking on the word **AND** and selecting **OR**.
3. Click **Press the Button to add a new condition**.
4. By default, the condition will be listed applied to the first column in the grid. Change this if necessary by clicking on it and selecting a new column name.

5. Click on the condition and select the appropriate condition (LIKE, EQUAL TO, LESS THAN, and so on).
6. Click on <Empty> and add your criteria.
7. Add additional conditions or groupings.
 - a. Click **Filter** and then select **Add Condition or Add Group**.
 - b. Make changes to the new condition or group as described in the first steps of this procedure.

Excel Style Filtering

Toad automatically uses Excel style filtering in its data grids.

To use Excel style filtering

1. Hover over a column heading to display the drop down.

	EMPNO	ENAME	JOB	MGR
▶	7369	SMITH	CLERK	790
	7499	ALLEN	SALESMAN	769

2. Click the dropdown that appears in the column heading. Select the filter of your choice.
3. If you selected custom, fill in the boxes to specify the filter criteria. Click **OK**.

Viewing and Editing Data

Editable Resultsets

The data grid that displays the results of the SQL queries is fully editable providing that the query itself returns an updatable resultset. Query statements *MUST* return the ROWID to be updatable.

For example:

```
select * from employee
```

would not be updatable, whereas:

```
select employee.* , rowid from employee
```

would be updatable.

To reduce required keystrokes, you can substitute EDIT for SELECT * FROM and Toad will translate into the updatable version of the statement.

For example:

```
edit employee
```

will return the same result as `select employee.* , rowid from employee`.

If the resultset should be editable but remains read only, make sure the **Toad Options | Data Grids - Data** tab, **Use Read-Only Queries** check box is **NOT** enabled.

Copying Cell Contents

When you copy selected grid cells to the clipboard, you can choose to copy the column headers with the cell contents.

To copy only the contents of the selected cells

1. Select the cells you want to copy.
2. Press **CTRL+C**.

To copy the contents of the selected cells AND the column header captions

1. Select the cells you want to copy.
2. Press **CTRL+INSERT**.

Exporting the Dataset

See "Export Dataset" (page 390) for more information.

Grid: Copy Row

Note: The recordset MUST be editable in order for the Duplicate Row function to work. See "Viewing and Editing Data" (page 955) for more information.

To copy a row

- » Click the cell you want to copy, right-click and select **Duplicate Row**.

Note: This will copy the entire row just above its current location, ready for you to edit. If you have a sequence set, then the sequence number will advance when you finish editing.

Preview Current Column

You can display or hide a full row below each data row that shows the value of the selected column.

To preview current column

- » Right-click in the Data grid and select **Preview Current Column** toggle.

Entering the SYSDATE

Enter **SYSDATE** in a data grid date field and press **Enter**.

The value of sysdate is posted into the field.

Inserting and Deleting Rows

If your resultset is editable, you can insert or delete rows within it.

To insert a row

- » From an editable resultset, click  on the grid navigator.

To delete a row

- » From an editable resultset, click  on the grid navigator.

Posting and Reverting Data

After you have made changes to data in an editable results set, you can then either post the changes to the database, or choose to cancel them.

To post data

1. Make changes to an editable results set in the results grid
2. Click  in the grid navigator.

To revert data

1. Make changes to an editable results set in the results grid.
2. Click  in the grid navigator.

Support For LONG and LONG RAW

Toad supports both LONG and LONG RAW columns. Both of these datatypes can be viewed in the editors.

LONG columns are columns that contain character data up to 2 gigabytes. You define them as "long" in your SQL script. LONG RAW columns contain binary data that cannot be displayed such as GIFs, Word docs, and so on. Toad does not display the data for LONG RAW columns in a SQL Edit Grid.

LONG columns display the first several characters. LONG RAW columns display as (BLOB).

Editing LONG and LONG RAW columns

You can edit these columns in the Editor Results grid.

Note: The recordset must be editable for the popup editors to edit the data. If it is not editable, you can still use the popup editors to have a read-only view of the data. LONG columns cannot be saved to files from the data grid.

- For LONG columns, the Text Editor window displays. See [Text Editor](#) for more information.

- For LONG RAW columns the BLOB Editor is displayed. See "BLOB Editor Toolbar" (page 961) for more information.

Note: The popup editor for LONG RAWS also provides Load a File or Save to File functionality.

Within the editor:

- Load From File lets you select a file from your hard drive and place it into the LONG RAW column in the Oracle database.
- Save To File lets you take the data from the LONG RAW column from the database and save it to a file on your LONG and LONG RAW columns cannot be edited in the Schema Browser window.

To edit LONG columns

1. Create a table: "`create table long_test (id number, long_ col long)`"
2. Edit the table: "`edit long_test`"
3. Insert a row: 1 (double-click the long col cell)
4. Enter text.
5. Click the right arrow. "`select * from long_test`" should view all records, including (at least the first few chars) the long cols.

To edit LONG RAW columns

1. Create a table: "`create table long_raw_test (id number, long_raw_col long raw)`"
2. Edit the table: "`edit long_raw_test`"
3. Insert a row: 1 (double-click the long raw col cell)
4. Pick a file to import. "`select * from long_raw_test`" should view only id, long_raw_col should display (blob)

Access the Calculator

You can access a calculator within Toad datagrids. To use the calculator, the table must be editable. See "Viewing and Editing Data" (page 955) for more information. Use the calculator to perform calculations inside the cell. When you are happy with your final result, click outside of the calculator area and the new number remains displayed in the cell.

To access the calculator

1. In an editable results grid, click in a numeric cell.
2. Click in it again and a drop down arrow appears.
3. Click the arrow to display the calculator.

View BFILE data

You can View BFILE data.

A cell with BFILE information contains the word **BFILE**. In addition, another column is added to the grid to show the BFILE directory.

To view BFILE data

» Do one of the following:

- Right-click over the cell and select **popup editor**.
- Double-click on the cell.

This will display the data within Toad if it is an image or text file, or Toad will launch the associated program for that extension. You can also point the BFILE to a different file on the server.

View/Edit Large Columns

The resultset must be editable in order for you to make changes to the data in the Memo Edit popup window. Otherwise, the data remains read-only.

To open a memo-editor

» Right-Click and select **Popup editor**.

View Nested Table Data

A cell in the results grid that contains nested data will display as "DATASET".

To view nested table data

» Right-click over the cell and select **popup editor**.

View VARRAY Data

You can View and edit VARRAY data. A cell with VARRAY information contains the word **VARRAY**.

Note: The memo editor displays the first 100 entries in the VARRAY.

To view VARRAY data

» Right-click over the cell and select **popup editor**.

View Object Data

You can view and edit object data. A cell containing object type data displays the data in parentheses, delimited by commas.

Note: You can edit nested object types, but you will not be able to edit attributes of certain types, such as a nested table, or a CLOB.

To view and edit object data

- » Right-click over the cell and select **popup editor**

View CURSORs

Queries run with CURSORs display results in the data grids. The cell with the cursor will display the word CURSOR.

To view CURSORs

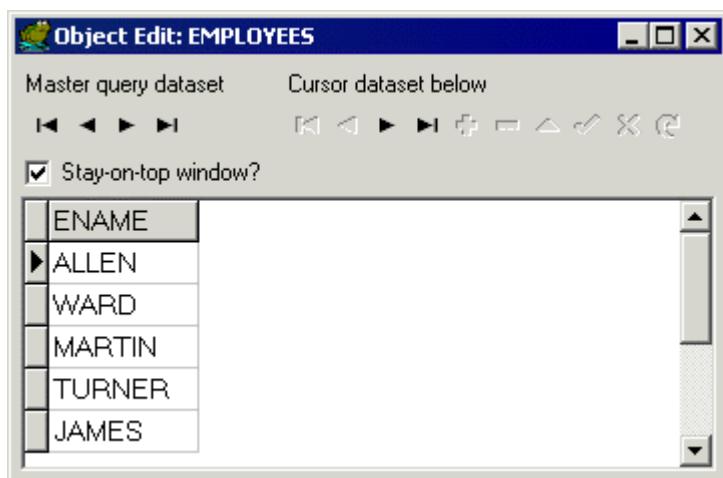
- » Right-click over the cell and select **popup editor**.

Note: Data can only be displayed once per cell each time the query is run. Once the data is displayed, it is lost until the query is run again.

Example

```
SELECT m.ename, CURSOR (SELECT e.ename
                           FROM scott.emp e
                           WHERE e.mgr = m.empno) employees
                           FROM scott.emp m
                           WHERE job = 'MANAGER'
```

When CURSOR is double-clicked in one of the results, the following dialog box appears:



BLOB Editor

In the SQL Results panel, a BLOB or ORABLOB entered in a column field indicates that a BLOB resides in that field. If BLOB or ORABLOB is entirely in capital letters, it indicates that the field is not null. These words in initial caps (Blob; Orablob) indicate that the field may be null, or the BLOB not initialized.

You can edit a BLOB.

To edit a BLOB

» Do one of the following:

- From thedatagrid of a table containing a LONG RAW or BLOB datatype column, right-click the field and select the Popup Editor.
- From a create/alter table window, LONG RAW or BLOB datatype, click  in the LOB column of the grid.

BLOB Editor Toolbar

The BLOB editor has a straight-forward toolbar to help you in inserting, editing, and navigating blobs.



Button	Command
	Load a file
	Save BLOB to file
	Save BLOB to file and open BLOB Note: You must include the appropriate file extension.
	View Data as Hex or Text
	Go to First Record
	Go to Prior Record
	Go to Next Record
	Go to Last Record
<input checked="" type="checkbox"/> Stay-on-top window?	Stay on top window - keeps the BLOB editor on top of other windows.

Date Editor

You can use the date editor to change the date, select the date format, null the date, or null the time. You can navigate through records as in the Text Editor, and post or cancel the edit.

To access the date editor

- » Double-click in a data grid cell containing a date.

To change the date

- » Click the dropdown beside the date and select the correct date from the popup calendar.

To change the date format

- » Select or clear the **Long date format** check box.

To null the date or time

- » Click  beside the appropriate information.

To enter the SYSDATE

- » Click **SYSDATE**.

External Editor

You can use an external editor of your choice, and swap out the text from the Toad Editor to the external editor, edit the text, and bring the results back into Toad.

To set up your External Editor

1. From the View menu, select **Toad Options | Executables | Editor**.

In the Editor box, enter the full path of the external editor you want to use, a space, and %s

For example: c:\winnt\notepad.exe %s

To open text in External Editor

- » From the Edit menu, select **Load in External Editor** (CTRL+F12).

Note: If you have not saved the contents of the Toad editor to a file, you will be prompted for a filename before launching the external editor.

To return to Toad from the External Editor

1. Save the file from the external editor and then close the editor.
2. Click on Toad. You will be prompted to reload the contents of the file only if the **View | Toad Options | Editor | Open/Save | Prompt for reload on activation if timestamp has changed** option is checked.

Popup Editors

Use the text editor to edit the contents of lengthy columns. Use the date editor to change the formatting of date columns. In addition, Toad provides popup editors for several other file formats. (See Related Topics)

Note: The recordset must be editable in order to edit the data in the Popup Editor window. See "Viewing and Editing Data" (page 955) for more information about making a recordset editable.

To access the Text Editor

» Do one of the following:

- From the SQL Results grid or **Schema Browser** data grids, right-click and select **Popup Editor**.
- Double-click on a CHAR, VARCHAR, CLOB, or LONG column.

To access the Date Editor

» Do one of the following:

- From the SQL Results grid or **Schema Browser** data grids, right-click and select **Popup Editor**.
- Double-click on a Date column.

DBMS Output

DBMS Output Window

Oracle provides a package, called **DBMS_OUTPUT**, which is specifically designed with functions for debugging PL/SQL code. It uses a buffer that your PL/SQL code writes into, and then a separate process queries the buffer out and displays the contents.

Output only appears after the procedure has completed execution, not while you are single stepping through the code. In nested procedure calls, all procedures must have run to completion before any DBMS Output content is displayed.

To access the DBMS Output window

» From the View menu, select **DBMS Output**.

Generating DBMS Output

The Editor has a **Right-Click menu** option that will generate a **DBMS_OUTPUT** statement for a highlighted variable. The same menu has an option to create a blank **DBMS_OUTPUT** statement.

To generate an output line from a variable

1. Highlight the variable in the Editor.

Right-click and select **Output Statements | Make Output Statement**.

Note: The statement is created on the clipboard.

2. Paste the statement in your code where you want it.

To generate a blank output statement

1. In the Editor, right click and select **Output Statements | Blank Output Statement**.
2. Paste the statement in your code.

Polling for DBMS Output

An application must poll Oracle for the output results, and if the polling option is turned on. Toad's Output window polls every 5 seconds. You can increase or decrease the frequency of polling with the slider located at the top right of the window.

Editing the DBMS Output Display

One feature of the DBMS Output window is the ability to edit the output display. This allows you to note what you did to receive the output.

For example, when debugging a procedure named MyProc that expects a single number parameter, you can execute the procedure from an Editor window with the following statement:

```
begin MYPROC(1); end;
```

Prior to executing the above, you can document the call in the DBMS Output with a comment:

```
Calling MyProc with 1
```

Then turn output **ON** and execute **MyProc**. The DBMS_OUTPUT statements will display after your notes about the call.

Using the DBMS Output window for Debugging

When used with an Editor window, the DBMS Output window is effective for developing and debugging stored procedure code.

Edit the code, test the code, tweak the code, and repeat. You can make notes within the DBMS Output window, and the standard copy, cut, and paste keys work in the DBMS Output box.

Finding Data

Find in Editor

Use this dialog box to enter a keyword or phrase to search for in the Editor window.

There are options for case sensitive, finding whole words, using Regular Expressions, and searching forward or backward in the buffer.

If text is highlighted prior to opening the Find dialog box, that text will be placed into the **Text to Find** data entry box. If no text is highlighted, then the word at the cursor will be placed in the **Text to Find** data entry box. The last *n* find items are available in the dropdown list. They are NOT saved from Toad session to Toad session.

You can also copy other text and paste it into the Find dialog box using **CTRL+V**.

Find may be available for a window even if the Find button is not present on the toolbar. In these cases, you easily can use **CTRL+F** from the keyboard to access this feature.

To open the Find box

From the Edit menu, select **Find** (**CTRL+F**).

Show All

This command only works after you have performed the Find command. After you use FIND to search through your text for a word or phrase, you can click **Show All** from the **Search** menu and Show All will highlight every occurrence of the search phrase.

The highlighting is removed with any change to the text in the editor.

To show all after a find

Select **Search | Show All**.

Find in Grid

Use this dialog box to find the first row of matching data in a grid. Toad will search all records for the value, and position the recordset to the first matching value. If the records are cached then the search is fast. If Toad has to query ahead in the recordset, then you will have to wait for the additional rows to be fetched from the database.

Incremental Searching

To find data incrementally

1. Click in the column you want to search.
2. Type the first few characters of the item you want to find.
3. Press **F3** to continue stepping through the grid.

Multi-Column Searching

You can use this method to find data in one column, or in many, or items that match two or more criteria.

To find data

1. Right-click in the grid and select **Find Data** (CTRL+F).
2. Select the **column** to search, enter a **value** to search for, click **Add**.
3. If you want to perform a multi-column search, select more columns and values.
4. Click **OK** and the data grid advances to the first occurrence of the search criteria.
5. To find the next occurrence of the search criteria press **F3**.

Find In Files

To find in files

1. From the Search menu select **Find in files**.
2. Enter the text you want to find.
3. Select or clear options.
4. Select the directories you want to search in the **File mask** box.
5. If you want to include subdirectories, check the **Include subdirectories** box.
6. Click **OK** to search in files.

Find Next, Find Previous

The Search | Find Next and Search | Find Previous menu items are only enabled after you have performed a Find.

- Search | Find Next (F3) will go to the next occurrence of the text you were searching.
- Search | Find Previous (or SHIFT+F3) will go to the previous occurrence of the text that you were searching.

Find and Replace Text

Use this dialog box to replace a keyword or phrase with another keyword or phrase, in either the Editor window or the Editor window.

To find and replace text

- » From the Edit menu, do one of the following:

- Select **Replace**.
- Click the **Replace** button on the edit toolbar.
- Press the **CTRL+R** shortcut.

There are options for finding whole words, searching only selected text, performing a case sensitive search, and replacing one at a time or all at once. The defaults are finding partial words, not case sensitive.

You can also copy other text and paste it into the Replace dialog box using **CTRL+V**.

Goto Line

If you have a large file, you may want to use this command to move your cursor to a specific line number.

You must enter an integer from 0 to the last line number of the buffer contents.

You can also use bookmarks to quickly navigate around the buffer contents. See "Bookmarks" (page 873) for more information.

To goto a specific line

1. From the Edit menu, select **Goto Line**.
2. Enter the line number where you want the cursor.
3. Click **OK**.

Object Search

Object Search searches all database objects, table columns, index columns, constraint columns, trigger columns, and procedure source code for a user entered phrase. Each of the previously listed items can be searched or excluded from the search by using options.

To access Object Search

- » Do one of the following:
- From the main toolbar, click .
 - From the Search menu, select **Object Search**

To create an object search action

- » Click  on the **Automation Designer, DBMisc** tab.

Search Term

Specify your search term in the box. You can select to search for an exact match, starts with, occurs anywhere, and you can specify a case-sensitive search by selecting that box.

Object Status

If desired, you can limit your search to Valid or Invalid objects. The default choice is to search both.

Specifying your Search

The object search is an extremely powerful feature. You can search for almost anything or combination of things you can conceive.

By default, Toad searches through all objects in the schema you specify to find the search term you enter.

You can limit your search to:

- Schemas
- Object names
- Column Names
- Source
- Any combination of these

Schemas to Search

Select the schemas you want to search. You can right-click in this area to select all, invert your selection, and otherwise control your selection options.

Search Object Names

When the search object names box is checked, you can select object types from the object list. You can right-click in this area to select all, invert your selection, and otherwise control your selection options.

Note: Currently the DB Admin module is required to search the following objects: Contexts, Dimensions, Directories, Evaluation Context, Library, Operators, Policies, Policy Groups, Profiles, Refresh Groups, Resource Plans, Rules, Rule Sets, Scheduler Chains, Scheduler Jobs, Scheduler Job Classes, Scheduler Programs, Scheduler Schedules, Scheduler Windows, Scheduler Window Groups, and Tablespaces.

Search Column Names

When the search column names box is checked, you can select object types with columns from the list. You can right-click in this area to select all, invert your selection, and otherwise control your selection options.

Source Search

The Search Source area of the window uses the Oracle INSTR function to determine if the search term exists in a given object's source. Because of this, when performing a Source Search, the search always searches as if the search team has specified **Occurs anywhere**, regardless of what is selected in the Search term area.

Object Search DDL Script Options

This window lets you alter the DDL script inclusions for the Object Search window. You can add or remove DDL scripts for Tables, Indexes, Views, Users, Tablespaces, and All others. See

"Object Search" (page 967) for more information.

Click in the check boxes to include (checked) or exclude (unchecked) the scripts. By default, all scripts are included.

Regular Expressions

Regular Expression Searches

Many books have been written about the use and usefulness of regular expressions. You can find additional information at the website www.regular-expressions.info, which also includes a list of recommended books on the subject.

Note: This site has no connection to Quest Software, Inc., and opens in a new browser window.

Toad uses the PERL regular expression syntax, and can be used in both the find and replace boxes throughout, as well as the Parser tab within Language Management. See "Language Management Overview" (page 688) for more information about the parser tab.

This topic will touch on the basics of using regular expressions. Regular expressions can be used to specify text by its characteristics, rather than searching for exact characters. In addition, you can use regular expressions to find strings that are not otherwise easily searched. This is one of the basic uses for regular expressions.

Replace with Template

When you select regular expressions in the Replace text dialog, you can also choose to Replace with Template. See "Example " (page 971) for more information.

Simple Matches

Simple matches simply find the occurrence of the specified character. Unless the string contains a metacharacter, Toad will use simple matching. For example, entering "toad" will match "toad", and so on.

Metacharacters

Special characters called metacharacters serve purposes other than matching themselves. Toad can be told to match a special character exactly if necessary. To escape the character and have it match itself, simply precede it with a backslash (\). For example, ^ means "match beginning of string, but \^ will find occurrences of "^". In the same way, characters which are not metacharacters in themselves are sometimes made into metacharacters by preceding them with the backslash. For example "t" will match all "t"s. However, \t finds the tab character.

Metacharacters are the heart of regular expressions. There are several different kinds of metacharacters. Some of the most often used are described below:

Expression	Meaning
\r	Carriage return

Expression	Meaning
\n	New line
\f	Form feed
\t	Tab character
\b	Backspace
\s	Whitespace character
\S	Negation of \s (so all non-whitespace)
.	Any single character. For example, c.b matches cab, cob, and cub.
[]	Any one of the characters in the brackets, or any range of characters separated by a hyphen, or a character class operator.
[^]	Any character that EXCEPTING those after the caret. For example, c[^u]b will match cab and cob, but not cut.
^	Start of a line
\$	End of a line (but not the line break characters)
*	Matches none or more of the preceding characters or expressions. For example, bo*t matches bt, bot, and boot.
?	Matches zero or one of the preceding characters or expressions. For example, bo?t matches bt, bot, but not boot.
+	Matches one or more of the preceding characters or expressions. For example, bo+t matches bot, and boot but not bt.

Replace with Template

If you choose to use a regular expression search, you can also replace the text you find with a template.

When the Replace with template is checked, the replace field is not valued as a string anymore, but rather code to back reference the substrings in Text to find.

