

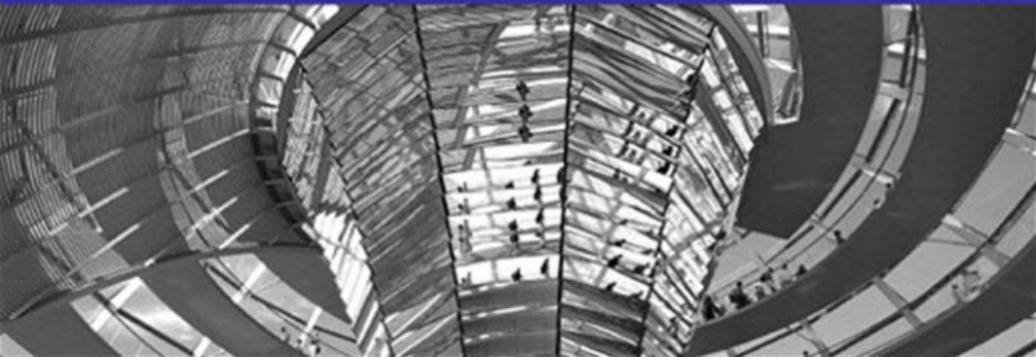
Bert Scalzo  
Dan Hotka

Second Edition



# TOAD<sup>®</sup> Handbook

**Developer's Library**



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# Introduction

This is the second edition of the first ever book to cover the very popular TOAD for Oracle database management and development tool. This book covers all of the most popular and key features of TOAD, including many features that are new additions to TOAD version 9.7. Moreover, this book offers numerous TOAD tips and tricks, with ample expert recommended advice or techniques—without focusing on any particular version of the Oracle database. Readers should be able to identify and readily adapt these “best practices” to their daily TOAD usage.

## Who Should Read This Book

This book should benefit all TOAD users. It is ideal for a wide range of users, from those who are new to both Oracle and TOAD to very sophisticated or experienced users of TOAD. Furthermore, this book attempts to address the specialized needs for three key database personas: database administrators, database application developers, and data/business analysts. In truth, TOAD has so many features and offers so many benefits that no one book can realistically hope to fully cover them all. Thus each chapter focuses on a particular functional or task-related area, covering it in depth with illustrations, tips, and techniques from Oracle and TOAD experts Bert Scalzo and Dan Hotka.

This book is ideal for the following types of readers:

- The power user who wants easy access to data, help with SQL, and help with occasional coding assignments
- The user who wants to increase his or her productivity while using the Oracle RDBMS
- The IT professional who is already familiar with TOAD but needs help with its extended features
- The developer who wants to do something specific but cannot remember how
- Any TOAD user who wants to learn how to take advantage of TOAD’s newly introduced features

## Why This Book Is Unique

This book doesn't make assumptions about readers' prior TOAD or Oracle administrative or development background, so it presents the full range of tips and techniques applicable to these tools. The main goal of this book is to illustrate the use of TOAD and to serve as a handy reference for anyone using the TOAD database tool. To this end, the book is liberally illustrated with working examples of all topics covered.

This book is intended to be a complete, single source of information, usage, tips, and techniques for the TOAD tool. It focuses on the following topics:

- TOAD installation and setup
- Development of PL/SQL and SQL statements and scripts in an easy-to-use and intuitive environment
- Tuning SQL and debugging PL/SQL
- Modeling any user's schema
- Routine and advanced DBA tasks
- Exporting of data into various formats
- Additional features such as FTP, TKProf, StatsPack, and AWR interfaces and the ability to add your own favorite editors and programs

## How This Book Is Organized

The chapters are organized as follows:

**Chapter 1, TOAD Setup and Configuration**, reviews the more common and critical setup and configuration steps necessary to fully maximize your initial TOAD experience. While some of these steps may seem quite simple and fairly obvious, failure to address them properly can radically reduce your initial success.

**Chapter 2, Database and Schema Browsers**, covers the main TOAD interface for exploring your database's structure and content (i.e., meta-data and data). This chapter explores all of the browser's advanced display options and capabilities, as well as key start-up and control options. It also explains how to filter the schemas, objects, and their data.

**Chapter 3, SQL Editor**, covers all of TOAD's features relevant to building and maintaining SQL and SQL scripts. This chapter explores all of the shortcuts and hot keys available, and summarizes them in convenient reference grids. Chapter 3 also explains how to build SQL with code templates and advanced topics such as "scripts that write scripts."