To replace with template

1. Select **Edit | Replace Text (CTRL+R)**.
2. Select **Regular Expressions**.
3. Select **Replace with Template**.

4. Enter the **Text to Find**.
5. Enter the template code in the **Replace with** box.

Example

You want to replace the expression "select * from emp." with substring parts.

1. In the **Text to find** field, enter the regular expression with each substring surrounded by parentheses:

`(se.*t) (.*)? (emp)`

2. In the **Replace with** field, enter the code referring to the substrings. For example:

Entering	Results in
\1\2\3	Setting reference points to the substrings: \1 correspond to (se.*t) \2 correspond to (.*?) \3 correspond to (emp)
\1\2dept,\3	Replacing the substring \2 with "dept.". When you click OK , "SELECT * FROM EMP" becomes "SELECT * FROM dept, EMP". Note: If Replace with Template is NOT checked then the values do not reference the substrings, and Replace with text is treated as a string to insert. So SELECT * FROM EMP would become: \1\2dept,\3.

Examples of Regular Expressions

Below are some expressions of regular expressions using the metacharacters listed. See [Metacharacters](#) for more information.

Expression	Matches
<code>^make</code>	string 'make' only if it begins a line
<code>make\$</code>	string 'make' only if it ends a line
<code>^make\$</code>	string 'make' only if it is the only string in the line
<code>m.ke</code>	strings such as 'make', 'mike', 'mbke', 'm1ke', and so on.
<code>mat\dh</code>	strings such as 'mat1h', 'mat2h', and so on, but not 'match', 'matbh', 'mathr' and so on.

Expression	Matches
mat[\w\s]h	strings like 'match', 'mat h', 'mathh', but not 'mat1h', 'mat2h', and so on.
mat.*h	strings like 'match', 'matasd kfjdf9sasf', and 'math'.
mat.+h	strings like 'math', 'masjd fksjfs9fsj', but not 'math'.
mat.?h	strings like 'matah', 'matbh', and 'math', but not 'mat9h.'
mat{2}h	the string 'matth'
mat{2,}h	the string 'matth', 'mattt', 'matttth', and so on.
mat{2,3}h	strings like 'matth' or 'matth', but not 'mattth'.
(match){6,10}	strings which contain 6, 7, 8, 9, or 10 instances of "match".
mat([0-9] a+)h	'mat0r', 'mat1r', 'match', 'matah', and so on.

Generate Test Data

Generating Data Overview

Note: This Toad feature is activated in the Professional Edition of Toad.

You can use Toad to generate test data for your database.

You can generate test data from the Schema Browser, Database Browser and ER Diagram windows. You can generate data for multiple tables at one time or for single tables.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

Accessing the Generate Data window

To access data generation from the Schema Browser

1. Open the **Schema Browser**.
2. Select the appropriate **Schema**, and then select **Tables**.
3. In the object pane select the tables you want to generate data for.
4. Right-click and select **Generate Data**.

To access data generation from the create and alter table windows

Note: You cannot generate specific data for each column from the Create/Alter table (for example: "real" names and addresses). You can, however, generate random data (including Unicode data where applicable). To generate specific "real-life" data, see the Schema Browser, Database Browser, or ER Diagram windows after the table has been created.

1. Enter the information to create a new table. See "Altering Tables" (page 1074) for more information.
2. Click the **Generate Data** tab.
3. Set generate data options. See [Generating Data Options](#) for more information.
4. Click **OK**.

To access data generation from the Database Browser

1. In the Database Browser, in the left tree view, expand an open connection down to the objects level. See "Database Browser" (page 532) for more information.
2. Click **Schema Objects**.
3. In the right hand side (Schema Browser view) follow the instructions for accessing Data Generation from the Schema Browser.

Accessing data generation from the ER Diagram windows

1. Open or create an ER diagram. See "ER Diagram" (page 709) for more information.
2. In the left hand tree view, select the tables for which you want to generate data.
3. Do one of the following:
 - Either right-click and select **Generate data**,
 - Click  on the ER Diagram toolbar.

Data Generation - Options

Use the options pane to specify the requirements of the data you want to generate. See "Generating Data Overview" (page 972) for more information.

Note: This topic only covers unfamiliar information. It does not include all step and field descriptions.

General Options Node

Option	Description		
General			
Random Data Engine	<p>Select the data engine you want to use.</p> <p>Internal</p> <p>Internal data generation creates a script with "n" INSERT statements per table (depending on the individual table's settings). An option is also available to commit every "x" rows.</p> <div style="border: 1px solid #ccc; padding: 5px;"><p>Caution: This will create a very large SQL script, which will take longer to execute, but does not require any packages installed on the database server.</p></div> <p>DBMS_RANDOM</p> <p>This option uses Oracle's DBMS_RANDOM package to generate data, and is similar to the behavior in Toad 9.7. DBMS_RANDOM needs to be installed on the database server for this option to be available.</p> <p>TOAD_DATAGEN</p> <p>The TOAD-specific package TOAD_DATAGEN is used to generate data on the server. The advantage is that this will generate a much smaller SQL script, and will perform faster.</p> <p>Note: You will need to install the TOAD_DATAGEN package through Server Side Object Wizard in order to use this feature. This package can be installed locally, or in the global TOAD schema. See "Installing Server Side objects" (page 172) for more information.</p>		
Transaction Commit mode	<p>Specifies the commit action to take after each table. DDL statements, such as TRUNCATE TABLE, DISABLE/ENABLE CONSTRAINT, AND DISABLE/ENABLE TRIGGER will automatically apply an implicit COMMIT against the database. This option specifies what level of commit to take between actual data generation blocks.</p> <div style="border: 1px solid #ccc; padding: 5px;"><table><tr><td>Commit work</td><td>Places a COMMIT statement after data generation block for each table.</td></tr></table></div>	Commit work	Places a COMMIT statement after data generation block for each table.
Commit work	Places a COMMIT statement after data generation block for each table.		

Option	Description
	<p>Do not explicitly commit</p> <p>Does not place a COMMIT statement after data generation block.</p> <p>Commit every n rows</p> <p>Set the number of rows you want to generate between every COMMIT statement.</p>
Enforce Referential Integrity	<p>When selected, Toad creates data where all foreign keys in a details table contain only appropriate values found in the referenced table.</p> <p>If you are generating data on a table that has referential integrity, this option defaults to checked. Otherwise, it defaults to unchecked.</p> <p>Note: This option can significantly increase execution time because Toad must query every row of the reference table for each entry in the details table. Because of this, you may want to schedule this task at a later time so as not to tie up system resources.</p>
Allow Reproducible Sequences	<p>By default, the data generation window initializes its random generator using the system timer from gv\$timer. Select this option to use a hard-coded random seed, allowing the script to reproduce the same sequence of data on multiple Oracle servers.</p>
Constraints	

Option	Description
Disable Constraints before Data Generation	When selected, Toad will disable all constraints (primary/foreign keys, unique, or check) on the selected table before generating data. If you also wish to maintain foreign keys while generating data, also select Enforce Referential Integrity .
Enable Constraints after Data Generation	When selected, Toad will enable all constraints (primary/foreign keys, unique, or check) on the selected table after generating data. Note: This step may produce an error on Primary/Unique keys if duplicate data was generated in the table.
Triggers	
Disable Triggers before Data Generation	Disables any triggers associated with this table. This can be useful when a trigger is associated with an INSERT event that does additional work to the selected table, or other table in the database. By disabling these triggers, you ensure they will not be executed every time a record is appended during data generation.
Enable Triggers after Data Generation	Enables all triggers associated with this table after data generation has completed. Doing this ensures that these triggers fire for subsequent insert or update statements.

Table Options

Option	Description
General	
# of Records to Create	Enter the number of records you want to create in this box. Note: This option is available from the Table node only.
Data Truncation	
Reuse Storage	When selected, Toad instructs Oracle to retain the space from the deleted rows allocated to the table. This space can then be re-used by the new data generated.
Drop Storage	When selected, storage will be deallocated as data is truncated. Space can then be used by other objects in the tablespace.
Data Grid tabs	Use the grids to view a summary of columns and sample data as you have set up options for this table. All options must be set by selecting appropriate nodes.

Column Options

Option	Description
General	
Generate Data Generator	Select the type of data you want to randomly generate. Some options include random strings, names, street addresses and city names.
Custom Options	Custom options are selected based on column setup and the data generator you have selected.
Full City	For US cities, this includes Cityname and State. For International cities, it includes Cityname and Country.
SQL Statement	Only valid for SELECT statements that return a single value.

Working with Database Objects

Schema Browser Window Overview

Note: Some of these features may not be available unless you have the current commercial version of Toad with the DB Admin Module.

To access the Schema Browser

- » Do one of the following:
 - Click on the main toolbar.
 - Select **Database | Schema Browser** from the main menu.

Note: You can also set the Schema Browser to open automatically when a new connection is made by going to the **View | Toad Options | Windows** dialog box and checking the check box in the **Auto Open** column of the **Schema Browser** row.

Object Pane - Left Hand Side Object Tabs

The left hand side of the Schema Browser provides a list of object types that you can view.

Hiding Object Tabs

You can select or deselect which objects you want to display. See "Personalizing the Schema Browser" (page 982) for more information about configuring your Object Tabs.

Filtering the Object List

The Quickfilter Edit box is located below the Schema dropdown for the tabbed and dropdown Schema Browser views. Using the quickfilter, you can filter the object list without querying the database again. This provides a quicker way to filter the list than using the browser filters.

See "Using the QuickFilter Box" (page 993) for more information about the Quickfilter Edit box.

See "Schema Browser Filters" (page 989) for more information about browser filters.

Refreshing Data

To refresh the current object list in the object pane

- » Click  on the toolbar above the details pane (F5).

Details Pane - Right Hand Side Information

When you select an object, details or the DDL structures for that object are displayed in the right panel. This eliminates having to drill down through hierarchical mountains to find the desired data. It also lets you compare details between objects of the same type with one click. Keyboard users can easily use the scroll keys to perform the same tasks.

For performance, Toad delays fetching some schema lists until the dropdown or tab that requires that list is activated.

You can cancel some long running list-populating queries from the **Statement Processing** popup.

From the Schema Browser you can drop most objects, enable/disable applicable objects, and disable triggers for a table or for an entire schema. Procedures, Functions, Packages, Triggers, and Views can be recompiled, or they can be extracted from the database and loaded into the clipboard or Editor.

To hide or display the details pane

- » Click  and select **Toggle RHS visibility** (F12).

To refresh data in the current details pane

- » Click  on the toolbar above the details pane (Shift+F5).

Schema Browser Options

For more information about Options, see the following:

- Schema Browser - Data and Grids
- Schema Browser - Data (page 674)
- Schema Browser - Visual
- Schema Browser - Types Tab (page 680)

Right-Click Menus

The Schema Browser panels contain right-click menus. Many of the pages, such as Tables and Views, have enhanced right-click menus that contain menu items for all the buttons on the objects panel and details panel of the page.

Auto-Refreshing the Datagrid

You can set the Schema Browser to automatically refresh the datagrid while you are working with a specific object.

This setting only lasts for your active dataset, and will turn itself off if you select another object, close the Schema Browser, or so on.

To set auto-refresh

1. Open the **Schema Browser**.
2. Select an object and click the **Data** tab in the right hand side.
3. Position your cursor over the Navigation buttons in the right hand side toolbar and right-click.
4. Select **Auto Refresh Data Grid**.

Icon Legend

Many of the windows within the Schema Browser include icons to identify the various objects included.

Toad includes an Icon Legend that you can use to easily decipher these images.

To access the icon legend

- » Click  on the Schema Browser toolbar.

Note: The Icon Legend opens with the node for the Schema Browser page you have active expanded and the remainder of the nodes collapsed.

Privileges

Use this window to view or modify the privileges of the selected table or view to other user schema accounts.

To access the Privileges window

1. Access this window from the Schema Browser. Select the **Tables** tab, **Views** tab, **Sequences** tab or **Procedures** tab.
2. Select an object from the list on the tab and click  on the objects pane toolbar.

The Privileges window allows you to view, grant, and revoke privileges on a database object. You can view all users and their privileges. If you are not the object owner, you can only grant privileges if you have been given the "grant option".

Grants are highlighted in blue and admin grants in yellow.

Troubleshooting

If you do not have sufficient privileges to alter an object, a warning message appears, and the privilege will not be changed. You can still view everyone's privileges for that object, and you can still reorder columns.

If you do not see all users, make sure **Hide privileges granted by other users** or **Hide users/roles with no privileges assigned** are not selected.

Schema Browser Toolbars

Objects Pane Toolbars

The Schema Browser window contains toolbars for the Object Types in the objects pane (left panel) and on some of the details panes (right panel). Each Object Type has its own toolbar, and these are described in the topics for the specific object type.

Details Pane Toolbars

Main details pane toolbar



The main details pane toolbar is located at the top of the details pane on the right side of the Schema Browser window.

Button	Command
	Show history - This dropdown lists the most recent Schema Browser pages you have visited. Select one from the list to return to it. See Schema Browser - Visual for more information.
	Refresh all Lists - Refresh all the lists in both the objects pane and the details pane.
	Refresh objects pane - Refresh just the data in the objects panel
	Refresh details pane - Refresh just the data in the details pane.
	Clear alldatagrid filters - See "Clearing Datagrid Filters" (page 992) for more information.
	Icon Legend - See "Icon Legend" (page 980) for more information.
	Browser Style - See "Personalizing the Schema Browser" (page 982) for more information.
	Change active session - You can click the image to call the Change Session dialog box, or you can click the arrow and choose from open sessions listed in the dropdown.

Specific details pane toolbars

In addition to the toolbar on the main details pane, toolbars are located on some of the details panes for specific objects. See the specific object types for more information.

Statement Processing

This dialog box appears when you execute long queries in the Schema Browser window.

Use it to cancel long-running Schema Browser list populating queries.

Create Objects in Another Schema

From the Schema Browser, you can use existing objects to create identically formed objects in a different schema. This feature uses the Export DDL feature to export the code for the objects, and then import it into the new schema.

To create objects in another schema

1. From the Schema Browser, select the object type you want to copy.
2. Select the objects you want to copy in the object pane, and then right-click and select **Create in another schema**.
3. Select export settings and click **OK**. See "Export DDL" (page 396) for more information.
4. Enter the **destination connection** and **destination schemas**.
5. Click the **Script** tab and review the script Toad has created.
6. Click **Execute**.

Personalizing the Schema Browser

Personalizing the Schema Browser

Note: Some of these features may not be available unless you have the current Commercial version of Toad. Some of these features may not be available without the DB Admin Module.

You can personalize how the Schema Browser displays to better suit the way you work. Each display option has different advantages.

You can display the Schema Browser in the following ways:

Style	Description and Notes
Dropdown Object Types	The object types list displays in an alphabetical dropdown.

Style	Description and Notes
Treeview	The object types list displays in tree view.
Tabbed Object Types	The object types list displays in one of two ways: <ul style="list-style-type: none">• Multiple rows of tabs• One line of tabs with scroll bars <p>Note: Choosing Tabbed Object Types also lets you drag object names to the Editor.</p>
Toggle RHS Visibility (F12)	Hide or display the Details Panel

In addition, you can:

- Choose to display images on the Left Hand Side (LHS) of the screen
- Configure Object types
- Configure tabs on the Right Hand Side (RHS)
- Toggle RHS visibility (hide or display the right hand side)

See "Changing the Browser Display" (page 983) for more information.

Changing the Browser Display

To change the display from the Toad Options page

1. Click  on the main toolbar.
2. In the left pane, select **Schema Browse | Visual**.
3. In the right pane, select the appropriate display options.

Note: See "Schema Browser - Data" (page 674) for more information about all the Schema Browser Options.

To change the display from within the Schema Browser

1. Click  on the Schema Browser toolbar.
2. From the drop down menu, select the display type you want to use.

Configuring Browser Tabs

If you are using Tabbed Object Types, the Schema Browser object types right-click menu has a **Configure** menu item, which opens the Configure Browser Tabs window that lets you retitle and rearrange the tabs.

Changing this configuration will affect all four types of Browser tabs: single line tabs, multiline tabs, dropdown, and treeview unless otherwise noted.

To open the Configure Browser Tabs window

1. Click  on the Schema Browser toolbar
2. Select **Configure LHS Object Types**.

Browser Tabs Order

To change the caption

- » Click in a caption cell and enter the new name.

To rearrange the order of the tabs

When complete, the first item on the list becomes the default tab.

Note: You can only rearrange the order of tabs if you are in a tabbed view.

- » Do one of the following:
 - Click in the gray box on the far left of the row of the item that you want to move, and drag the row to its new position in the list.
 - Select an **Object Type** or **Caption** cell and click the **Up Arrow** or **Down Arrow** in the window to move the whole row up or down in the list.

Loading and Saving Configurations

You can save and load different configurations. This gives you more flexibility when you are working, because you will not have to carefully select and deselect tabs when you are working in different manners.

To save a configuration

1. Make any changes to the tab order and visibility.
2. Click  at the bottom of the window.
3. Enter a name for your configuration.
4. Click **OK**.
5. Continue creating different configurations, or click **OK** to leave the window.

To load a configuration

1. Click  at the bottom of the window.
2. Select the configuration from the list.

To delete a configuration

1. Click  at the bottom of the configuration window.
2. Select **Delete Configuration** from the menu.
3. Select the configuration from the list or enter the name in the **Name** box.

4. Click **OK**.

Caution: There will be no warning. The selected configuration will be deleted immediately.

Restoring Defaults

To restore defaults

1. From the **Configure Browser tab** window, click .
2. Select one of the following options:
 - Restore Default Captions
 - Restore Default Visibility
 - Restore All

Caution: No warning will be given, but the default settings will be restored.

General Schema Browser Actions

General Schema Browser Actions

There are several things you can do from the Schema Browser, no matter the object type you are browsing.

To do	See
Create Object Scripts	Export DDL (page 396)
Drop Objects	Dropping Objects (page 986)
Filter the Browser	Schema Browser Filters (page 989)
Choose columns in Object list	Choosing Columns in Object List (page 987)
Jump to Object	Schema Browser: Jump to Object (page 987)
Create Custom Queries	Create Custom Queries (page 988)
Add objects to the Project Manager	Adding Objects to Project Manager (page 986)

Adding Objects to Project Manager

Adding Objects by Dragging and Dropping

You can add objects to your Project Manager simply by dragging them to the node where you want them to reside. This way you can have your Project Manager set up however you like it, and the Nodes named by you.

You must drag the object to a node designed for it. (In other words, tables need to go to a tables node under the correct connection, and so on.) Toad will not let you drag an object to an unacceptable node.

To add objects by dragging and dropping

1. Select an object, or multi-select several objects in the Object list in the Schema Browser.
2. Drag to the node in the Project Manager where you want it to reside.

Adding Objects from the Right-Click Menu

Using the right-click menu to add objects has both advantages and disadvantages. Chief among its advantages is that you can create a new project on the fly.

All nodes beneath the new project are created and named for you.

For example, if you add a table called "SPEC" to a new project that you call "Test," you will have the following nodes created for you:



To add objects using the menu

1. Select an object, or multi-select several objects in the Object list in the Schema Browser.
2. Right-click and select **Add to Project Manager**.
3. From the Select Project dialog box, either select a project name from the drop down menu, or enter a new project name.
4. Click **OK**.

Dropping Objects

Many objects can be dropped directly from the Schema Browser.

If an object has a **Drop** button, it is enabled whenever an object is selected in the list on the respective tab.

To drop objects

- » Select an object and click  (DELETE).

Caution: Toad will confirm any DROP operation on the Browser but after confirmation, **DROPS CANNOT BE REVERSED.**

Choosing Columns in Object List

By default, the object list in the Schema Browser displays the name of the objects you can select. More information about these objects is available, however. Columns available for display change depending on the type of object viewed.

To choose columns to display

1. Select the type of object you want to display (tables, views, constraints, and so on).
2. In the objects pane, right-click the column header. Select the column you want to display.
3. Repeat for any columns you want from those available.

Schema Browser: Jump to Object

Objects are displayed in the Schema Browser right hand side in one of two ways. They can be within a data grid, or within a label. From these displayed objects, you can perform a describe on an object, or jump to another object. You can do these in two ways.

Data Grid

If the object is present in a grid on the right hand side of the Schema Browser, you can describe the object or jump to the object.

To describe the object

- » Press **F4** to perform a describe on the object.

To jump to the object

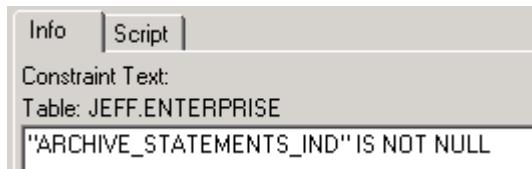
- » Press **Shift+F4**

Labels

If the object is present in a label you can:

- Jump from the label directly to that object in the Schema Browser.
- Click on the object label to perform a describe.

For example, in the following excerpt from the right hand side of a constraint, you can:



- Click **JEFF.ENTERPRISE** to perform a describe
- Hold down **CTRL** and click **JEFF.ENTERPRISE** to jump to the JEFF.ENTERPRISE table in the Tables page of the Schema Browser.

Create Custom Queries

You can create quick custom queries from the Schema Browser. The query will be built with your selected objects and placed into the Editor for editing or running. See "Schema Browser Window Overview" (page 978) for more information.

To create a custom query

1. In the left hand panel of the Schema Browser, select the **objects** you want to use for the query.
2. Right-click and select **Custom Queries**.
3. Choose from the list of default queries.

To edit custom queries

- » Right-click in the Schema Browser and select **Custom Queries | Edit Custom Queries**.

Note: See "Edit Browser Filter Query" (page 990) for more information.

Creating a new Query Template

Custom queries are designed to select from the data dictionary about the tables you select, rather than making custom SELECT statements. If you are creating a new query template, this needs to be kept in mind.

For example, the following query is not valid as a custom query because there is no specific object stated:

```
select * from <ObjectOwner>.<ObjectList>
```

However, this more specific query is valid:

```
select *
from dba_tables
where owner = <ObjectOwner>
and table_name in <ObjectList>
```

To create a new query template

1. Open the **Edit Custom Queries** window as described above.
2. Above the query list, click .
3. Enter your new query name, and query.
4. Click  to create the query and add it to the selection list.
5. Use the new query the same way you would use one of the default queries.

Refresh Options

When working in the Schema Browser data grid, there may be times when the refresh options you have set interfere with the action you want to take. In this case, you can alter the options you have selected without opening the Options page.

To change data grid options from the Schema Browser

1. From the Schema Browser | Tables, View or Snapshots page, select an object and click the **Data** tab in the details pane.
2. Right-click over the data grid and select **Refresh Options**.
3. Select the refresh options you want in effect, and clear the check boxes for the others.
4. Click **OK**.

Browser Filters

Schema Browser Filters

Browser filters are useful for schemas that contain a large number of objects. The fewer objects that Toad has to load, the faster it executes. It is useful to narrow down the focus, (such as only those object names beginning with "Toad_ ", and so on) temporarily ignoring all other objects in the schema.

Note: For performance reasons, Toad caches the list of table names for the current schema once the list has been queried from any window. The browser filter, although primarily intended to filter the Schema Browser window, also affects the table lists throughout Toad. So, for example, if your filter is set to display only tables that begin with GEO, every table list will display a filtered list until the filter is changed.

To use browser filters

1. Do one of the following:
 - Select **Session | Schema Browser Filters**.
 - Click  in an objects pane of the Schema Browser. This will display the browser filter for the selected Object Type and Schema.
2. Create your filter by making the appropriate selections.

3. You can save the filter to a file, or, you can use filters without saving them to a file.
Apply them by simply clicking **OK** when you have made your selections.

Loading and Applying Browser Filters

When you have saved one or more browser filters, you can load and apply them as needed.

To load and apply a browser filter

1. In the upper right of the browser filter window, click the **Saved Filters** dropdown.
2. Do one of the following:
 - Select **Load Filter** and then select the filter.
 - Select the filter name from the bottom of the dropdown.
3. Click **OK** to apply the filter and exit the filters dialog box.

Saving Browser Filters

You can create and save a browser filter for later use in any schema.

To save a browser filter

1. In the upper right of the window, click **Saved Filters**.
2. Select **Save Filter As**.
3. Enter a name for the filter in the **Filter Name** box.

Note: This name will be displayed in the filter dropdown. If you do not enter a name in this box, the filter will still display in the dropdown, but as a blank line.

4. Enter a file name for the filter in the **File Name** box.
- NOTE:** By default, filters are saved as XML files (one per connection) in the Toad User Files folder. You can save them to another folder by entering the full path in the File Name dialog box.
5. Click **OK**.

Edit Browser Filter Query

The Schema Browser grids are populated by a set of standard queries determined by the filter you choose. However, you can edit the query created by the browser filter. This gives you complete control over the population of the left hand side of the Schema Browser.

Unless you select Custom Filters, this option is automatically turned off after it is used, and changes to the filter are not saved.

Custom Filters

When editing a browser filter, you can create a custom filter when you edit the browser filter query. All editing of custom queries must occur within the view/edit query window.

Once you have created a custom filter, it remains in effect until as long as Custom Filter is checked. The custom filter remains available until you click **Clear Custom Filter**.

To create a custom filter

1. From the Schema browser, click .
2. Select **Custom Filter (Use View/Edit Query to adjust)**.
3. Select **View/Edit Query Before Executing**.
4. Click **OK**.
5. Edit the query.

Note: Clear the Custom Filter check box to stop using it. It remains available for use until you click Clear Custom Filter. However, if you have multiple Schema Browsers open to the same connection, the filter may not be applied consistently

To edit the browser filter query

1. Open a **browser filter**. See "Schema Browser Filters" (page 989) for more information.
2. After you have established the basic criteria for the filter, check the **View/Edit Query Before Executing** box and click **OK**. This will show you the query that is about to populate the browser.
3. You can change the WHERE or ORDER BY clauses however you like.

Caution: Do not change the SELECT list.

4. Click the **Variables** button to edit any bind variables in the query. A query that contains bind variables will look something like this:

```
select....  
from...  
where s.owner = :var1  
and s.table_name = :var2
```

5. Click **Check** to check that your new query parses correctly.
6. Click **OK**.

To reactivate a custom filter

1. Click  in the Schema Browser toolbar.
2. Select **Custom Filter (Use View/Edit Query to adjust)**.

3. Click **OK**.

Clearing Datagrid Filters

To clear datagrid filters

1. Click  on the Schema Browser right hand side.
2. Select connections and what to clear.

Creating Default Browser Filters

From the general Browser Filters dialog box , you can set up the default filter, which is in force for every new schema.

Browser filters are useful for schemas that contain a large number of objects. The fewer objects that Toad has to load, the faster it executes. It is useful to narrow down the focus, (such as only those object names beginning with "Toad_," and so on) temporarily ignoring all other objects in the schema. You can do this in multiple ways. You can save browser filters that you can apply "on the fly," and you can create default browser filters that will be applied whenever you view objects from the selected schema. See "Saving Browser Filters" (page 990) for more information about saving browser filters.

Caution: Always make changes using the Toad interface. Do NOT attempt to edit these files directly.

To create default filters

1. From the Session menu, select **Schema Browser Filters**.
2. At the top of the **Browser Filters for:** dialog box, click **Show Default filters**. You can now create filters as you would normally.
3. You do not need to save the filters to a file. When you are done creating filters, click **OK**.

Default filters are stored in a file named Toad_DEF.FLT in the Toad for Oracle\Temps folder.

Filtering by Project Manager file

You can use the Schema browser filter to filter by Project Manager file.

To filter by Project Manager file

- » Do one of the following:

- Click  and then select the Project Manager File and click **Open**.

Note: If there are multiple projects within a Project Manager file, you must also select a project before filtering.

- Use the dropdown history list beside the filter button to select a file you have used before.

Using the QuickFilter Box

The quickfilter edit box is located below the Schema dropdown for the tabbed and dropdown Schema Browser views. Using the quickfilter, you can filter the object list without re-querying the database. This provides a quicker way to filter the list than using the browser filters.

The Quickfilter is a client-side filter, so it filters all Schema Browser Object lists without re-querying the database. This filter works in conjunction with the existing Browser Filters.

By default, this contains the "select all" wildcard character (*). You can quickly and easily filter the Object list by changing the contents of this box.

Note: Quickfilter does not work in the treeview Schema Browser or the Favorites Schema Browser tab.

There is also a filter button on the main object toolbar that you can use for more detailed filtering. See "Schema Browser Filters" (page 989) for more information.

To use the Quickfilter box

- » Enter the filter information. You can use the wildcard characters at any point in your filter.

Note: The Quickfilter maintains a history of up to 25 items, listed most recent first. Right-click on the Quickfilter to access this list.

Wildcard Characters

Wildcard characters are accepted in the Quickfilter. In addition, you can select ranges to filter by. Wildcard characters and range settings available include:

Wildcard	Meaning
* and %	multiple character wildcards
? and _	single character wildcards
[]	a set of returned values
!	values not included in a set
-	a range of values

Examples of Wildcards and Sets

Wildcards can be used to find a group of results.

Sets begin with an opening bracket ([]) and end with a closing bracket (]). Each element between the brackets refer to a literal character or a range of characters. Ranges, specified by the initial value, a dash, and the final value, are inclusive. Do not use spaces or commas to separate elements.

All comparisons are case insensitive.

For example:

Entering	Will Return
*ploy or %ploy	"deploy," "employ," and so on
em* or em%	"employee," "employ," "empresses," and so on
_at or ?at	cat and bat, but not flat or latitude
?at* or _at%	cat, bat, and latitude
[a-c]*	everything that starts with a, b, or c
[def]*	everything start starts with d, e, or f
[!abc]*	everything what does not start with a, b, or c

Clusters

Schema Browser: Clusters

Clusters are an alternate way of storing table data, where data in tables that share columns is only stored once within the database. This can shrink the database and speed up access time considerably. For more information about clusters and how to use them efficiently, please see your Oracle documentation.

From the Schema Browser, you can create, alter, and drop clusters. You can also filter your list and copy cluster scripts to the clipboard.

Objects Pane

The objects pane lists the clusters available in the selected schema.

Cluster Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new cluster. See "Create and Alter Cluster" (page 995) for more information.
	Alter selected cluster. See Create and Alter Cluster for more information.
	Filter cluster list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop cluster. Drop the selected cluster.

Details Pane

The details pane contains information about the selected cluster, and you can view and edit the cluster script.

You can choose to include or remove several items in the cluster script. These include: schema owner, tables, storage, drop statement, and index.

To edit the cluster script

1. Select a cluster to edit and then click the **Script** tab in the details pane.
2. Click .
3. Click the **check boxes** to select or clear any of the options provided.
4. Click  to change the script in the ways you have chosen.

You can then:

	Copy script to clipboard
	Copy script to editor

Create and Alter Cluster

Create Cluster

You can create an indexed cluster or a hash cluster from Toad.

To create a cluster

1. Access the Create Cluster window by either
 - From the Database | Create menu, select **Cluster**.
 - From the Schema Browser | Cluster page, click .
2. Select the **schema** where you want the cluster to reside from the **Schema** dropdown.
3. Enter a **name** for the cluster.
4. Select either **Indexed Cluster** or **Hash Cluster**. If you select hash cluster, another tab, Hash Info appears.
5. Optionally, add the object to the Project Manager by selecting the **Add to PM** check box.
Enter information about the cluster.
Note: When entering the hash expression, do not enter the "Hash is" keywords.
6. Click **OK** to create the cluster immediately. You can also choose:
 - Show SQL
 - Schedule the script to run later

Alter Cluster

From this dialog box you can alter an existing cluster. This can be either an indexed cluster or a hash cluster. You can only alter information about storage properties from Toad. To change the cluster more extensively, you will need to drop it and create a new cluster.

To alter a cluster

1. From the Schema Browser | Cluster page, click .
2. Click the **Storage** tab and change storage information.

Constraints

Schema Browser: Constraints

From the Schema Browser window, you can enable and disable constraints, and filter your objects.

Objects Pane

The left panel of the Schema Browser displays a list of constraints. To see the details of a constraint, click it. The details display in the right panel.

Different types and status of constraints are differentiated by different icons. See "Icon Legend" (page 980) for more information.

Constraint Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new constraint. See "Create and Alter Constraints" (page 997) for more information.
	Alter constraint. See "Create and Alter Constraints" (page 997) for more information.
	Enable current Trigger or Constraint . To use this command, you must first select a constraint. Then click the icon to enable it.
	Disable current Trigger or Constraint. To use this command, you must first select a constraint. Then click the icon to disable it.
	Filter the objects list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information. Note: If you clear filters on the constraints from the Schema Browser, constraint options are automatically updated to show only the Primary Constraint.
	Drop the selected constraint from the database.

Create and Alter Constraints

Create Constraint

To access the create constraint window

- » Do one of the following:
 - Select **Create | Constraint**.
 - Click on the Schema Browser| Tables.

To create a constraint

1. Do one of the following:
 - From the Create menu, select **Constraint**.
 - Click on the Schema Browser | Tables.
2. Type the constraintname in the Constraint Name field.

3. Select the FROM schema and FROM table from the Schema and Table lists. This will query and populate the columns into the **Table Columns** list.
4. Refer to the following for additional information about different constraint types:

Constraint Type	Notes
Primary Key	If a Primary Key constraint already exists for the selected table, then the Primary Key button will be disabled.
Check	Check Constraint Condition example: SALARY < 100000 and COMMISSION > 5000
Note: If you want to move records that do not meet the new constraint criteria into another table, click the Exceptions tab, pick a schema, existing table, or enter a new table name, and click the Create a New Exceptions Table button.	

5. Review the SQL prior to execution by clicking the **SQL** tab.
6. Do one of the following:
 - Click the **Execute** button to create constraint immediately.
 - Click **Schedule** to schedule the create task for a later time.

Alter Constraint

When altering a constraint, you can make changes to the following:

- Constraint State
- Validation Clause
- Rely Clause

When enabling or validating an index, an exceptions table may also be specified.

Renaming Constraints

You can easily rename a constraint from the Schema Browser.

To rename a constraint

1. From the Schema Browser | Constraints page, select a constraint to rename.
2. Right-click and select **Rename Constraint**.
3. In the **New Constraint Name** box, enter the new name for the constraint.

Note: Toad can provide a suggestion for the new constraint name. Click **Suggest** for a suggestion. This is only a suggestion and you can type over it.

4. Click **OK**.

Contexts

Schema Browser: Contexts

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

A context is an object which helps apply fine-grained access control, linking function-based security policies with applications.

Note: Contexts are only available for Oracle versions 8i and newer.

Context variables are mapped into a set of functions and procedures contained in a stored package associated with a unique context name. Oracle then uses relationship through the SYS_CONTEXT function to validate against the variables or constants defined in the package.

Context objects are owned by the SYS user and reside in the SYS schema. When a context is established, the SYS_CONTEXT function fetches the specified attributes. This encapsulates the attributes in their own secure database object, which can then be controlled. Although all contexts are owned by SYS, Toad's schema browser lists contexts under the schema which owns the package associated with each context.

Objects Pane

In the left panel of the Schema Browser, a list of contexts appears. To see the details of a context, click it. Details display in the right panel.

Database Links Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Alter a context. Toad drops the original link and creates a new one with the changes you make. See "Create and Alter Context" (page 1000) for more information.
	Create a new context. See "Create and Alter Context" (page 1000) for more information.
	Filter contexts. This opens a Browser Filters window and lets you filter the

Button	Command
	object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop context. Clicking this drops the selected context. A context must be selected to use this command.

Details Pane

The details pane has an General Info tab and a Script regeneration tab.

Create and Alter Context

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Create Context

To create a context

1. From the Schema Browser | Context page, click .
2. Enter appropriate information in the requested fields and then click **OK**.

Note: the default for the Package Schema is the currently active schema.

Alter Context

You can alter an existing context. You cannot change the name of the context, but you can change:

- Package Schema
- Package Name
- Type

DB Links

Schema Browser: DB Links

From the Schema Browser window, you can create a script from a database link, create new links, and drop links.

Note: Database link passwords will never be extracted from the data dictionary.

Objects Pane

In the left panel of the Schema Browser, a list of database links appears. Click a link to see the details. The details display in the right panel. You cannot make changes to the database link, but you can drop it and create a new one.

Different types and status of database links are differentiated by different icons. See "Icon Legend" (page 980) for more information.

Database Links Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create a new database link. See "Create and Alter Database Link" (page 1001) for more information.
	Alter a database link. See "Create and Alter Database Link" (page 1001) for more information.
	Test database link. Results are displayed in a dialog box with the option to copy them to the clipboard for pasting elsewhere.
	Filter database links. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop database link. A database link must be selected to use this command.

Details Pane

The details pane has an Info tab which shows the parameters and values (owner, host, user, date, and so on).

Create and Alter Database Link

To create a database link

» Do one of the following:

- From the Create menu, select **Database Link**.
- Click on the **Schema Browser | DB Links** page.

To alter a database link

- » Click  on the Schema Browser | DB Links page.

Dimensions

Schema Browser: Dimensions

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Dimensions are processes that redirect queries from the base table to materialized views (snapshots) based upon that table. This lets queries run faster by referencing the best summary tables.

For example, you have a table called DAILY_SALES that contains sales information by day. Some users prefer to see reports of sales by week or month. So you create materialized views (snapshots) based upon the DAILY_SALES table and call these WEEKLY_SALES AND MONTHLY_SALES. Now you can create a dimension that tells Oracle that these tables are based upon each other (daily sums up to weekly, which sums up to monthly).

Now, if a user queries DAILY_SALES to ask for data summarized by week or month, Oracle will rewrite the query to use the summary table that best matches the WHERE clause. This is done before the explain plan step, and the user never knows that the query has been redirected.

Splitters will remember their position from the last time you opened the page.

Objects Pane

The objects pane on the Dimensions page lets you view, create, compile and drop dimensions.

Objects Pane Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information. See "Export DDL" (page 396) for more information.
	Create new dimension, See "Create Dimension" (page 1003) for more information.
	Compile dimension. This will compile your dimension
	Filter dimension list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.

Button	Command
	Drop dimension

Details Pane

The details pane of the Dimensions page displays information about a selected dimension. This information includes the levels and hierarchies created as described in the Create Dimension topic. You can also view the script that defines the dimension.

The "dependant col" column is where attributes are shown.

Create Dimension

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To create a dimension

1. Do one of the following:
 - From the Database | Create menu, select **Create Dimension**.
 - From the Schema Browser, select the **Dimension** page and then click  on the toolbar.
2. Create at least one level by clicking the + and naming the level. After you have created a level, you can add a table and columns to it. The **dependant col** column is where attributes are shown.
3. Add hierarchies to your dimension. Do this the same way you created your levels.
4. Drag Parent/Child levels down from the **levels** edit box into the Parent/Child Levels tree. This establishes the <level> Child of...section of the DDL for the selected hierarchy.
5. Set up **Join** keys for each hierarchy.
6. Click **OK** to create your new dimension.

Directories

Schema Browser: Directories

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

The Schema Browser: Directories page is only available if you are using Oracle 8 or above.

You can create or alter a directory. See "Create and Alter Directory" (page 1004) for more information.

Objects Pane

The objects pane displays the Directory window with the name and path.

Directory toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create a new directory. See "Create and Alter Directory" (page 1004) for more information.
	Alter directory. See "Create and Alter Directory" (page 1004) for more information.
	View/Edit privileges. See "Privileges" (page 980) for more information.
	Filter directory list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop directory.

Details Pane

The details pane includes tabs for Info, External Tables, Script, Auditing and Grants.

Create and Alter Directory

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

This window is used to create a new directory object. A directory object is an alias to a directory on the server's file system where external binary large objects (BFILEs) are stored.

To create a directory

1. Do one of the following:
 - From the **Create** menu, select **Directory**
 - Click on the **Schema Browser | Directories** page.
2. Enter options.
3. Click **OK** to create the directory.

To alter a directory

- » Click  on the Schema Browser | Directories page.

Favorites

Favorites

This page lets you group many different types of objects that you use frequently into a tab on the Schema Browser. These different objects can be grouped into one or several "folders". Your configuration of this tab is kept in the file Toad for Oracle\Temp\<server name>\Projects.lst, and configuration is maintained at the instance level; in other words, folders are specific to an instance (not a connection or a schema). Multiple folders may be created on this page. After a folder is created, you can then add objects to it.

Objects supported in this window include: Tables, Views, PL/SQL code (Procedures, Functions, Packages, Triggers), and Files.

Note: The Favorites page is not available in the tree view of the Schema Browser.

Create a Folder

Before you can add objects to your Favorites tab, you need to create a Folder where you will group them.

To create a folder

1. Click  on the toolbar.
2. Enter a folder name and then click **OK**.

Add Objects to a folder

You can easily add objects to a Folder in the right hand panel. You can add either database objects or scripts/files.

To add Database Objects

1. Select **Add Database Object** or click  on the toolbar.
2. In the Object Search window, use the search function to find the object you want to add. See "Object Search" (page 967) for more information.
3. In the results grid, highlight the objects you want to add and then **right-click**. Most tabs in the Schema Browser have an "Add to Favorites list" on the right-click menu.
4. Select **Add to SB Favorites** from the menu. Select the folder where you want the objects and click **OK**.
5. Close the Object Search window.

To add scripts/files

1. In the left panel, right-click the **folder** where you want the script.

Select **Add Files** from the menu.

Note: Multi-select files to add more than one at a time.

2. Click **Open**.
3. Select the folder where you want the objects and click **OK**.

Remove Objects from a Folder

To remove objects

1. Select the **object** you want to remove.
2. Click .
3. Choose **Remove Item** from the menu.
4. Click **Yes**.

Empty or Remove Favorites Folders

To empty or remove favorites folders

1. In the left panel, select the **folder** you want to empty or remove.
2. Right-click the **folder name**.
3. Select either **Remove Folder** or **Empty Folder** from the menu. In the first case, the entire folder is removed. In the second, the folder is emptied of objects but left on the Favorites page.

Flashback Archives

Flashback Archives

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Flashback Archives are only available when using Oracle 11g or above. You can use the Flashback Data Archive to track and maintain changes to Oracle data. For details about using Flashback Archives, please see your Oracle documentation. The Flashback Archives page in the Schema Browser allows you to work with them from within Toad. You can view archive information, create new archives and alter existing archives, as well as creating scripts from your archives.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

Objects Pane

Different types and status of flashback archives are differentiated by different icons. See "Icon Legend" (page 980) for more information.

Flashback Archives Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new Flashback Archive - creates a new flashback archive on the database.
	Edit Flashback Archive
	Filter Flashback Archive list - This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop Flashback Archive - Select a flashback archive and click Drop. Toad prompts you to confirm, and the archive is dropped from the database.

Details Pane

The details pane contains tabs that allow you to see information about the selected archive. These tabs include: Info, Tables and Script.

Create and Edit Flashback Archive

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

With Oracle 11g and above, you can create a new flashback archive and edit existing archives from the Schema Browser flashback page.

To create a flashback archive

1. Open the Schema Browser | Flashback Archive page | **Objects panel**, click .
2. Enter a name in the **Flashback Archive Name** box.
3. Enter the information required on the Basic Info tab:

- If you are logged in with a SYSDBA connection, you can choose to make this the Default archive.
 - Enter the number of retention days.
4. Click the **Tablespaces** tab.
 5. Click  and add the primary tablespace used to store the archive.
 6. Enter the tablespace **Quota in MB**. If you leave this column blank, the archive will have unlimited quota in the tablespace.

To edit an existing flashback archive

1. Open the **Schema Browser | Flashback Archive page | Objects panel**, click .
2. Edit necessary information on the basic tab:
 - If you are logged in with a SYSDBA connection, you can choose to change the Default archive status.
 - Change the number of retention days.
3. Change tablespace information from the **Tablespaces** tab. Click  to post your changes.
4. Click **OK** to alter the archive immediately.

Functions

Schema Browser: Functions

Objects Pane

The Functions page objects pane lists PL/SQL functions. You can open them in the Editor, execute them, compile or save them to files.

Different types and status of functions are differentiated by different icons. See "Icon Legend" (page 980) for more information.

Functions Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create New Function. See "Default Templates" (page 900) for more information.
	Save to a SQL file. See "Files - General" (page 658) for more information about configuring file extensions.

Button	Command
	Filter Function list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Compile Selected Procedure.
	Compile Invalid Functions. Everything invalid in the objects list will be compiled, including items that have been hidden by the use of a filter. Note: Depending on the number of items in your list, this option can take quite some time.
	Compile Dependencies. All procedures, packages, or functions dependent upon the selected procedure, package or function are recompiled. See "Dependencies & References" (page 911) for more information about compiling dependent procedures, packages, or functions.
	Execute Procedure. If parameters are required, Toad will prompt you for them and then the procedure, package or function will execute. Note: In the Debugger this button is called Run, because in that case it calls the procedure, package or function, but also allows you to stop execution (by setting breakpoints).
	Add or change privileges. See "Privileges" (page 980) for more information.
	Make Synonym. This defaults to creating a public synonym.
	Drop procedure.

Details Pane

The details pane contains tabs that allow you to see information about the selected function. These tabs include: Code, Arguments, Deps (Uses), Deps (Used by), Errors, and Grants.

When you select a function from the objects pane, the top of the details pane displays the created date and last modified date for the object.

Indexes

Schema Browser: Indexes

Objects Pane

The objects pane on the Indexes page displays a list of indexes, and a toolbar to create, alter, analyze, and so on your indexes.

In the list of indexes, icons indicated the different types or status of indexes. See "Icon Legend" (page 980) for more information about the legend of icons used in the Schema Browser.

Indexes Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	New index. See "Create and Alter Index" (page 1010) for more information.
	Alter index. See "Create and Alter Index" (page 1010) for more information.
	Rebuild index. See "Rebuild Index" (page 1015) for more information.
	Analyze index. Collect statistics so that COST based query optimization can be used and the optimizer can run better queries. You can estimate statistics (faster than compute), compute statistics, or delete current statistics. See "Analyze All Objects" (page 594) for more information.
	Filter index list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop selected index.

Details Pane

The details pane contains information about the selected index, organized on tabs that include: Columns, Partitions, and Script.

Create and Alter Index

Indexes can speed up execution by providing a faster path to table data.

Use this dialog box to select a schema owner, table name, then on the Index tab, select whether you want to create a Primary Key index, Unique index, Non-Unique Index, function-based indexes, or a Bitmap index, select the index columns, and optional storage parameters.

To create an index

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. Do one of the following:

- From the Database | Create menu, select **Index**
- Click  on the Schema Browser | Indexes page.

2. Enter parameter settings on the appropriate tabs. Refer to the following for additional information:

Tab	Information
Basic Info tab	<p>Bitmap</p> <p>This specifies that the index is to be created as a bitmap rather than as a B-tree. This is most appropriate for applications that have low levels of concurrent transactions, such as warehousing. This function is only enabled if you have Oracle 8 or later.</p> <p>Logging</p> <p>This check box controls whether the creation of the index will be logged (selected) or not logged (clear) in the redo log file. It also specifies that subsequent Direct Loader (SQL*Loader) and direct-load INSERT operations against the index are logged or not logged, depending on your choice. The default is checked.</p> <p>Versions prior to Oracle 8 refer to this concept as Recoverable. So, for versions before Oracle 8, instead of Logging the option will display as Recoverable.</p> <p>Monitoring</p>

Tab	Information
	<p>Oracle versions 9i and later provide a means of monitoring indexes to determine whether or not they are being used. You can then drop unused indexes to eliminate unnecessary statement overhead. When checked, Oracle will monitor this index. See "Index Monitoring" (page 544) for more information.</p> <p>Parallel check box</p> <p>This option enables or disables the Parallel edit field. If this option is checked, it causes Oracle to select a degree of parallelism equal to the number of CPU's available on all participating instances times the value of the PARALLEL_THREADS_PER_CPU initialization parameter. If a value is specified, it represents the degree of parallelism, which is the number of parallel threads used in the parallel operation. Each parallel thread may use one or two parallel execution servers. Oracle usually calculates the optimum degree of parallelism, so it is not necessary to specify a value. When checked, you will need to specify the degree and instances parameters.</p> <p>This option is unchecked (no parallel) by default.</p>
	<p>Unique</p> <p>Select this to specify that the values of the columns upon</p>

Tab	Information
	<p>which the index is based must be unique. (This is usually not recommended. Oracle recommends using UNIQUE integrity constraints when the table is created.)</p> <p>Key Compression</p> <p>Note: Key Compression is only enabled if you have Oracle 8 or later.</p> <p>Compress - Selecting Compress, enables key compression, which eliminates repeated occurrences of key column values and can reduce storage substantially.</p> <p>Value -</p> <ul style="list-style-type: none">• Unique indexes - the valid range of prefix length values is from 1 to the number of key columns minus 1. The default prefix length is the number of key columns minus 1.• Nonunique indexes - the valid range of prefix length values is from 1 to the number of key columns. The default prefix length is the number of key columns. <p>Oracle compresses only nonpartitioned indexes that are nonunique or unique indexes of at least two columns.</p> <p>No Compress - If you select No Compress, you disable key compression.</p> <p>Creations Options</p>

Tab	Information
	<p>Compute Statistics - Enabled if you have Oracle 8.1 or later.</p> <p>Not Sorted - Mutually exclusive with the Reverse check box, and only enabled if you have Oracle 8 or later.</p> <p>Online - This function is only enabled if you have Oracle 8 or later.</p>
Physical Attributes tab	<p>Tablespace</p> <p>If you do not specify a tablespace name, Oracle will create the index in the default tablespace of the owner of the schema containing the index.</p>
Partitions tab	<p>Available Columns</p> <p>The same columns that you selected as the columns for the index (except for columns with certain datatypes: BLOB, CLOB, NCLOB, BFILE, ROWID, UROWID, MLSLABEL).</p> <p>Select columns from the Available Columns list to determine which columns the partition will be based upon.</p> <p>Every partition created for the index is based on the same column list.</p> <p>Range Partitions:</p> <p>You must enter the upper range for each column within the partition, or select Maxvalue from the dropdown list on that dialog box.</p> <p>String value upper bounds must be enclosed in single quotes within the grid (for example, for a Last Name</p>

Tab	Information
	<p>column with a datatype of varchar2, an upper bound could be 'Smith'). The single quotes must be entered into the grid.</p> <p>Hash partitions</p> <p>Quantity is irrelevant for hash partitions based on Indexes, so quantity is disabled.</p>

To alter an index

- » Click  on the **Schema Browser | Indexes** page.

Rebuild Index

Indexes periodically need to be rebuilt in order to improve query performance. Over time, records are added to the end of tables and indexes, and other records are deleted from the middle of tables and indexes, so when you read the tables and indexes, the disk device has to traverse the chain up and back until your record is found. Rebuilding an index will reorganize the chain sequentially, greatly improving query performance.

To rebuild an index

1. Access the Rebuild Index dialog box from the Schema Browser.
2. From the Indexes tab, select an index from the list, and click **Rebuild Index**.

The Rebuild Index dialog box has two tabs: **Options**, and **Sql**. Set the options for these two tabs as described below. When you are finished, click **Execute** to rebuild your index.

Note: Logging/No Logging or Recoverable/Not Recoverable

- Default indicates the statement will not be included in the DDL script creation.
- Versions prior to Oracle 8 refer to this concept as Recoverable. So, for versions before Oracle 8, instead of Logging, the option will display as Recoverable and the dropdown choices will be Default, Recoverable, and Unrecoverable.

Rename Index

To rename an index

1. From the Schema Browser, select the Indexes page.
2. In the objects pane, select the **index** you want to rename.

3. Right-click and select **Rename Index**.
4. Enter the new name in the **index name** box and then click **OK**.

Invalid Objects

Schema Browser: Invalid Objects

Objects Pane

The objects pane on the Invalid Objects page displays a list of invalid objects in the selected schema, and a toolbar to alter, compile, compare the invalid objects.

Toad runs a simple query to find all invalid objects in DBA_OBJECTS, ALL_OBJECTS or USER_OBJECTS depending on privileges and settings.

This query displays:

- procedures
- functions
- packages (spec & body)
- triggers
- views
- types (spec & body)
- Java
- snapshots

You may also see evaluation contexts (in which case the right hand side will be blank). The Schema Browser does not support these objects.

This tab also includes unusable indexes (or indexes with an unusable partition or subpartition).

Invalid objects toolbar



Button	Command
	Alter the selected object.
	Compare object with another.
	Compile selected object (this option will also rebuild any unusable indexes that are selected).
	Compile all invalid objects (this option does not include unusable

Button	Command
	indexes).
	Filter index list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop selected object.

Details Pane

The details pane contains information about the selected object. Tabs and requirements for the details pane depend upon the type of object selected.

Java

Java

If you are running Oracle 8i or higher, you can use the Java page in the Schema Browser to compile or drop a Java object. You can also convert Java to PL/SQL. See "Publish Java to PL/SQL SQL Wizard Overview" (page 1019) for more information.

Objects Pane

The objects pane on the Java page displays a list of java objects, and a toolbar to act on those objects.

In the list of objects, icons indicate the different types or status of java code. See "Icon Legend" (page 980) for more information on seeing the legend of icons used in the Schema Browser.

Java Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Compile the selected object.
	Publish the selected Java object to PL/SQL. See "Publish Java to PL/SQL SQL Wizard Overview" (page 1019) for more information.
	Save source Code to file.
	Open object in the Editor.
	Add public synonym - Select an object and click this icon to create a Public Synonym for the selected item.
	View/Edit privileges - This opens the View/Edit privileges window. If you have sufficient privileges yourself, you can edit the associated privileges. See "Privileges" (page 980) for more information.
	Filter java list - This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop the object from the database.

To compile or drop a java object

- » Select the object from the list of objects in the objects pane, and then click either
 - To compile the object
 - To drop the object from the database

Drop All is not available for Java objects.

Details Pane

The details pane lets you see information regarding the java objects you select. Tabs include: Code, Errors, Synonyms, and Grants.

Publish Java to PL/SQL SQL Wizard Overview

Oracle 8i and above lets you store java classes in the database. PL/SQL programs can access a java class through a PL/SQL wrapped package. The wrapper package defines a set of procedures and functions to be called and maps them to the methods from the java class.

The **Publish Java to PL/SQL Wizard** is an easy way to create a PL/SQL wrapper package for a selected java class in the database. The java class must be compiled, and it must have compiled correctly to use the wizard.

Note: To use the Java Wizard, you must have the /com/quest/Reflector class and the QUEST_REFLECTOR package installed in your database. If these are not present when the wizard is opened, the wizard will prompt you to create them and walk you through the process.

One of the main functions of the wizard is to map java return types to Oracle return types. Some of the Oracle types mapped must be edited manually to update them and make them valid. See "Java Types and Oracle Return Types" (page 1019) for more information about the list of types that can be returned.

To publish Java to PL/SQL

1. Access the **Java to PL/SQL wizard** from the Schema Browser | Java page.
2. Select a **java class** from the Objects panel and right-click. Select **Publish to PL/SQL...** from the menu.
3. Refer to the following for more information:

Selecting Methods to publish	You must be logged in as the owner of the schema containing the java class you want to publish, or this screen will not display properly.
------------------------------	---

4. Complete the wizard.

Java Types and Oracle Return Types

Below is a list of Java types and the Oracle types where they are mapped. Some of the Oracle types mapped must be edited manually to update them and make them valid.

Java Type	Translated to Oracle Type
oracle.sql.CustomDatum, oracle.sql.Datum, oracle.sql.RAW	RAW
oracle.sql.STRUCT	OBJECT
oracle.sql.REF	REF

Java Type	Translated to Oracle Type
oracle.sql.CLOB	CLOB
Any array, boolean, java.lang.String, oracle.sql.BLOB, oracle.sql.CHAR, anything else: java.awt.Component, java.awt.Graphics, and so on	VARCHAR2
byte, java.lang.Byte, java.lang.Double, java.lang.Float, java.lang.Integer, java.lang.Long, java.lang.Short, java.math.BigDecimal, oracle.sql.NUMBER, short, double, float, int, long	NUMBER
java.sql.Date, java.sql.Time, java.sql.Timestamp, oracle.sql.DATE	DATE
oracle.sql.BFILE	BFILE
oracle.sql.ARRAY	VARRAY
oracle.sql.ROWID	ROWID

Jobs

Schema Browser: Jobs

The Jobs page displays the list of jobs in the Objects Pane and the details for the selected job in the details pane.

In order to use the Jobs page in the Schema Browser, you must have the sys.dbms.job package installed in your SYS schema. If you do not have this package installed, ask your DBA to run the catproc.sql to install it.

Objects Pane

The objects pane displays a list of jobs. Toad designates a job as online or offline with the following icons:

- Online - When a job is online, no icon is displayed. The Place Offline button on the toolbar is enabled and the name of the job displayed in the Jobs list.
- Offline - When a job is offline, is displayed beside it in the Jobs list. The Place Online button on the toolbar is enabled.

Jobs Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new job. See "Create and Alter Jobs" (page 1022) for more information.
	Alter job. See "Create and Alter Jobs" (page 1022) for more information. Note: Unless you have access to DBMS_IJOB, you must be connected as the Job Owner to perform this command.
	Place online. Places the selected job Online, available for transactions. Note: Unless you have access to DBMS_IJOB, you must be connected as the Job Owner to perform this command.
	Place offline. Places the selected job offline, unavailable for transactions. Note: Unless you have access to DBMS_IJOB, you must be connected as the Job Owner to perform this command.
	Execute job immediately. This executes the selected job. Note: Unless you have access to DBMS_IJOB, you must be connected as the Job Owner to perform this command.
	Filter jobs list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop job.

Details Pane

Upper

The upper details pane shows various parameters for the selected job, such as LOG, USER, NEXT DATE, and INTERVALS.

Lower

The lower details pane displays the SQL used for the selected job.

Right-Click Menu

The Jobs panel has a customized right-click menu that includes the following commands:

- Disable Job - This command takes the selected job offline. (See Take Offline above.)
- Enable Job - This command puts the selected job online. (See Place Online above.)

- Alter Job - This displays a job definition window for the selected job as described in **Create New Job**, which you can then alter. You must be connected as the Job Owner to perform this command.
- Execute Job - This executes the selected job. You must be connected as the Job Owner to perform this command.

Create and Alter Jobs

The create job functionality lets you create and schedule jobs. By doing this you can automate standard and repetitive tasks. These can be as complex as a detailed SQL script, or as simple as executing a single operating system command. When the job is created and scheduled, you can further manipulate it from the Schema Browser | Jobs page. See "Schema Browser: Jobs" (page 1020) for more information.

To create a job

» Do one of the following:

- Access the Create Job window from **Create | Job...**
- Click  on the **Schema Browser | Jobs** page.

To alter a job

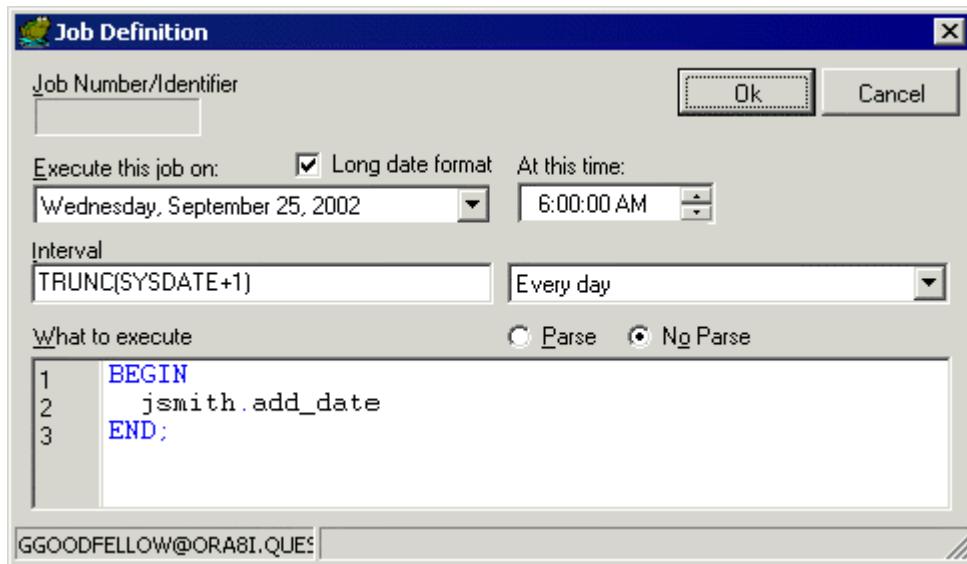
» Click  on the **Schema Browser | Jobs** page.

Examples

A job can be just about any code you want to run on a regular, automatic basis. For example, if you have a table with a date column, you could create a procedure using this code and calling it ADD_DATE:

```
CREATE OR REPLACE PROCEDURE ADD_DATE;
BEGIN
  INSERT INTO JSMITH.TEST1 (currentdate) VALUES (SYSDATE);
END ADD_DATE;
/
```

Then, to insert the date into the table every morning you would set the dialog boxes as follows:



Click **OK**, and the job is assigned a Job Number and created. It should now appear on the Jobs tab of your Schema Browser.

Libraries

Schema Browser: Libraries

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Libraries are available only if you are using Oracle 8 or above.

You can create, alter, or drop libraries. You can also view details.

Objects Pane

The objects pane on the Libraries page lets you create, alter and drop libraries.

Library Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create Library. See "Create and Alter Library" (page 1024) for more information.
	Alter library. See "Create and Alter Library" (page 1024) for more information.

Button	Command
	View/Edit privileges. See "Privileges" (page 980) for more information.
	Filter the library list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop selected libraries.

Details Pane

The details pane has tabs to view information including: Info, Used by, Grants, Scripts, and Auditing for the selected library.

Create and Alter Library

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

This window lets you create a new library object. A library object is an alias to an operating system shared library (like a .DLL) that can be used in SQL or PL/SQL to allow calls to external functions.

To create a new library object

1. Do one of the following:
 - a. Select **Database | Create | Library**
 - b. Click on the **Schema Browser | Libraries** page.
2. Choose a **Schema** from the dropdown. This will be the schema that owns the library.
3. Use the text boxes to enter the library **Name** (alias name for the library) and the **File Name**.
4. Click **OK**.

To alter a library object

- » Click on the **Schema Browser | Libraries** page.

Materialized Views (Schemas)

Schema Browser: Materialized Views

Oracle changed the name of Snapshots to Materialized Views in 8i. Throughout Toad, we use the term "Materialized View". They are the same object and Toad windows can be used with earlier Oracle databases.

You can create and drop materialized views. You can also view details and select multiple materialized views.

Objects Pane

The objects pane displays a list of materialized views that exist in the selected schema.

Different types and status of materialized views are identified by different icons. See "Icon Legend" (page 980) for more information.

Materialized Views Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new materialized view. Displays the materialized views window where you can create a new materialized view. See "Create and Alter Materialized View" (page 1026) for more information.
	Alter materialized view. Displays the Materialized Views window so that you can alter a previously created materialized view. See "Create and Alter Materialized View" (page 1026) for more information.
	Refresh materialized view. Runs the SQL script that causes Oracle to refresh your materialized view's data.
	Filter materialized views list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop materialized view. Drops the selected materialized view.

Details Pane

The details pane includes tabs for Info, Materialized View Query, Script, and Data.

Create and Alter Materialized View

The Materialized View window is where you can create, update, or modify a materialized view.

A materialized view is basically a partial (subset) or complete copy of a table. You can set your Toad Materialized Views to be read-only or updatable (which allows users to insert, modify, or delete rows). Materialized Views can be stored in the same database as the master table or in a different database.

To create a Materialized View

This topic only covers unfamiliar information. It does not include all step and field descriptions.

1. Do one of the following:
 - a. Select **Database | Create | Materialized View**.
 - b. Click  on the **Schema Browser | Materialized View** page.
2. Enter required Oracle parameters, referring to the following for more information:

Tab or Option	Notes
Materialized View Info tab	
Build	Deferred populates the materialized view during the next refresh.
On Prebuilt Table check box	The table and materialized view must have the same name. If checked, the radio buttons are enabled. If you select Without Reduced Precision, the precision of the table or materialized view columns must match exactly with the precision of the subquery results. If you select With Reduced Precision, the precision of the table or materialized view view columns do not have to exactly match the subquery results.
Partitions tab	In order for this tab to be enabled you must enter a valid subquery into the materialized view subquery tab. You select columns from the Available Columns list to determine which columns the partition will be based upon. Double-click the column name or click the column and click

Tab or Option	Notes
	the single right arrow to move the selected columns into the Partitions Columns list.
Add a Partition	Range Partitions - String value upper bounds must be enclosed in single quotes within the grid (for example, for a Last Name column with a datatype of varchar2, an upper bound could be 'Smith'). The single quotes must be entered into the grid.

To alter a materialized view

- » Click  \ on the Schema Browser | Materialized View page.

Materialized View (Snapshot) Logs

Schema Browser: Materialized View Logs

A materialized view log is a table associated with the master table of a materialized view. It contains information about changes made to the associated master table, which is used to refresh the materialized view. Oracle requires a Materialized View log for every master table that supports a materialized view with fast refreshes.

Objects Pane

The objects pane displays a list of materialized view logs that exist in the selected schema.

Different types and status of materialized views are identified by different icons. See "Icon Legend" (page 980) for more information.

Materialized View Logs Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new materialized view log. Displays the materialized view logs window where you can create a new materialized view log. See "Create Materialized View Log" (page 1028) for more information.

Button	Command
	Alter materialized view. Displays the Materialized Views window so that you can alter a previously created materialized view. See "Create Materialized View Log" (page 1028) for more information.
	Refresh materialized view. Runs the SQL script that causes Oracle to refresh your materialized view's data.
	Filter materialized views list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop materialized view - Drops the selected materialized view.

Details Pane

The details pane includes tabs for Info, Data, Script, and Used By Materialized view.

Create Materialized View Log

A Materialized View Log is a table associated with the master table of a Materialized View. It contains information about changes made to the associated master table, which is used to refresh the Materialized View. Oracle requires a Materialized View Log for every master table that supports a Materialized View with fast refreshes.

To create a Materialized View/MView logs

1. Do one of the following:
 - From the **Database | Create** menu, select **Materialized View Log**.
 - From the **Schema Browser, Materialized View** page, click 
2. Select and set Oracle Parameters for the materialized view log.
3. Click **OK**.

To alter a materialized view log

- » Click  on the **Schema Browser | Materialized View** page.

Oracle Scheduler

Schema Browser: Scheduler

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

The Oracle Scheduler is included in Oracle 10g and above.

Caution: The Oracle Scheduler is new in Oracle 10g. If you are using a client version lower than 10g to connect to an Oracle 10g database, unexpected errors and failures may occur.

Toad makes use of this scheduler with several pages in the Schema Browser. These include:

- Objects Pane (page 1029)
- Objects Pane (page 1032)
- Objects Pane (page 1034)
- Objects Pane (page 1036)
- Objects Pane (page 1037)
- Objects Pane (page 1039)

For more detailed information on the Oracle Scheduler, please see your Oracle documentation.

Jobs

Scheduler: Jobs

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

A job is the definition of when to a particular task will be performed. Jobs in the 10g scheduler reuse three basic job parts, which means that you don't have to recreate every similar task multiple times. For more information about Oracle Scheduler Jobs, please see your Oracle documentation.

Objects Pane

From the Sched.Jobs page in the objects pane of the Schema Browser you can create, alter, and drop jobs.

Sched:Jobs toolbar



On the toolbar in the objects pane are several options. You can select more than one job at a time for some of these operations.

Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information. See "Export DDL" (page 396) for more information.
	Create new job. See "Create and Alter Scheduler Job" (page 1030) for more information.
	Alter job. This displays a job definition window for the selected job. You must be connected as the Job Owner to perform this command. See "Create and Alter Scheduler Job" (page 1030) for more information.

Button	Command
	Filter jobs list. See "Schema Browser Filters" (page 989) for more information.
	Remove job. This drops the selected job. You must be connected as the Job Owner to perform this command.

Details Pane

The details pane has Info and Scripts tabs that list details about the selected job.

Create and Alter Scheduler Job

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

This topic only covers unfamiliar information. It does not include all step and field descriptions

To create a scheduler job

1. From the Schema Browser | Sched.Jobs page | objects pane, click .
2. Enter Oracle parameters, referring to the following for additional information:

Tab and Option	Information
Basic Info Tab	
Stop on window	When checked, when a job is running within a window, and the window is dropped from the database, then the job will be stopped immediately. Not specifying this will allow the job to complete. The default is unchecked.
Schedule Info Tab	When specifying schedule info: <ul style="list-style-type: none"> • All parameters should be in Oracle specific format. • View the next several dates when the job will run by clicking  beside the Repeat Interval box.
Job Arguments Tab	Displays if the scheduler program requires arguments. When you have selected a program, required arguments will populate the grid, letting you easily enter the values for those arguments.

3. Click **OK** to create the scheduler job.

To alter a scheduler job

- » From the Schema Browser | Sched.Jobs page | objects pane, click .

Scheduler Chains

Scheduler: Chains

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

The job chain can be used to string jobs together using dependency rules to achieve a business objective. Each step in a chain represents a task, and you can specify dependencies between tasks. Job chains were introduced in Oracle 10gr2.

Objects Pane

From the Sched.Chains page in the objects pane of the Schema Browser you can create, alter, and drop chains.

Sched:Chains toolbar



On the toolbar in the objects pane are several options. You can select more than one job for some of these operations.

Button	Command
	See "Export DDL" (page 396) for more information.
	Create new chain - This displays the chain definition window. See "Create and Alter Scheduler Chain" (page 1032) for more information.
	Alter chain - This displays a chain definition window for the selected chain. You must be connected as the chain Owner to perform this command. See "Create and Alter Scheduler Chain" (page 1032) for more information.
	Filter chains list. See "Schema Browser Filters" (page 989) for more information.
	Remove chain - This drops the selected chain. You must be connected as the chain Owner to perform this command.

Details Pane

The details pane has **Info**, **Steps & Rules**, and **Scripts** tabs that list details about the selected chain.

Create and Alter Scheduler Chain

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

This topic only covers unfamiliar information. It does not include all step and field descriptions

To create a scheduler job chain

1. From the Schema Browser | Sched.Chains page | objects pane, click .
2. Enter Oracle parameter settings for the scheduler chain, referring to the following for additional information:

Tab	Information
Comments tab	By default this parameter remains NULL.

3. Click **OK**.

To alter a scheduler job chain

1. From the Schema Browser | Sched.Chains page | objects pane, click .
2. Make changes to Oracle parameter settings.

Job Classes

Scheduler: Job Classes

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

You can use job classes to group jobs that are similar. For example, you can group jobs that should run at the same time, jobs that perform similar tasks (such as database management), and so on. This makes it easier to find the appropriate job when you need it.

Objects Pane

From the Sched.Jobs Classes page in the objects pane of the Schema Browser you can create, alter, and drop job classes.

Sched.Jobs Classes toolbar

On the toolbar in the objects pane are several options. You can select more than one job class for some of these operations.



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information. See "Export DDL" (page 396) for more information.
	Create new job class. See "Create and Alter Scheduler Job Class" (page 1033) for more information.
	Alter job class - This displays a job class definition window for the selected job class so you can alter it. You must be connected as the job class owner to perform this command.
	Filter job class list - This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information. See "Schema Browser Filters" (page 989) for more information.
	Remove job class - This drops the selected job class. You must be connected as the job class owner to perform this command.

Details Pane

The details pane has tabs for viewing Info for selected job classes and the script related to them.

Create and Alter Scheduler Job Class

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

This topic only covers unfamiliar information. It does not include all step and field descriptions.

To create a scheduler job class

1. From the Schema Browser | Sched.Job Class page | objects pane, click .
2. Enter Oracle parameters for the new job class.
3. Click **OK**.

To alter a scheduler job class

1. From the Schema Browser | Sched.Job Class page | objects pane, click .
2. Make changes to Oracle parameters for the new job class.
3. Click **OK**.

Programs

Scheduler: Programs

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

Within the Oracle Scheduler, a program defines what is executed. It contains information about the what the scheduler should run. This includes things such as the name of the program, the program action (for example, a procedure or executable name), program type (for example, PL/SQL stored procedures, anonymous blocks, or OS executable file) and the number of arguments required for to execute.

Programs are separate from jobs. Jobs can contain programs, and different jobs can use the same program. Given appropriate privileges, different users can use the same program without having to redefine it.

For more information about Oracle Scheduler Programs, please see your Oracle documentation.

Objects Pane

From the Sched.Programs page in the objects pane of the Schema Browser you can create, alter, and drop Programs.

Programs toolbar

On the toolbar in the objects pane are several options. You can select more than one program for some of these operations.



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new program. See "Create and Alter Scheduler Program" (page 1034) for more information.
	Alter program. This displays a program definition window for the selected program so you can you can then alter it. You must be connected as the program owner to perform this command.
	Filter program list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Remove program. This drops the selected program. You must be connected as the program owner to perform this command.

Details Pane

The details pane has Info and Script tabs that information about the program and the script connected to the program.

Create and Alter Scheduler Program

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

You can easily create a program for the scheduler. These programs can then be maintained in program libraries and used by multiple users with the correct privileges.

This topic only covers unfamiliar information. It does not include all step and field descriptions.

To create a scheduler program

1. From the Schema Browser | Sched. Programs page, click .
2. Enter Oracle parameters, referring to the following for additional information:

Tab and Option	Information
Basic Info Tab	Stop on window When checked, when a job is running within a window, and the window is dropped from the database, then the job will be stopped immediately. Not specifying this will allow the job to complete. The default is unchecked.
Schedule Info Tab	When specifying schedule info: <ul style="list-style-type: none">• All parameters should be in Oracle specific format.• View the next several dates when the job will run by clicking  beside the Repeat Interval box.
Program Arguments Tab	Displays if the scheduler program requires arguments. When you have selected a program, required arguments will populate the grid, letting you easily enter the values for those arguments.
Program Comments	Oracle has a character limit of 240 for this field.

To alter a scheduler program

1. From the Schema Browser | Sched. Programs page, click .
2. Make any changes to the Oracle parameters.
3. Click **OK**.

Schedules

Scheduler: Schedules

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

The schedule defines when and how often a job will be performed. You can use the same schedule for several programs.

Objects Pane

Schedules toolbar

You can select more than one Schedule for some of these operations.



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new schedule. See "Create and Alter Scheduler Schedule" (page 1036) for more information.
	Alter schedule. This displays a schedule definition window for the selected schedule that you can alter. You must be connected as the schedule owner to perform this command. See "Create and Alter Scheduler Schedule" (page 1036) for more information.
	Filter schedule list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Remove schedule. This drops the selected schedule. You must be connected as the schedule owner to perform this command.

Details Pane

The details pane has Info and Scripts tabs that list information about the schedule and the script that defines it.

Create and Alter Scheduler Schedule

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

This topic only covers unfamiliar information. It does not include all step and field descriptions

To create a schedule

1. From the Schema Browser | Sched.Schedule page, in the **objects pane**, click .
2. Set Oracle parameters, referring to your Oracle documentation for proper formatting of these selections.
3. Click **OK**.

To alter a scheduler schedule

1. From the Schema Browser | Sched.Schedule page, in the **objects pane**, click .
2. Change Oracle parameters, referring to your Oracle documentation for proper formatting of these selections.
3. Click **OK**.

Windows

Scheduler: Windows

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

The word windows in the scheduler refers to time rather than to a screen on the computer monitor. You can define your peak times and schedule jobs based on database activity at those times. For more information on Oracle Scheduler windows please see your Oracle documentation.

Objects Pane

From the Sched.Windows page in the objects pane of the Schema Browser you can create, alter, and drop windows.

Windows toolbar

On the toolbar in the objects pane are several options. You can select more than one window for some of these operations.



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new window - This displays the window definition screen. See "Create and Alter Scheduler Window" (page 1038) for more information.
	Alter window. This displays a window definition window for the selected window as described in Create Window, which you can then alter. You must be connected as the window owner to perform this command. See "Create and Alter Scheduler Window" (page 1038) for more information.

Button	Command
	Filter window list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Remove window. This drops the selected window. You must be connected as the window owner to perform this command.

Details Pane

The details pane has Info and Scripts tabs that list information about the selected window and the script that defines it.

Create and Alter Scheduler Window

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

This topic only covers unfamiliar information. It does not include all step and field descriptions.

To create a scheduler window

1. From the Schema Browser | Sched.Window page, in the **objects pane**, click .
2. Enter the parameters for your job, referring to the following for additional information:

Tab and Option	Information
Basic Info Tab	
Duration	<p>In order to avoid errors you must specify a duration.</p> <p>Use the format</p> <p>Interval 'n' type</p> <p>For example: <code>interval '5'</code> hour specifies five hours, and <code>interval '6'</code> minutes specifies six minutes.</p> <p>The duration interval ranges from 1 minute to 99 days.</p>
Window Priority	This parameter only becomes relevant when two windows overlap. Only one window can be in effect at a time, and Oracle uses window priority to determine which window to use.

Tab and Option	Information
Scheduler Tab	You can use a predefined schedule, or specify a schedule specifically for this job. All dates and intervals should be in Oracle specific format.

3. Click **OK**.

To alter a scheduler window

1. From the Schema Browser | Sched.Window page, in the **objects pane**, click .
2. Change the parameters for your job.
3. Click **OK**.

Window Groups

Scheduler: Window Groups

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

You can collect similar windows into window groups to more easily manage your jobs and schedules. For more information on Oracle Scheduler windows please see your Oracle documentation.

Objects Pane

From the Sched.Window Group page in the objects pane of the Schema Browser you can create, alter, and drop window groups.

Window Groups toolbar

On the toolbar in the objects pane are several options. You can select more than one window group for some of these operations.



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new window group. See "Create and Alter Scheduler Window Group" (page 1040) for more information.
	Alter window group. This displays a window group definition window for the selected window group, which you can then alter. You must be

Button	Command
	connected as the window group owner to perform this command. See "Create and Alter Scheduler Window Group" (page 1040) for more information.
	Filter window group list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Remove window group. This drops the selected window group. You must be connected as the window group owner to perform this command.

Details Pane

The details pane has Info and Scripts tabs that list information about the selected window group and the script that defines it.

Create and Alter Scheduler Window Group

Note: This Toad feature is only available in Toad with the optional DB Admin Module.

This topic only covers unfamiliar information. It does not include all step and field descriptions

To create a scheduler window group

1. From the Schema Browser | Sched.Window Group page, in the **objects pane**, click .
2. Enter Oracle parameters in appropriate Oracle format.
3. Click **OK**.

To alter a scheduler window group

1. From the Schema Browser | Sched.Window Group page, in the **objects pane**, click .
2. Change parameters.
3. Click **OK**.

Packages

Schema Browser: Packages

Objects Pane

Different types and status of packages are identified by different icons. See "Icon Legend" (page 980) for more information.

Packages Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create New Package. See "Default Templates" (page 900) for more information.
	Save to a SQL file. See "Files - General" (page 658) for more information about file extensions.
	Filter Package list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Load in Editor - Loads the package into an editor window.
	Compile Packages. The Compile All button compiles all procedures, functions, packages, and triggers for the current schema. On databases prior to 8.1.7, it compiles only INVALID objects.
	Compile All Invalid Objects. Everything invalid in the objects list will be compiled, including items that have been hidden by the use of a filter. Note: Depending on the number of items in your list, this option can take quite some time.
	Compile Dependencies. See "Dependencies & References" (page 911) for more information.
	Execute Package. If parameters are required, Toad will prompt you for them and then the procedure, package or function will execute. Note: In the Debugger this button is called Run, because in that case it calls the procedure, package or function, but also allows you to stop execution (by setting breakpoints).
	Add or change privileges. See "Privileges" (page 980) for more information.
	Make Synonym. This defaults to creating a public synonym.
	Drop package.

Details Pane

The details pane contains tabs that allow you to see information about the selected package. These tabs include: Source, Arguments, Deps (Uses), Deps (Used by), Errors, Grants, Synonyms, and Auditing.

When you select a package from the objects pane, the top of the details pane displays the created date and last modified date for the object. The information for both the spec and the body are included.

Policies

Schema Browser: Policies

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Policies are available only if you are using Oracle 8i or above.

Objects Pane

The objects pane lists policies for the selected schema. You can create, enable, disable, edit the predicate package source, and drop the policy.

Policy Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create New Policy. See "Create Policy Definition" (page 1043) for more information.
	Enable Policy.
	Disable Policy. Disabled policies will have a red X preceding them in the object list.
	Refresh Policy.
	Edit Policy Predicate Package Source. Opens the selected policy's Predicate Package Source in the Editor so you can make changes.
	Filter Policies. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.

Button	Command
	Drop Policy.

Details Pane

The details pane displays various parameters and values for the selected policy such as the name, the predicate package, and the predicate function.

Create Policy Definition

Note: Since this is a new Toad feature (optional), it is only available in the commercial version of Toad with the optional DB Admin Module.

Use this window to create a new policy through the DBMS_RLS package. If you do not have DBMS_RLS you cannot use this function in Toad. Refer to the Oracle documentation for more information.

To create a new policy definition

1. Do one of the following:
 - Click  on the Schema Browser | Policies page.
 - From the **Create** menu, select **Policy**.
2. Enter parameter settings.
Note: See your oracle documentation for additional information about parameters.
3. Click **Execute** to create the policy group definition.

Policy Groups

Schema Browser: Policy Groups

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Policy groups are a way of applying more than one security policy to a table. For more information see your Oracle documentation. Policy groups are available only if you are using Oracle 9i or above.

Objects Pane

Policy Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create New Policy group. See "Create Policy Group" (page 1044) for more information.
	Filter Policy Groups. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop Policy Group.

Details Pane

The details pane displays various parameters and values for the selected policy group organized on three tabs: Info, Policies and Objects, and Script.

Create Policy Group

Note: Since this is a new Toad feature (optional), it is only available in the commercial version of Toad with the optional DB Admin Module.

This window lets you create a new policy group through the DBMS_RLS package. If you do not have DBMS_RLS you cannot use this function in Toad. Refer to the Oracle documentation for more information.

To create a policy group

1. Do one of the following:
 - From the Database | Create menu, select **Policy Group**.
 - From the Schema Browser | Policy Group page, click .
2. Enter required Oracle parameters.
3. Click **OK** to create the policy group definition.

Procedures

Schema Browser: Procedures

Objects Pane

Different types and status of procedures, packages, or functions are differentiated by different icons. See "Icon Legend" (page 980) for more information.

Procedures Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create New Procedure. See "Default Templates" (page 900) for more information.
	Save to a SQL file. See "Files - General" (page 658) for more information about file extensions.
	Filter Procedure list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Open in Editor . The selected object is copied into a new Editor tab and you can debug or work with it there.
	Compile Selected Procedure. If the procedure was invalid (marked with a red X) and compiles correctly, it will be remarked as valid and the X no longer appears beside the object name.
	Compile Invalid Objects. Everything invalid in the objects list is compiled, including items that have been hidden by the use of a filter. Note: Depending on the number of items in your list, this option can take quite some time.
	Compile Dependencies. See "Dependencies & References" (page 911) for more information.
	Execute Selected Procedure. If parameters are required, Toad will prompt you for them and then the procedure, package or function will execute. Note: In the Debugger this button is called Run, because in that case it calls the procedure, package or function, but also allows you to stop execution (by setting breakpoints).
	Add or change privileges. See "Privileges" (page 980) for more information.
	Make Synonym. This defaults to creating a public synonym.
	Drop selected procedure.

Details Pane

The details pane contains tabs that allow you to see information about the selected procedure, package or function. These tabs include: Code, Arguments,_deps (Uses), _deps (Used by), Errors, and Grants.

When you select a procedure, package or function from the objects pane, the top of the details pane displays the created date and last modified date for the object. If the object is a package, the information for both the spec and the body are included.

Executing Stored Code from the Schema Browser

You can execute stored procedures, functions, packages or triggers in the Schema Browser window.

To call a stored procedure from the Schema Browser

1. Open the Schema Browser, and select **Procedures**, **Functions**, **Packages** or **Triggers** from the object pane.
2. Select a **PL/SQL object** and click .

Profiles

Schema Browser: Profiles

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can create, modify, and drop profiles. You can also view resource details.

Objects Pane

The Profiles objects pane provides a list of profiles for the selected schema. From the toolbar, you can create, modify, or drop a profile, or create a SQL script.

Profiles Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Filter Scripts. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.

Button	Command
	Create New Profile. See "Create and Alter Profile" (page 1047) for more information.
	Create Like. This lets you make similar profiles in fewer steps. See "Create and Alter Profile" (page 1047) for more information.
	Alter Profile. See "Create and Alter Profile" (page 1047) for more information.
	Drop Selected Profile.

Details Pane

The details pane has several tabs to display various details for selected profiles. These include resource, password, and users.

Create and Alter Profile

Note: This Toad feature is only available in the commercial version of Toad with the optional **DB Admin Module**.

A profile is a set of limits on database resources. If you then assign the profile to a user, that user cannot exceed those limits.

To create a profile

1. Do one of the following:
 - From the Database | Create menu, select **Profile**.
 - Click  on the **Schema Browser | Profiles** page.
2. Select **Default** or **Unlimited** for parameter items from the **Resource Parameters** and **Password Parameters** tabs.
3. Click **OK**.

To alter a profile

- » Click  on the **Schema Browser | Profiles** page.

Queue Tables

Queue Tables

Advanced Queuing is supported only in Oracle 8, 8i and above. Toad hides the Queue Tables and Queues page in the Schema Browser if you are running an older version of Oracle.

Objects Pane

Select the Queue Tables page in the Schema Browser. A list of Queue Tables in the selected schema appears.

Queue Tables toolbar



On the toolbar in the objects pane are several options.

Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create New Queue Table - This displays the Create Table window, with Queue Table pre-selected. See "Create and Alter Queue Table" (page 1049) for more information.
	Alter Queue Table - This displays an Alter Table window for the selected queue table. See "Create and Alter Queue Table" (page 1049) for more information. Note: Alter Queue Table is not supported in Oracle 8.0.
	Filter Queue Tables - This opens a Browser Filters window and lets you filter the Queue Table list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop Queue Table - This drops the selected Queue Table. A confirmation window will ask you if you are sure you want to drop the selected table. Click Yes to drop the table.

Details Pane

The details pane provides information about the selected table.

General

The General tab displays information about the selected queue table. This information includes payload type, compatibility, and options.

Queues

The Queues tab on the details pane allows you to select a queue from the list and then use the toolbar to start and stop enqueues and dequeues of the various queues.

Note: The exception queue cannot be enqueued.

Statistics

The Statistics tab displays the statistics for all the queues in the current queue table. These statistics include the number of messages in each queue that are in the states of waiting, ready, and expired. One grid row represents one queue.

Schedules

The Schedules tab displays the current schedules for propagating messages for all the queues in the current queue table.

Script

The Script tab displays a complete set of scripts to recreate all the queues in the queue table.

Create and Alter Queue Table

Advanced Queuing tables are a table type for use with Oracle's Advanced Queuing features. The Create Queue table command uses Oracle's DBMS_AQADM.CREATE_QUEUE_TABLE procedure.

To create a queue table

1. Do one of the following:
 - From Database | Create | Table, select **Advanced Queuing** from the radio button selection of table types.
 - From the Schema Browser | Queue Tables page, click  on the toolbar.
2. Enter the appropriate parameters, referring to the following for additional information:

Queue Tab Option	Information
Payload type	Enter the type of payload this table will handle. This option maps to the DBMS_AQADM.CREATE_QUEUE_TABLE payload parameter.
Allow subscribers	Maps to the DBMS_AQADM.CREATE_QUEUE_TABLE multiple_consumers parameter.
Allow message grouping	Maps to the DBMS_AQADM.CREATE_QUEUE_TABLE message_grouping parameter.
Compatibility	For example, if you are using Oracle 9i, and you want this

Queue Tab Option	Information										
	<p>table to be compatible with Oracle 8 Advanced Queuing, select 8.0.</p> <p>Note: If you are using Oracle 8.0, Compatibility is not a parameter you can set. This box will be hidden.</p>										
Sort list	<p>Sort keys for dequeue ordering, if any, must be defined when you create the table. You can specify the queues to be sorted in one of the four ways described in the table below. If you do not specify a sort, then all the queues in the queue table are sorted by the enqueue time, in ascending order.</p> <table border="1"> <thead> <tr> <th>Sort Key</th><th>Meaning</th></tr> </thead> <tbody> <tr> <td>ENQ_TIME</td><td>By time of enquiry</td></tr> <tr> <td>PRIORITY</td><td>By priority of queue</td></tr> <tr> <td>PRIORITY, ENQ_TIME</td><td>By priority of queue and then by time of enquiry</td></tr> <tr> <td>ENQ_TIME, PRIORITY</td><td>By time of enquiry and then by priority.</td></tr> </tbody> </table> <p>Note: Even if you have specified a default order a dequeuer can choose a message to dequeue that is not in this order. The msgid, correlation, and sequence_deviation take precedence over the default dequeuing order if they are</p>	Sort Key	Meaning	ENQ_TIME	By time of enquiry	PRIORITY	By priority of queue	PRIORITY, ENQ_TIME	By priority of queue and then by time of enquiry	ENQ_TIME, PRIORITY	By time of enquiry and then by priority.
Sort Key	Meaning										
ENQ_TIME	By time of enquiry										
PRIORITY	By priority of queue										
PRIORITY, ENQ_TIME	By priority of queue and then by time of enquiry										
ENQ_TIME, PRIORITY	By time of enquiry and then by priority.										

Queue Tab Option	Information
	specified.

3. Click **OK**.

Objects Created with Queue Table

When you create a Queue table, four standard objects are created:

- A default exception queue associated with the table. This is called `aq$<queue_table_name>_e`.
- A read-only view, which is used by AQ applications for querying data. This is called `aq$<queue_table_name>`.
- An index, or an index organized table (in the case of multiple consumer queues) for the queue monitor operations, called `aq$<queue_table_name>_t`.
- An index or index organized table (in the case of multiple consumer queues for dequeue operations), called `aq$<queue_table_name>_i`.

If you have created an Oracle8i compatible queue table, the following three index organized tables are also created:

- A table to store information about the subscribers, called `aq$<queue_table_name>_s`.
- A table to store information about rules on subscriptions, called `aq$<queue_table_name>_r`.
- A table to store dequeue history data, called `aq$<queue_table_name>_h`.

Alter Queue Table

Advanced Queuing tables are a table type used specifically by Oracle's Advanced Queuing features. As such, how you alter them is limited.

The Alter Queue table command uses Oracle's DBMS_AQADM.ALTER_QUEUE_TABLE procedure. From this window you can:

- Change limited storage parameters from the Physical Attributes tab.
- Change parallel, logging, and several other parameters on the Additional Attributes tab.
- Change your comments on the Comments tab.
- Change the compatibility parameter on the Queue tab.

To alter a queue table

- » From the Schema Browser | Queue Tables page, click  on the toolbar.

Queues

Schema Browser: Queues

Advanced Queuing is supported only in Oracle 8, 8i and above. Toad hides the Queue Tables and Queues pages in the Schema Browser if you are running an older version of Oracle.

Objects Pane

Click the tab titled Queues in the objects pane of the Schema Browser. A list of Queues in the selected schema appears.

Queues toolbar



On the toolbar in the objects pane are several options.

Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create Queue. See "Create and Alter Queue" (page 1053) for more information.
	Alter Queue. See "Create and Alter Queue" (page 1053) for more information.
	Filter Queue list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Start Enqueue. Enables enqueueing on the selected queue using the DBMS_AQADM.START_QUEUE functionality.
	Stop Enqueue. Stops enqueueing on selected queues using the DBMS_AQADM.STOP_QUEUE functionality.
	Start Dequeue. This enables dequeuing on the selected queue using the DBMS_AQADM.START_QUEUE functionality.
	Stop Dequeue. Stops dequeuing on selected queues using the DBMS_AQADM.STOP_QUEUE functionality.
	Drop Selected Queue.

Details Pane

The details pane has General, Statistics, Schedules, Script, Subscribers, Grants and Synonyms tabs that list parameters and their values.

Create and Alter Queue

The Create Queue window uses the DBMS_AQADM.CREATE_QUEUE procedure, with the exception of creating a non-persistent queue.

To create a queue

1. Do one of the following:
 - From the **Database** menu, select **Create | Queue**.
 - From the Schema Browser | Queue page, click .
2. Enter the required Oracle parameters, referring to the following for more information:

Queue Type - Non-persistent	Creates an in-memory queue using the CREATE_NP_QUEUE procedure.
Subscribers Tab	The Subscribers tab is hidden unless you opt to create a non-persistent queue which allows subscribers. This tab uses the Oracle DBMS_AQADM.ADD_SUBSCRIBER procedure.

3. Click **OK**.

Altering Queues

In a queue that is not an exception queue, you can alter most of the parameters, with the exception of the Queue type. Parameters are listed on the Alter Queue window in the same format as in the Create Queue window.

Exception queues will allow you to alter your comments, and nothing else.

To alter a queue

- » From the Schema Browser | Queue page, click .

Recycle Bin

Schema Browser: Recycle Bin

In Oracle version 10g and above, a recycle bin is available to retrieve tables and associated objects (such as indexes, constraints, and triggers) you have dropped from the database. From the

Schema Browser's Recycle Bin page you can access this bin and retrieve dropped tables if necessary.

Objects Pane

The objects pane lists the objects available in the recycle bin for the selected schema.

Refresh Group Toolbar



Button	Command
	Flashback the selected table. Note: If you selected Purge when you dropped the table, it will not be available for retrieval in the Recycle Bin.
	Purge the recycle bin. You can choose to purge all or only selected objects.
	Filter refresh group list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.

Details Pane

The details pane includes information about the dropped objects.

Flashback Table

You can easily retrieve a table from the recycle bin and place it back in your database.

To flashback table

1. From the Schema Browser | Recycle Bin, select the table you want to retrieve.
2. Click  on the objects pane toolbar.
3. Select one of the following:
 - use the same name as the dropped table
 - rename the table and enter a new name in the **Rename To** box
4. Click **OK**.

Purging Objects from the Recycle Bin

You can easily delete (purge) objects from the recycle bin.

To purge the recycle bin

1. From the Schema Browser | Recycle Bin | objects pane, select the objects you want to purge.
2. Click  on the toolbar.
3. Select from the following options:
 - Purge Selected Tables and Indexes (Triggers cannot be purged individually.)
 - Purge everything from connected schema (SCHEMANAME)
 - Purge Entire recycle bin - database wide
 - Purge Everything in specified tablespace
4. If you have chosen to purge everything in a selected tablespace:
 - enter the **tablespace** to be purged
 - if you want to limit the purge to one user within that tablespace, check the **Only specified user's objects** box and enter the username
5. Click **OK**.

Refresh Groups

Schema Browser: Refresh Groups

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

From the Schema Browser, you can add materialized views to existing refresh groups, remove materialized views, refresh selected groups, and drop groups.

Objects Pane

The objects pane lists the refresh groups available in the selected schema.

Refresh Group Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new refresh group. See "Create and Alter Refresh Group" (page 1056) for more information.
	Alter existing refresh group. See "Create and Alter Refresh Group" (page 1056)

Button	Command
	for more information.
	Add materialized view to refresh group.
	Remove materialized view from refresh group.
	Refresh the object list - This refreshes the list of refresh groups in the object pane
	Filter refresh group list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop selected refresh group.

Details Pane

The details pane contains information about the selected refresh group.

Create and Alter Refresh Group

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To create a refresh group

1. Do one of the following:
 - From the Database | Create >menu, select **Refresh Group**
 - From the Schema Browser | Refresh Group page click .
2. Enter the appropriate Oracle parameters, referring to the following for more information:

Properties Tab	
Implicit Destroy	If checked, if you delete all of the mviews from the refresh group, Oracle will automatically delete the refresh group too.
Rollback Segment	Enter the rollback segment you want to use for this refresh group. When Oracle refreshes the snapshots in a refresh group, the server can generate a

	significant amount of rollback data. Be sure to select a rollback segment large enough for the group's refreshes. If left blank, the default rollback segment is used.
Specify Heap Size	This option is used only if parallelism > 0. It sets the maximum number of transactions to be examined simultaneously for determining parallel scheduling. If unchecked and unspecified, Oracle will determine this value.
Objects in Group tab	Use the grid on this tab to add or remove mviews to and from the Refresh Group. Note: If this group is set to Implicit Destroy, then removing all mviews from the group will also delete the group.

3. Click **OK**.

To alter a refresh group

- » From the Schema Browser | Refresh Group page click .

Note: If you have selected **Implicit destroy** and you remove all of the materialized views from the group, the group will be removed as well.

Resource Consumer Groups

Schema Browser: Resource Groups

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

You can use resource consumer groups to group user sessions together by resource requirements. These are different from roles, as one user can have different sessions assigned to different resource consumer groups.

You can create, alter, drop, and clear pending resource groups. You can also view resource group details.

Note: Resource groups are only available Oracle 8i and above.

Objects Pane

The objects pane lists the resource consumer groups available in the selected schema.

Resource Consumer Group Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create resource consumer group. See "Create and Alter Resource Consumer Group" (page 1058) for more information.
	Alter resource consumer group. Create and Alter Resource Consumer Group (page 1058)
	Filter resource consumer group list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Clear pending area - While resource groups are being created, they reside in a "pending" area. If errors occur during the process of creating/altering/dropping a resource consumer group, objects may remain in the pending area. Toad's GUI will usually clear the pending area when errors occur, but this will clear the pending area manually if necessary.
	Drop selected resource consumer group.

Details Pane

The details pane contains tabs to display details for resource plans, including: information, grantees, plans, and script.

Create and Alter Resource Consumer Group

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To create a resource consumer group

1. Do one of the following:
 - From the Database | Create menu, select **Resource Consumer Group**
 - From the Schema Browser | Resource Consumer Group page click .

2. Enter Oracle parameters.

Note: Oracle only allows for the ROUND-ROBIN CPU method at this time.

3. Click **OK**.

To alter a resource group

- » From the Schema Browser | Resource Group page click .

Note: You cannot change the name or CPU method of a Resource Group. Oracle only allows for the ROUND-ROBIN CPU method at this time.

Resource Plans

Schema Browser: Resource Plans

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Resource plans control processing resources using directives that specify the resources to be given to each group and can be specified in hierarchical fashion using sub-plans.

You can create, alter, drop, schedule and clear pending resource plans. You can also view resource plan details.

Objects Pane

The objects pane lists the resource plans available in the selected schema.

Different types and status of resource plans are identified by different icons. See "Icon Legend" (page 980) for more information.

Research Plan Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create resource plan. See "Create and Alter Resource Plan" (page 1060) for more information.
	Alter resource plan. See "Create and Alter Resource Plan" (page 1060) for more information.
	Filter resource plan list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.

Button	Command
	Activate resource plan. This is also available from the right-click menu. Note: Only one plan can be active at a time. Activating a new plan will deactivate the first plan.
	Deactivate resource plan. This is also available from the right-click menu.
	Schedule resource plan. See "Schedule Resource Plans" (page 1060) for more information. Note: You must be logged in as SYS to alter this schedule.
	Clear pending area - While resource plans are being created, they reside in a "pending" area. If errors occur during the process of creating/altering/dropping a resource plan, objects may remain in the pending area. Toad's GUI will usually clear the pending area when errors occur, but clicking this will clear the pending area manually if necessary.
	Drop selected resource plan.

Details Pane

The details pane contains tabs to display details for resource plans.

Create and Alter Resource Plan

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To create a resource plan

1. Do one of the following:
 - From the Database | Create menu, select **Resource Plan**.
 - From the Schema Browser | Resource Plan page click .
2. Enter parameter settings.
3. Click **OK**.

Alter resource plan

- » From the Schema Browser | Resource Plan page, select a resource plan and then click .

Schedule Resource Plans

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To schedule resource plans, the schema that you log in with must be connected as **SYSDBA**.

Note: This scheduler creates jobs that are viewable in the Schema Browser under the Jobs tab. Modifying these jobs is not advisable and may cause the scheduler to perform incorrectly.

To schedule resource plans

1. From the Schema Browser | Resource Plans page, click .
2. From the Daily Resource Plan Schedule that appears, you can:
 - Add new plans by clicking .
 - Remove plans by clicking .
 - Enable plans by selecting the Enabled check boxes in the grid, or by clicking **Enable All**.
 - Disable plans by deselecting the Enabled check boxes, or by clicking **Disable All**.
 - Display the SQL that will make the change by clicking **Show SQL**. From this dialog box you can save the SQL to a file to be run later.
3. Click **OK** to run the SQL.

Roles

Schema Browser: Roles

Note: The Creating, Altering and Dropping roles features are only available in the commercial version of Toad with the optional DB Admin Module.

Objects Pane

Roles Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create role. See "Create and Alter Role" (page 1062) for more information.
	Alter role. See "Create and Alter Role" (page 1062) for more information.
	Filter resource plan list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.

Button	Command
	Drop selected role.

Details Pane

The details pane contains tabs to display details for Roles. These tabs include: Info, Role Grants, System Privileges, Object Grants, and Resource Groups.

Note:

- Object Privileges tabs do not include SYS and SYSTEM objects.
- Configure grantees is available only with the DB Admin Module.

Create and Alter Role

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To create a role

1. Do one of the following:
 - Select **Database | Create| Role**
 - Click  on the **Schema Browser | Roles** page.
2. Enter parameters settings.
3. Click **OK**.

To alter a role

- » From the **Schema Browser | Roles** page, select a role, and then click .

Rollback Segments

Schema Browser: Rollback Segments

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Objects Pane

Different types and status of rollback segments are identified by different icons. See "Icon Legend" (page 980) for more information.

Rollback toolbar

On the toolbar in the objects pane are several options. You can select more than one rollback segment for some of these operations.



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new rollback segment. See "Create and Alter Rollback Segment" (page 1063) for more information.
	Alter rollback segment. See "Create and Alter Rollback Segment" (page 1063) for more information.
	Shrink segment.
	Place online - This button is enabled if the rollback segment is offline. Clicking this icon places the selected rollback segment online and makes it available for transactions. The Info tab for the segment (in the details pane) will list the status value as ONLINE.
	Place offline - This button is enabled if the rollback segment is online. Clicking this icon places the selected rollback segment offline and makes it unavailable for transactions. The Info tab for the segment (in the details pane) will list the status value as OFFLINE. Offline segments will have a red X icon displayed to the left of them in the segments list (on the left panel).
	Filter scripts. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop selected rollback segment.

Details Pane

The details pane has Info and Stats tabs that list parameters and their values.

Create and Alter Rollback Segment

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

This window lets you create a new rollback segment. A rollback segment is an object that Oracle uses to store data necessary to reverse (undo) changes made by non-completed transactions.

To create a rollback segment

1. Do one of the following:
 - a. Select **Database | Create | Rollback Segment**.
 - b. Click  on the **Schema Browser | Rollback Segments** page.
2. Enter parameter settings.
3. Click **OK**.

To alter a rollback segment

1. From the Schema Browser | Rollback Segments page, select an existing rollback segment.
2. Click .

Sequences

Schema Browser: Sequences

A sequence can either be ascending or descending. Oracle computes and caches the specified number of sequence values in memory before they are requested. This lets Toad and Oracle run faster.

Objects Pane

The objects pane contains a list of Sequences in the selected schema. You can select any of these by clicking on the name of the sequence in the list. Details about that sequence display in the details pane (see below).

Sequences Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new sequence. See "Create and Alter Sequence" (page 1065) for more information.
	Alter sequence. See "Create and Alter Sequence" (page 1065) for more information.
	Add or edit privileges. See "Privileges" (page 980) for more information.

Button	Command
	Add Public Synonym.
	Filter the Table List. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop selected sequence.

Details Pane

The Info tab in the details pane shows the selected sequence's Max Value, its Increment, the number to Cache, and its Next or Last Cached Value.

The Grants tab in the details pane lets you view grants.

In addition, you can view Synonyms, who the sequence is used by, the script and auditing information.

Create and Alter Sequence

Sequences are counters that Oracle maintains to generate unique integers. They can be used to automatically generate primary key values. Because they are independent of tables, the same sequence can be used to generate values for one or multiple tables and for multiple users.

To create a new sequence

1. Do one of the following:
 - From the Database | Create menu, select **Sequence**.
 - Click  on the **Schema Browser | Sequences** page.
2. Enter the sequence information.
3. Click the **Execute** button to create the Sequence.

To alter a sequence

1. From the **Schema Browser | Sequences** page, select the sequence to alter.
2. Click .

Synonyms

Schema Browser: Synonyms

Objects Pane

The objects pane contains a list of available synonyms and a toolbar of commands to work with these objects.

Different types and status of synonyms are differentiated by different icons. See "Icon Legend" (page 980) for more information.

Synonyms Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new synonym. See "Create Synonym" (page 1066) for more information.
	Filter synonyms list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Save list to file for syntax highlighting . See "Syntax Highlighting" (page 690) for more information.
	Drop Synonym.

Details Pane

The details pane has tabs for Columns, Source, Data, Grants, Deps (Uses), and Deps (Used by).

Create Synonym

Use this dialog box to create a synonym, which will point from the synonym name to the original object name.

To create a Synonym

1. Do one of the following:

- From the Database | Create menu, select **Synonym**
- From the Schema Browser | Synonyms page, click the **Create Synonym** button.

2. Select the **object type** from the dropdown list, such as Table, Procedure, Package, Function, Trigger, Sequence, View, Database Link, or Synonym.

Note: If you want to filter down the list, enter a LIKE% value in the box and click the **FIND** button. (You can check the **Include Grantable Objects** check box if desired. It is unchecked by default.)

3. Double-click an object from the upper list, and the synonym will be added to the lower list. Check boxes let you **Include drop statement** and **Make Public**. Both are checked by default.
4. When you are done selecting objects for synonym creation, click the **Copy Script to Clipboard** button or the **Execute Script** button.

System Privileges

Schema Browser: System Privileges

Objects Pane

The objects pane contains a list of available system privileges and a toolbar of commands to work with these objects.

Sys Prvs Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Configure grantees. This opens the Grants window for the select privilege. From this window, you can grant or revoke the privilege to/from a selected user by checking or unchecking the appropriate box. In addition, you can do the same to a selected role or roles.
	Filter system privileges. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.

Details Pane

Note: Configure grantees is available only with the Quest DB Admin Module.

The details pane has tabs that will list grantees and display the script for the selected system privilege.

Configure Grantees

From the System Privileges window you can grant or revoke selected privileges to/from a selected user. In addition, you can do the same to a selected role or roles.

To grant or revoke a privilege

1. From the **Sys Prvs** page of the Schema Browser, select a privilege.
2. Click 
3. Check or clear the appropriate boxes to grant or revoke privileges to users or roles.
4. Click **OK**.

Tables

Schema Browser: Tables

Objects Pane

The objects pane lists the tables in the current schema, as well as a toolbar of commands.

List of Tables

Different types and status of tables are identified by different icons preceding the table name. See [Icon Legend](#) for more information.

Sometimes a table may be of more than one type, and only one of the multiple icons will display in the margin. In this case, the icon with the highest priority will be shown. For example, a partitioned snapshot table will show the snapshot icon.

See "Altering Tables" (page 1074) for more information about tables.

Note: Advanced Queuing tables are not listed on the Tables page of the Schema Browser. See "Queue Tables" (page 1047) for more information about advanced queuing tables.

Tables Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create table. See "Altering Tables" (page 1074) for more information.
	Alter table. See "Altering Tables" (page 1074) for more information.

Button	Command
	Open table in ER diagram. See "ER Diagram" (page 709) for more information.
	Add or edit privileges. See "Privileges" (page 980) for more information.
	Add constraint. See "Create and Alter Constraints" (page 997) for more information.
	Analyze table . Use this dialog box to analyze the selected table from the tables object list. This collects statistics so that COST based query optimization can be used and the optimizer can run better queries. You can estimate statistics (faster than compute), compute statistics, or delete current statistics.
	Add synonym. See "Create Synonym" (page 1066) for more information.
	Filter the table list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Rebuild table. See "Rebuild Table" (page 591) for more information. Note: You must own the schema you are browsing in order to rebuild a table from it.
	Compile dependencies. See "Dependencies & References" (page 911) for more information.
	Drop selected table.
	Remove all data from selected table. See "Truncate Table" (page 1080) for more information.

Details Pane

From the details pane you can view and edit data for a selected table. In addition, you can see the status of indexes, constraints, triggers, grants, synonyms, partitions, referential tables, among other information.

Tables and Columns Comments

Oracle provides the facility to store comments of up to 2000 characters on Tables, Table Columns, Views, View Columns, Snapshots, and Snapshot Columns. This is an excellent but under-used means to document the DDL design not just for developers but also for Report Writers, QA, and others who must access the database.

Viewing Comments in the Schema Browser

From the Tables page of the Schema Browser you can choose to display or hide table comments in the details pane.

To display or hide comments in the grid

1. Select the **table** you want to view.
2. Click  ▾ choose **Show column comments in list**. When selected, a new column is added to the grid and comments displayed there.

To display or hide comments in a separate pane.

1. Select the **table** you want to view.
2. Click  ▾ choose **Show column comments** or **Show table comments**. Comments are displayed in a pane beneath the grid.

To add a new comment

1. Select the **table** you want to view.
2. Click  ▾ choose **Show column comments** or **Show table comments**. Comments are displayed in a pane beneath the grid.
3. Select **Editable Column Contents** box.
4. Make changes or add a new comment.
5. Click in another grid cell or on another table to post changes before closing the Schema Browser.

Adding Comments in Editor

To add comments to tables, views, view columns, snapshots, or snapshot columns, you can perform these SQL statements in an editor window:

```
comment on table schema.table_name is 'text'  
comment on table schema.view_name is 'text'  
comment on table schema.snapshot_name is 'text'  
comment on column schema.view.column is 'text'  
comment on column schema.snapshot.column is 'text'
```

To drop a comment, set 'text' to " (in other words, delete all text between the quotation marks).

Creating DML Procedures

You can use Toad to create DML procedures from your tables in the Schema Browser. You can create DML procedures for one table at a time, or multi-select them from the Objects panel and

create procedures for all of the tables at once. After selecting what to include, adding your options, and choosing where you want the output sent, Toad will create the procedures for you.

To create DML procedures

1. From the Schema Browser, tables page, select the tables you want to use in the objects pane.
2. Right-click and select **Create DML Procedures**.

3. Set Refer to the following for more information:

INCLUSIONS tab	
INSERT Procedure	
Procedure Name	Enter a name for the created INSERT procedure. The default is INS_%TableName%. Where %TableName% will be replaced with the name of the table. If you are creating procedures for multiple tables, the default is recommended.
One ROWTYPE% parameter	Select this option if you want to use only one ROWTYPE% parameter. Otherwise, Toad will use a different ROWTYPE% parameter for each parameter.
One parameter per column	The created procedure will include declarations for the parameters and their columns. When it is not selected, the created procedure will not include these declarations.
UPDATE Procedure	
Procedure Name	The default is UPD_%TableName%. Where %TableName% will be replaced with the name of the table. If you are creating procedures for multiple tables, the default is recommended.
One ROWTYPE% parameter	Select this option if you want to use only one ROWTYPE% parameter. Otherwise, Toad will use a different ROWTYPE% parameter for each parameter.
One Parameter per column	Select this option if you want to include only one parameter per column in the procedure. The created procedure will include declarations for the parameters and their columns. When it is not selected, the created procedure will not include these declarations.
DELETE Procedure	
Procedure Name	The default is DEL_%TableName%. Where %TableName% will be replaced with the name of the table. If you are creating procedures for multiple tables, the default is recommended.

Other Options tab	
Option	Information
Use packages (one package per table)	Select this option to create your procedures in the form of a package rather than a procedure. When checked, package spec and body will be created. When unchecked, a standard procedure will be created from the table.
Naming	
IN Parameters	The default is <code>in_%ColumnName%</code> .
OUT Parameters	The default is <code>out_%ColumnName%</code> .
IN OUT Parameters	The default is <code>inout_%ColumnName%</code> .
Package Names	The default is <code>DML_%TableName%</code> .

4. Click **OK** to generate the DML procedures.

Creating Tables

Create and Alter Table

Note: Toad does not support the following functionality at this time: foreign key references, LOB storage, and Varrays.

Tabs and options are slightly different depending on what kind of table you are creating.

- Standard tables, index-organized tables, and clustered tables.
- Global Temporary tables. See "Columns Tab" (page 1076) for more information.
- Advanced Queuing tables. See "Create and Alter Queue Table" (page 1049) for more information.
- External tables. See "Columns Tab" (page 1077) for more information.

To create a table

1. Do one of the following:
 - From the Database | Create menu, select **Table**.
 - From the Schema Browser | Tables page, click .
2. Enter a name for the table in the **Table Name** box.
3. Select a table type.
4. Define your table using the tabs.
5. Click the **Execute** button to create the table.

Altering Tables

Note: Toad does not support the following functionality at this time:

- Foreign key references
- LOB storage
- Varrays

To alter a table

» Select a table from the objects list in the **Schema Browser |Tables** page and then click .

The Table window automatically displays the **Schema** and the **Name** for the table you selected. You cannot modify the Schema or the Name of the Table.

Create Like

Use the create like functionality to use a table as a template for a new table.

To create a table based on another table

1. In the Schema Browser, select the **Tables** page.
2. Select the table you want to use as the template for a new table.
3. Right-click the **table**.
4. Select **Create Like**.
5. Enter the **name** you want to use for the new table.
6. You can now make changes to the table from any of the tabs, just as you would if you were using the Create Table dialog box. See "Altering Tables" (page 1074) for more information.
7. Click **Show SQL** to show the SQL that will be used to create the table.
8. Click **OK** to create the table.

Loading Columns from File

You can load columns for your table from a file instead of entering them manually.

To load columns from file

1. Select the **Columns** tab in the Create Table window.
2. Click **Load Columns from File**.
3. Select the type of file where your data resides:
 - XLS file
 - Delimited text file

- MS Access DB file
 - DBase file
4. Enter the filename or click and select the file.
 5. If you are using an MS Access database as your source, choose the source table in the table box.
- Click **OK** to import columns.

Note: Clicking **Clear all Columns** will clear all columns that have been entered into the table.

Editing BLOB/CLOB/NCLOB Parameters

You can edit the parameters for your BLOBS, CLOBS, and NCLOBS.

To edit parameters

1. From the Create/Alter table window, select the column you want to edit.

Note: This column must be of type BLOB, CLOB, or NCLOB.

2. Do one of the following:
 - Right-click and select **Lob Parameters**.
 - Click in the **LOB** column.
3. Adjust parameters as desired and then click **OK**.

Note: For detailed information on the parameters you can set, please see your Oracle documentation.

4. Click **OK** in the **Create** or **Edit Table** window.

Model Table Dialog

The model table dialog box lets you choose the level of referential tables you want to load when creating your SQL Model.

To enter a number of referential tables

1. From the Schema Browser, select the **Tables** page.
2. Select a **table**, right-click and select **Model Table for** from the menu.
3. Enter the number of **referential tables**, and click **Close**. The Query Builder opens with the selected table and references open.

Create Global Temporary Tables

The Create Table window for Global Temporary tables is divided into tabs. If you have Toad's Professional version, you can also Generate Data.

Note:This topic only covers unfamiliar information. It does not include all step and field descriptions.s.

Columns Tab

Editing Button	Function
Drop Col	This deletes the selected column. (In Alter function this marks a column for a drop.) This function is only enabled if you have Oracle 8.1.5 or later, because that is when this function was introduced.
Set Unused	This sets the selected column to unused. This is for the Alter function only and is disabled in the Create Table function. This function is only enabled if you have Oracle 8.1.5 or later, because that is when this function was introduced.
Load Cols from File	Opens the Load Columns from File dialog. See "Loading Columns from File" (page 1074) for more information.

Hot Keys

Command	Function
INSERT	Add
CTRL+DEL	Drop
HOME	Go to first column in grid
END	Go to last column in grid
CTRL+HOME	Go to first row in grid
CTRL+END	Go to last row in grid

External Tables

External tables are available only in Oracle 9i and above.

Note:This topic only covers unfamiliar information. It does not include all step and field descriptions.s.

Columns Tab

Editing buttons

- Delete Col - This deletes the selected column. (In Alter function this marks a column for a drop.) This function is only enabled if you have Oracle 8.1.5 or later, because that is when this function was introduced.
- Set Unused - This sets the selected column to unused. This is for the Alter function only and is disabled in the Create Table function. This function is only enabled if you have Oracle 8.1.5 or later, because that is when this function was introduced.

Hot Keys

Command	Function
INSERT	Add
CTRL+DEL	Drop
HOME	Go to first column in grid
END	Go to last column in grid
CTRL+HOME	Go to first row in grid
CTRL+END	Go to last row in grid

External Properties

Use this screen to set properties for your external table.

Access Driver

The default for the Access Driver is ORACLE_LOADER.

Access Type

The default for the Access Type is CLOB.

Default Directory

You can set your own default directory. Click  to create a new directory.

Reject Limit

The reject limit is the number of records that can be rejected before a SELECT on your external table fails. The default is Unlimited, but you can select **Specify** and enter the appropriate number in the associated box.

Table Details

Column Definition

To define a column

1. From the Schema Browser | Tables page | Columns tab, click .
2. Enter the **column name**, **data type**, and other appropriate information.

Click **Execute** to add the column.

Notes:

- Character Default Values have to be wrapped within single quotes, in order to make a valid "ALTER TABLE..." statement.
- Additional columns are always appended to the end of the table definition. You cannot insert columns.
- If you want to rename columns, rearrange them, or drop them, use the Rebuild Table dialog box. See "Rebuild Table" (page 591) for more information.

Table Referential

On the **Schema Browser | Tables | Referential** tab is a hierarchy of tables and how the selected table

- is referenced by other tables
- references other tables.

Note: This window will populate more quickly if you have access to: sys.con\$, sys.cdef, sys.user\$, sys.obj\$, and dba_cons_columns.

On each node of the hierarchy, there is a bitmap of a "chain" for standard referential, and a bitmap of a pair of scissors if the reference is "**Cascade on Delete**".



Circular references, such as EMPLOYEE.MANAGER_ID referencing EMPLOYEE.EMPLOYEE_ID are captured, so you cannot drill down in the hierarchy endlessly: for example, emp_id is referenced by manager_id, which references emp_id, and so on.

To view details of objects

- » Select an item in the list, press **F4** to display a DESCRIBE window.

Build a SQL statement

You can build a SQL statement with a join between the two tables. This statement can then be sent to either the clipboard or the Editor.

To build a SQL statement

1. From the **Schema Browser | Tables | Referential** tab, select one of the tables in either pane.
2. Right-click and select "**Send Join SQL Statement to Editor**" (or **Clipboard**).

Table Details

Details for tables are displayed in the right hand side of the Schema Browser when you select one or more tables from the object list.

Multiple Table Details

When you select multiple tables from the object list, the grid in the details panel displays general information about the tables selected:

- Img - Displays an icon related to the table type. Normal heap tables have no icon.
Note: Unfamiliar icons can be identified using the icon legend. See "Icon Legend" (page 980) for more information.
- Table - This is the name of the table detailed.
- Schema - The schema where the table resides.
- Tablespace - The tablespace used by the table.
- Last Analyzed - The date the table was last analyzed.
- Number of Rows - The number of rows in the table according to the table's statistics.

Note: These statistics are derived from the `xxx_TABLES` data dictionary view: an estimate from the last time statistics were collected from the table. Depending on when those statistics were last created, they may not be completely up to date.

Single Table Details

When you select a single table from the object list, there are more options for details you can view.

Detail tabs include options to view and filter information about data, columns, indexes, constraints, triggers, synonyms and so on. Information on these tabs is queried directly from the objects in question.

To see the queries in use

- » From the **Database | Spool SQL**, select **Spool SQL to screen**. Queries will display in the output pane at the bottom of the main Toad window.

Actions on Tables

Create Insert Statements

Within the Schema Browser | Tables | Data Grid, you can create an INSERT statement that encompasses all rows in the data grid, or just selected rows.

To create INSERT statements for selected rows

1. Right-click over the data grid and make sure that **Multi-select** is checked.
2. In the data grid, select the rows for which you want insert statements.
3. Right-click and select **Export Dataset**.
4. Set up the export as follows:
 - a. Format: **Insert statements**
 - b. Export Selected Rows: **Checked**
 - c. Automatically detect Schema and name: **Checked**.
5. Click **OK**.

To create INSERT statements for all rows

1. Right-click over the data grid and select **Export Dataset**.
2. Set up the export with the format of **Insert Statements**.

Truncate Table

To truncate a table

1. From the **Schema Browser**, select the **Tables** tab. Select a **table** and then click the **Truncate Table** toolbar button.
2. Select the **allocation option** you want to use and click **Execute**. The table is truncated, and storage is either freed or dropped.

Analyze Tables

Use this command to analyze the selected tables from the tables object list. This collects statistics so that COST based query optimization can be used. So, the optimizer can run better queries.

You can estimate statistics (faster than compute), compute statistics, or delete current statistics.

This opens the Analyze Objects window.

To analyze tables

- » From the Schema Browser | Tables page click  on the toolbar.

Foreign Key Lookup

When you are editing table data in the Schema Browser, you can look up foreign keys and enter the associated data into the selected table.

Foreign key lookup will also work when the grid is in Read Only mode. You can disable this feature from the Toad Options | Schema Browser | Data and Grids | Enable FK Lookup.

To lookup foreign keys

1. In the Schema Browser, click the **Tables** tab.
2. Select the table you want to edit and in the details pane click the **Data** tab.
3. Click in a column that has foreign keys. Click again to activate Editing mode. A drill down button appears.
4. Click  to display the rows in the referential table.
5. To enter data in appropriate columns in the data grid, select a row and click **OK**.

The Foreign Key Lookup Window

Within the lookup window, all foreign key constraints are included. If you want Toad to ignore disabled constraints, see Toad Options | Schema Browser | Data.

You can filter rows by typing or by directly editing the query.

To filter rows by typing

1. Make sure the **Filter by** box in the lower left is checked.
2. Put your cursor in one of the displayed columns. You can now filter by typing (if you type "ab" it will filter out rows that do not begin with "ab").

To filter rows by editing the query

1. Click **Edit Query**.
2. Edit the query within the editing window.
3. Specify variables by clicking the **Variable** button and entering variable information.
4. Check that your query syntax is accurate by clicking the **Check** button.
5. Click **OK** to run your new query and filter the lookup grid.

Working with Data

Schema Browser: Tables - Data Grids

Filter and Sort

On the Tables - Data tab, you can filter and/or sort the columns in the data grid.

To filter data

- » Click  above the grid.

Note: Dates can only be entered in mm/dd/yy, mm/dd/yyyy, or the Windows Control Panel, Regional Settings, Date, Short Date Style format. For example, in French, date entry of dd/mm/yy or dd/mm/yyyy is acceptable. Dates entered in dd-mon-yy format will be rejected.

To clear all table/view filters

- » Click **Clear Filters**.

Insert Records

To insert a record

1. From the Schema Browser | Tables | Data tab, click in the **data grid** and then click **+**.
Note: The new record is inserted above your cursor point.
2. Enter the data into the grid, pressing **TAB** to move between fields.

Notes:

- Unless you have the Auto Commit option checked, data is not committed until you click the commit button.
- After an Insert, Toad does not know the rowid until the data has been committed and the dataset refreshed. (Dataset refresh options can be easily changed from the Schema Browser. See "Refresh Options" (page 989) for more information.)

Therefore, if you have **Allow Multiselect** checked in the right-click menu, select only the new row, and then select **Create Insert Statement for Selected Rows**, insert statements will be created for ALL rows in the table. (If the new row is part of a group of rows selected, the selected rows will have insert statements, and the new row will be ignored).

Sending Data Query to Editor

To send the query to the Editor

- » Click on the desired **Table** in the Object list and then press **CTRL+E**.

Copy data to another Schema

You can quickly copy data from one or multiple tables to the same table or tables in another schema or database. Toad builds insert statements that use array binding in the variables to copy the data. If you set the array size to 500, then 500 rows are inserted with a single insert statement. The array size is adjustable.

To access copy data

1. Select and right-click one or more tables in the Schema Browser.
2. Choose **Copy data to another schema** from the menu.

Source/Dest and Options

To select source destinations and options

1. Click the **Source/Dest and Options** tab to select destination connection, schema, and options.

Note: Toad copies data from one schema to another between tables that have the same tablename. The tables must exist prior to running this command.

2. Choose a **destination connection** and **schema**.
3. Select options. You can change the **truncate** options, the **array size**, specify a rollback segment, and choose commit options. In addition, you can click the Where Clauses tab and apply where clauses to the SQL that selects your data.

Note: The default is to commit automatically after each insert. This may not be the best option for you or your databases.

In addition, if the source connection is the same as the destination connection, and the source schema is the same as the destination schema, then truncate will be disabled, and a "proceed -- are you sure" dialog box displays.

Where Clauses (optional)

To add a where clause

1. Click the **Where Clauses (Optional)** tab.
2. Choose the tables you want to apply the WHERE clause:
 - Choose **All Tables** to apply to all tables listed.
 - Select tables from the list and choose **Selected Tables Only** to apply to some but not all tables.
3. Enter the WHERE clause in the right panel. Include the "WHERE" in the clause. You can check your query by clicking **Test Query**.
4. Click **Apply Where Clause To** to apply the where clause to the appropriate tables. Tables with where clauses applied will be listed in a purplish color, and tables without a where clause applied will remain listed in black.
5. Repeat steps 2-5 as necessary if you want to apply a different where clause to each table.
6. You can check your query by clicking **Test Query**.
7. When a where clause has been added, you can click the table to see its where clause (and edit it if necessary).

Saving and Loading Settings

You can save your settings to a file and then later reload them from the file. This makes it easier to create similar copies in the future, as you may not have to recreate the WHERE clause, or fill out the options again.

In addition, if you save your settings to a file you can later choose to run the Copy function from the command line. See "Run Copy to another Schema from Command Prompt" (page 842) for more information.

Scheduling the Copy

To schedule a data copy

1. Open the Copy Table data window and set up your Source/Dest, Options and Where clauses.
2. Click .
3. Enter the name of the file where you want Toad to save your settings. Click **OK**.
4. The Schedule Task wizard appears. Enter the information requested and Click **OK**. See "Add Task Wizard" (page 763) for more information about the task wizard.

Tablespaces

Schema Browser: Tablespaces

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Objects Pane

The objects pane includes buttons to create and alter tablespaces, place a tablespace online or take it offline, and the drop/drop all buttons.

Different types and status of tablespaces are differentiated by different icons. See "Icon Legend" (page 980) for more information.

Tablespaces toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new tablespace. See "Create and Alter Tablespace" (page 1085) for more information.

Button	Command
	Alter tablespace. See "Create and Alter Tablespace" (page 1085) for more information.
	Filters. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Place online. This is enabled if the selected tablespace is offline. It lets you place the selected tablespace online.
	Place offline. This is enabled if the selected tablespace is online. When you have confirmed that you want to place the tablespace offline you have four options to place the selected tablespace offline, unavailable for transactions: Normal, Temporary, Intermediate, and For Recover.
	Show tablespace map. See "Tablespace Map" (page 274) for more information.
	Export tablespace. See "Export Utility Wizard" (page 410) for more information.
	Coalesce tablespace. Toad will display a confirmation dialog box before performing the coalesce command.
	Drop tablespace. See "Drop Tablespace" (page 1088) for more information.

Details Pane

The details pane has tabs for Datafiles, Free Space, Fragmentation, Objects, Quotas, Extents, and Properties.

Create and Alter Tablespace

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

To create a new tablespace

1. Do one of the following:
 - From the Database | Create menu, select **Tablespace**.
 - From the Schema Browser | Tablespace page, click the **Create New Tablespace** button.
2. Enter information to define your tablespace.

Altering Tablespaces

From the Alter Tablespace window you can alter permanent and temporary tablespaces. If you use Oracle 8i or above, you can alter both dictionary managed and local tablespaces. You can then migrate between the two types. When you open the Alter Tablespace window, any parts of the Tablespace you cannot edit are disabled. These will differ depending on the type of tablespace you are editing and whether it is online or off.

To alter a tablespace

» Do one of the following:

- From the Schema Browser | Tablespaces >page, select a **tablespace** in the object pane and then click  on the toolbar.
- From the Identify Space Deficits window, click **Alter Tablespace**.
- From the Database menu | Administer | Tablespaces, select a **tablespace** and click  in the toolbar.

Migrate Tablespace

If you are using Oracle 8i or above, you can migrate between locally Managed and Dictionary Managed Tablespaces.

Note: To use this function as a DBA user, you must have the EXECUTE privilege on DBMS_SPACE_ADMIN. This must be granted by the SYS user.

On the Basic Info tab, in the Extent Management area, Locally Managed tablespaces have the **Locally Managed** check box checked.

- To switch to a dictionary tablespace from a locally managed tablespace, uncheck this box and then click **Execute**. If you spool SQL to screen, you can see the SQL that is executed. It should look something like this:

```
begin
  sys.dbms_space_admin.tablespace_migrate_from_local ('migrate');
end;
```

- To switch to a locally managed tablespace from a dictionary managed tablespace, select Locally Managed and click **OK**. If you spool SQL to screen, you can see the SQL that is executed. It should look something like this:

```
begin
  sys.dbms_space_admin.tablespace_migrate_to_local ('migrate');
end;
```

Create and Alter Tablespace Quota

Using the Tablespace quota window, you can create or alter tablespace quotas for a selected tablespace or user.

To access the Tablespace quota window

1. From the Schema Browser, select the **Tablespaces** page and then select a tablespace.
2. On the right hand side, click the **Quotas** tab.
3. Select the quota user you want to change.
4. In the right hand side, click the **Create/Alter Quotas** button.

Or:

1. From the **Schema Browser**, select the **Users** page and then select a user.
2. Click the **Create/Alter User** button.
3. Click the **Quotas** tab.
4. Make changes and click **OK**.

Creating or Altering a Quota

The grid of Tablespace quotas is organized by User Name, Tablespace, Unlimited, Quota, and Units. This information describes which users are assigned to the tablespace.

- If the user has **no quota**, the quota and units column will be blank.
- If the quota is **Unlimited**, the quota column will display Unlimited.

To add or change a quota

1. At the top of the dialog box, either check **Unlimited** box, or enter the size of the quota you want to add. If the latter, use the dropdown to select either **MB** or **KB**.
2. Choose the appropriate radio button:
 - All this - applies the quota to all users.
 - Selected - choose the appropriate row from the grid. (You can multi-select by holding down **Ctrl** as you click.)

Any quotas you apply on rows will replace any previously existing quota.

3. Click **Apply To**.
4. You can now choose to:
 - Apply changes immediately by clicking **Execute**.
 - Click **Show SQL** and choose to copy to clipboard or save to file.

Drop Tablespace

Note: This Toad feature is only available in the commercial version of Toad with the optional DB Admin Module.

Including contents

When not checked, Oracle will not allow the tablespace to be dropped if it is not empty. When checked, the tablespace and its contents will be dropped. When checked, the following options become available:

- And Datafile - Oracle 9i only. When checked, Oracle will remove the datafiles for the tablespace from the server. When unchecked, the datafiles remain and must be manually deleted.
- Cascade Constraints - Can be used only when "Including Contents" is checked. If checked, all referential integrity constraints from tables outside the tablespace that refer to primary and unique keys of tables inside the tablespace are dropped. If unchecked and such referential integrity constraints exist, Oracle returns an error and does not drop the tablespace.

Drop Datafile

If you are using Oracle 10gR2 or newer, you can drop a datafile from the Schema Browser - Tablespaces page. The datafile must be empty, and must not be the first file in the tablespace.

Note: This button will also drop datafiles in locally managed temporary tablespaces.

To drop a datafile

1. From the Schema Browser | Tablespaces, select a tablespace.
2. Click the **Datafile** tab on the Details panel.
3. Select the datafile you want to drop.
4. Click  on the datafiles tab toolbar.

Datafile Definition

Note: This topic only covers unfamiliar information. It does not include all step and field descriptions.

To define a datafile

1. From the Schema Browser, select **Tablespaces**.
2. Select a **tablespace** in the **Objects Panel**. The data filenames for that tablespace appear in the Details panel, on the **Datafiles** screen.

3. Choose to add or alter a datafile.
 - To change a datafile, double-click the data filename.
 - To add a datafile, click  at the top of the Datafile screen.

To edit a data definition file

1. In the **Datafiles** tab, select a data definition file and then click **Edit** on the Datafiles toolbar.
2. In the **Data Definition** dialog box, change the datafile information as required.
3. Click **Execute** to complete the editing and return to the Alter Tablespace window.

Change or add settings

Rename

The Rename button appears only on existing datafiles. Renaming a datafile moves the datafile at the OS level. See "Rename/Move Datafile" (page 1089) for more information.

Minimize Size

When you click **Minimize size** Toad analyzes the datafile and displays a box telling you how small the minimum size for the datafile can be.

Autoextend

If you choose to autoextend then select the amount of additional space you want to add, and the maximum space to allow the datafile.

Rename/Move Datafile

You can rename a datafile. This entails taking the tablespace offline and moving the files.

To rename a datafile

1. On the Datafile Definition window, click **Rename**. See "Datafile Definition" (page 1088) for more information.
2. Toad fills in the datafile name and tablespace for you. If the current status of the tablespace is ONLINE, Step 1 will be active. Click **Execute** to take the tablespace offline.

When the tablespace is offline, you can proceed to step 2. Enter the full path and filename for the new filename. Then click either Copy Unix command to move the file to the clipboard or Copy DOS command to move the file to the clipboard.

Note: A dialog box appears warning to execute the saved command on the server before you move on. Executing this command actually renames the file.

3. In Step 3, issue the "Alter Database" SQL to tell Oracle that the file has moved. Click **Execute**.

4. In step 4, you bring the Tablespace back online. Click **Execute**.
5. Click **Close**.

Triggers

Schema Browser: Triggers

Objects Pane

The objects pane toolbar includes buttons to compile the selected trigger or all triggers, buttons to disable/enable the selected trigger or all triggers, a trigger filter button, and the drop/drop all buttons.

Different types and status of triggers are differentiated by different icons. See "Icon Legend" (page 980) for more information.

Triggers Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create new trigger. See "Create and Alter Trigger" (page 1091) for more information.
	Save to file.
	Alter trigger. See "Create and Alter Trigger" (page 1091) for more information.
	Open in editor. The selected object is copied into a new editor tab.
	Compile trigger.
	Disable selected trigger.
	Enable selected trigger.
	Filter trigger list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop selected triggers.

Details Pane

The details pane has tabs for Source, Columns, and Errors.

A right-click menu contains Compile, Edit, Disable, Enable, and Save to File items.

Create and Alter Trigger

To create a trigger

» Do one of the following:

- From Database | Createmenu, select **Create Trigger**.
- Click  on the **Schema Browser | Trigger** page.

The create trigger window is divided into three areas. The Main window and Basic Info/Fire Control tab, contain the buttons and main information for the trigger. Two additional information tabs let you create the WHEN clause and the body of the trigger.

WHEN Clause

The tab for the **When** clause lets you enter your own specific clause.

Note: Do not begin with the word "WHEN". Just enter the clause itself. Toad will include the WHEN as it compiles the SQL.

Alter Trigger

To alter a trigger

1. Click  on the **Schema Browser | Triggers** page.
2. Make changes and click **OK**.

Types

Schema Browser: Types

Types are supported only in Oracle 8, and above, in versions with the Objects option enabled. Toad hides the Types page if you are running an older version of Oracle.

Objects Pane

The objects pane includes buttons to create a new object, alter an object, save an object to file, load in Editor, compile, change privileges, and drop the object.

The objects pane consists of a hierarchical list of object types as owned by the selected schema in the dropdown list. You can browse or edit objects in other schemas, provided you have appropriate Oracle Database privileges.

You can drill down or up by either double clicking the item, or single clicking over the plus or minus symbol. You can also drill down by pressing the "+" (PLUS) key on the numeric keypad, "-" (MINUS) to drill up, and "*" (ASTERISK) to expand all.

Different types and status of Types are identified by different icons. See "Icon Legend" (page 980) for more information.

If an object name cannot be displayed in the given amount of horizontal screen space, a tooltip popup will appear with the complete object name.

Types Toolbar

The Types toolbar includes buttons to create a new object, alter an object, save an object to file, load in Editor, compile, change privileges, and drop the object.



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	Create user type. This displays the New Object Type window where you can create a new user type and assign attributes to it. Create Object Type (page 1093)
	Alter user type. See "Edit Object Type" (page 1095) for more information. Note: You cannot edit a collection.
	Compile. Compiles the selected object. The dropdown menu beside it lets you choose to compile only the spec, body, or both.
	Privileges. Lets you grant the EXECUTE privilege to other users or roles for this type.
	Create object table. Creates an object table from the selected object. You cannot create an object table from a collection.
	Filter types list. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Drop user type. Drops the selected object.

Details Pane

The details pane provides information about the types in the objects pane.

Dependencies tab information

This tab displays information about any dependencies attached to the selected type. If your **Autoload** options are turned off (in View | Schema Browser | Options | Types Tab), you can right-click over one of the grids and select **Load** to display the information.

Create Object Type

Types are supported only in Oracle 8, 8i and above, in versions with the Objects option enabled.

To create a new object type

Do one of the following:

- From Schema Browser | Types page, click the **New Object Type** button on the toolbar.
- From the Database | Create Menu, select **Object**.

Left Panel Object Hierarchy

On the left side of the window there is a hierarchical list of the attributes and methods contained in the selected object.

Each item in the hierarchy has an icon associated with it for easy reference. These include:

Icon	Meaning
	Object
	Attribute
	Method
	Object Changed but not yet recompiled

Renaming Objects

Objects and their attributes and methods are assigned default names. You can rename a type, or its associated attributes and methods. Right-click the item you want to rename and enter the new name.

Toolbar

The toolbar allows you to add a new attribute or method, and to build/refresh the code for the object type.



Icon	Meaning
	New Attribute - Click to create a new attribute associated with this object.
	New Method - Click to create a new method associated with this object. The dropdown lets you create the method with default parameters for: New Procedure, New Function, New Map Procedure, and New Order Function.
	Build/Refresh Code - Click to build or refresh the body and specification code for this object type. This code is displayed in the Body and Specification tabs.

Right Panel Object Details

When an object is selected, the right detail panel displays a three-tab interface listing: Properties, Specification, and Body.

- When the root type is selected, there are only two tabs: Specification and Body.
- When an attribute is selected, the Properties tab displays detailed information about the attribute, including data type, schema, object, length, precision, and scale.
- When a method is selected, the Properties tab displays a list of parameters to the method, the method type, and restrictions of the method.

Properties Tab

Attributes

When an attribute is selected in the hierarchy, the Properties tab allows you to select or adjust the settings for the attribute. You can select from the basic data types for the attribute. For example, INTEGER, VARCHAR2, DATE, and so on, or select REF or Nested Object to refer to other objects, in which case Schema and Object dropdown lists become enabled.

Methods

When a method is selected in the hierarchy, the Properties tab displays a list of parameters to the method, including parameter name, data type, mode (IN, OUT, and so on), and Object.

Also on the Properties tab is a dropdown list to select the method type (Procedure, Function, Map Function, or Order Function), a label indicating if the method is overloaded (True or False), a dropdown for method return data type (if Function), dropdown lists for Schema and Object if the return type is a REF to an object or a Nested Object, and check boxes for method restrictions WNDS, RNDS, WNPS, and RNPS.

These method restrictions tell the PL/SQL compiler what sort of access the method needs to the database. The compiler can then deny the method read/write access to database tables, packaged variables, or both. Methods with defined pragma can be called from SQL expressions.

- WNDS means "writes no database state"
- WNPS means "writes no package state"

- RNDS means "reads no database state"
- RNPS means "reads no package state"

You can Add, Edit, or Delete method parameters by clicking the appropriate buttons. In the case of Add or Edit, you will be prompted for parameter name, mode (IN, OUT, or IN OUT), data type, and in the case of REF or Nested Object, Schema and Object.

Map Functions cannot have any method parameters associated with them. If you change from Procedure, Function, and so on to Map Function, you will be prompted whether or not to automatically delete all method parameters.

Order Functions must have one IN parameter of the same type as the object. If you select Order Function, you will be prompted whether or not to automatically remove all method parameters and add one parameter of the appropriate type.

Specification Tab

This shows the specification for the object's attributes and methods. As with any memo editor in Toad, you can select the text and copy it elsewhere using **CTRL+C**.

Body Tab

This shows the code for the object's methods.

Edit Object Type

You can edit types, and the attributes and methods associated with them.

From the Schema Browser | Object Pane | Types page, select the type you want to edit and click the **Alter User Type** button.

Left Panel Object Hierarchy

On the left side of the window there is a hierarchical list of the attributes and methods contained in the selected object.

Each item in the hierarchy has an icon associated with it. These include:

Icon	Meaning
	Object
	Attribute
	Method
	Object Changed but not yet recompiled

Renaming Objects

You can rename a type, or its associated attributes and methods. Renaming the type itself keeps the old type and creates a new one with the new name. To replace the old type, return to the Schema Browser | Types page and drop the old type.

Removing Attributes

You can remove an attribute, but not a method.

To remove an attribute

- » Select the attribute in the left panel hierarchy, right-click, and select **Remove**.

Note: The attribute is not entirely removed from the hierarchy until you click **OK**. You can click **Cancel** to restore the attribute.

Right Panel Object Details

When an object is selected, the right detail panel displays a three-tab interface listing: Properties, Specification, and Body.

- When the root type is selected, there are only two tabs: Specification and Body.
- When an attribute is selected, the Properties tab displays detailed information about the attribute, including data type, schema, object, length, precision, and scale.
- When a method is selected, the Properties tab displays a list of parameters to the method, the method type, and restrictions of the method.

Properties Tab

Properties can be set or adjusted for attributes and methods. See "Create Object Type" (page 1093) for more information.

Specification Tab

This shows the specification for the object's attributes and methods. As with any memo editor in Toad, you can select the text and copy it elsewhere using **CTRL+C**.

Body Tab

This shows the code for the object's methods.

Note: This tab is unavailable for Collection Types.

Create and Alter Collection Type

Types are supported only in Oracle 8, 8i and above, in versions with the Objects option enabled.

To create a collection type

» Do one of the following:

- From Schema Browser | Types page, select the Collection Types group in the hierarchy and click the **Create Type** button on the toolbar.
- From the Schema Browser | Types page, select new Collection Types from the dropdown menu beside the New Type button on the toolbar.

To name the collection

1. In the left panel, right-click over the NEWCOLLECTION name. Select **Rename** from the menu.
2. Type a **new name** and press **ENTER**.

Set Properties

In the right panel, select the appropriate properties for the new collection. Options are activated or grayed out depending on which radio button you select, VARRAY, or Nested Table.

Alter Collection Type

Alter Collection Type

- » From the Schema Browser | Object Pane | Types page, select the collection type you want to edit and click .

Users

Schema Browser: Users

Objects Pane

The objects pane lists all users for the current database and lets you easily work with them.

Different types and status of users are differentiated by different icons. See "Icon Legend" (page 980) for more information.

An [online video tutorial](#) is also available for this feature. This video opens in a new browser window and requires an internet connection.

Users Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.

Button	Command
	Create new user. See "Create and Alter User" (page 1098) for more information.
	Alter user. See "Create and Alter User" (page 1098) for more information.
	Copy selected user. This displays the New User Information window that lets you copy a user and assign the copy a new name and password.
	Filters. This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Lock user. Lock the selected account. The status of the account is changed to locked, and the lock date is recorded. Locked accounts display in the objects list with a lock to the left of the name. When someone tries to access a locked account, a message will display that says the account is locked. The locked status appears in the Info tab on the details pane. Note: You must have DBA privileges to lock an account.
	Unlock user. Unlock the selected account. The status of the account is changed to unlock, and the lock date is deleted. Note: You must have DBA privileges to unlock an account.
	Drop selected user.

Details Pane

The details pane for the Users page includes tabs (for the selected User) for Info, Role Grants, System Privileges, Object Grants, Objects, Extents, Quotas and Resource Groups.

Both the Roles and Privileges tabs contain **Revoke** and **Revoke All** buttons.

Note: Object Privileges tabs do not include SYS and SYSTEM objects.

Create and Alter User

Create User lets you create new users, basing them upon grants from existing users.

To create a user

1. Do one of the following:
 - Select **Database | Create | User**
 - Click  on the Schema Browser | Users page.

2. Enter the required information in the tabs and fields, referring to the following for more information:

Tab	Information
Quotas tab	If you are creating a new user, the new user must be created before you can add quotas.
Resource Groups tab	This is the group that the user is a part of when he first connects to the database. When the connection is established, the user can switch to any other resource group included in his "switch" list. Note: Only one initial group is permissible for a single user.

3. Click **Execute** to create the user.

To clone a user

- » Select a user on the **Schema Browser | Users** page and then click .

To alter a user

- » Select a user on the **Schema Browser | Users** page and then click .

Views

Schema Browser: Views

Objects Pane

The information in the objects pane is designed so you can easily tell the status of your views. To the left of the view name, an icon appears. See "Icon Legend" (page 980) for more information.

Views Toolbar



Button	Command
	Create Object Script. See "Export DDL" (page 396) for more information.
	New view. See "Create and Alter View" (page 1100) for more information.

Button	Command
	Filter views . This opens a Browser Filters window and lets you filter the object list. If a filter is in use, this icon turns red. See "Schema Browser Filters" (page 989) for more information.
	Alter view. See "Create and Alter View" (page 1100) for more information.
	Compile selected views.
	Compile all invalid views.
	View/Edit privileges. See "Privileges" (page 980) for more information.
	Add synonym.
	Compile dependent procedure. See "Dependencies & References" (page 911) for more information.
	Drop selected views.

Details Pane

The details pane includes tabs for Columns, Source, Data, Grants, Deps (Used), Deps (Used by), Triggers, and Errors.

Create and Alter View

This window is used to create a new view. A view is a customized display of data from a table or tables or from another view or views. A view does not get any storage space (except for the stored query). It is basically displaying the output of a query in the form of a table.

To create a new view

1. Do one of the following:
 - From the Database | Create menu, select **View** menu item
 - From the Schema Browser | Views page, click the **New View** button.
2. Choose **Schema** from the dropdown and enter a **Name** in the box.
3. Enter any required or optional View information in the areas described below.
4. Optionally, add the object to the Project Manager by selecting the **Add to PM** check box.
5. Click one of the following:
 - Show SQL button - The Show SQLstatement button will display the SQL statement window which will show the create view SQL statement for your new

view.

- Clipboard button - Copies the statement to the Clipboard.
- Save to File button - Saves the statement as a file.

To alter a view

» Click  on the Schema Browser | Views page

To rename a view

» Right-click on a **view** in the left hand side object list and then select **Rename View**.

Tabs

This topic only covers unfamiliar information. It does not include all step and field descriptions.

Option	Information
View Info tab	
Force check box	When selected, this forces the creation of the view, even if the active schema does not have access to the table.
With check box	If selected, the following check boxes are enabled. <ul style="list-style-type: none">• Read Only - If checked, the alias will be read-only.• Check Option - The Check Option specifies that inserts and updates performed through the view must result in rows that the view query can select. The check option cannot make this guarantee if there is a subquery in the query of this view or any view on which this view is based or INSERT, UPDATE, or DELETE operations are performed using INSTEAD OF triggers.
Source tab	Enter your subquery in this section. When you have entered your subquery, you can click Check Query to make sure it parses correctly before you execute it.

Views - Data Grids

On the Schema Browser | Views | Data tab, you can filter and/or sort the columns in the data grid. If the view is updatable, you can also edit the data from the grid.

Filtering data

To filter data by column

1. Click the **Filter Data** toolbar button just above the grid.
2. Use the Table Sort window to select the columns to sort and/or filter.

To clear all table/view filters at once

- » Click **Clear Filters**.

Note: Dates can only be entered in mm/dd/yy, mm/dd/yyyy, or the Windows Control Panel, Regional Settings, Date, Short Date Style format. For example, in French, date entry of dd/mm/yy or dd/mm/yyyy is acceptable. Dates entered in dd-mon-yy format will be rejected.

Editing views in the data grids

If the view is updatable, you can edit the data from the grid.

The exception to this are views that are editable, but do not have a RowID. These will be returned as non-editable. This includes views within a view hierarchy, and views containing a join without a primary key that have `INSTEAD OF` triggers.

Note: If you have trouble refreshing data after editing, or attempting to edit it, a Refresh option may be the culprit. Dataset refresh options can be easily changed from the Data tab. See "Refresh Options" (page 989) for more information.

Sending Data Query to Editor

If the view is editable, you can send the data tab query to the editor.

To send the query to the Editor

- » Click on the desired **View** in the Object list and then press <CTRL><E>.

Appendix:Contact Quest

Contacting Quest Support

Quest Support is available to customers who have a trial version of a Quest product or who have purchased a commercial version and have a valid maintenance contract. Quest Support provides around the clock coverage with SupportLink, our web self-service. Visit SupportLink at <http://support.quest.com>

From SupportLink, you can do the following:

- Quickly find thousands of solutions (Knowledgebase articles/documents).
- Download patches and upgrades.
- Seek help from a Support engineer.
- Log and update your case, and check its status.

View the Global Support Guide for a detailed explanation of support programs, online services, contact information, and policy and procedures. The guide is available at:

[http://support.quest.com/pdfs/Global Support Guide.pdf](http://support.quest.com/pdfs/Global%20Support%20Guide.pdf)

Note: This document is only available in English.

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About Quest Software

Quest Software, Inc., a leading enterprise systems management vendor, delivers innovative products that help organizations get more performance and productivity from their applications, databases, Windows infrastructure and virtual environments. Through a deep expertise in IT operations and a continued focus on what works best, Quest helps more than 100,000 customers worldwide meet higher expectations for enterprise IT. Quest Software helps organizations deliver, manage and control complex database environments through award-winning products for Oracle, SQL Server, IBM DB2, Sybase and MySQL. Quest Software can be found in offices around the globe and at www.quest.com.

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