**Chapter 4, TOAD PL/SQL Editor**, covers the features available for building and maintaining PL/SQL, procedures, functions, and triggers. This chapter also illustrates just how easy it is to see the various object relationships using TOAD. In addition, it discusses use of the powerful PL/SQL symbolic debugger and PL/SQL Profiler. This chapter covers all of the shortcuts and hot keys available, and summarizes them in convenient reference grids.

**Chapter 5, Database Reporting**, reviews the various reports that come with TOAD, including HTML reports, the report interface, and ways to generate additional reports using the Fast Reports utility.

**Chapter 6, Tuning Tools in TOAD**, explores the use of the TOAD Explain Plan interface, Oracle Trace with TOAD, the TKProf interface, and newer browsers for both StatsPack and AWR.

Chapter 7, Database Management, focuses on routine DBA tasks such as checking instance status, database performance monitoring, user session monitoring and management, checking/correcting fragmentation, and creating and maintaining database objects. Anyone who has to perform database administration tasks (including power users) will find this chapter useful.

**Chapter 8, Exporting Table Data**, illustrates how easy it is to extract data from Oracle and import it into a variety of customized formats using TOAD. This chapter also discusses how TOAD works with existing Oracle features, such as through the Export/Import utility and the newer Data Pump alternatives.

**Chapter 9, Other Useful Tools**, covers the remaining features of TOAD—for example, browsing master/detail data, building SQL visually using the SQL Modeler, creating “poor man’s” mini-ER diagrams via the Schema Browser hook to the SQL modeler, registering external programs for quick launch from within TOAD, visually comparing text files for differences, working with TNS Names files, making subsets of data, and managing libraries of scripts.

**Chapter 10, TOAD App Designer**, explores the process of creating, running, and scheduling TOAD groupings of tasks (called applications) into command-line-executable packages. Now you can record TOAD actions as macros and then execute them, thereby automating many of the TOAD tasks that you routinely perform.

We hope you enjoy using this book as much as we have enjoyed writing it.

Bert Scalzo  
Dan Hotka

# TOAD Setup and Configuration

**C**ongratulations! You have just purchased TOAD, the market-leading Oracle integrated development environment (IDE) and productivity enhancement tool, and are now preparing to deploy it throughout your organization. TOAD has always adhered to one very simple mantra: to make all Oracle database interactions as easy and productive as possible. Thus, when TOAD has been properly configured, you should find it to be the single most effective and productive database tool on the market today. However, even the world's leading Oracle productivity enhancement tool requires a little attention to detail during both setup and configuration to achieve the best user experience possible. By spending just a few extra minutes wisely upfront, you should then be able to reasonably fulfill all of your various TOAD users' expectations—including database administrators (DBAs), developers, and data or business analysts.

With more than 1 million registered commercial product users, and even more free-ware users, TOAD has already been deployed and utilized in just about any scenario imaginable. Regardless of whether you are working with older Oracle database versions such as 7.3 or newer versions such as 10g or 11g, you can rest assured that TOAD has seen action in those arenas. The TOAD development team takes enormous pride in supporting millions of users in a plethora of environments. You should, therefore, consider that any potential difficulties that you may encounter are most likely setup and configuration issues—and not automatically or necessarily anything particular or overly special related to your situation.

In this chapter, we review some of the more common and critical setup and configuration steps necessary to fully maximize your initial TOAD experience. While some of these steps may seem quite simple and fairly obvious, failure to address them properly can radically reduce your initial success. Once you've mastered this chapter's concepts, you should have TOAD set up properly and working ideally to support most users' needs.

## Windows Platform Support

TOAD is a native Microsoft Windows 32-bit application. Such Windows 32-bit applications are very often referred to as Win-32 apps. TOAD is written in the Delphi 7 programming language, which is essentially just Object Pascal for Windows. You may have observed that some of Quest Software's newer TOAD product family members, such as TOAD for SQL Server, have been written in Microsoft C# and, therefore, require the .Net framework. But that's true only for these newer products, which don't have preexisting code bases. With nearly 2 million lines of legacy code, porting of TOAD to another language simply for the sake of porting is cost prohibitive.

As a Win-32 app, TOAD has been developed to run natively on the various Microsoft desktop operating systems, including these members of the Windows family:

- Windows 2000
- Windows XP (32 or 64 bit)
- Windows 2003 (32 or 64 bit)
- Windows Vista (32 or 64 bit)

Notice that all 64-bit versions of the various Microsoft Windows operating systems are fully supported. Microsoft created a highly compatible 64-bit environment where any well-behaved Win-32 app should run just fine within a 64-bit memory space. TOAD is no exception: It runs perfectly well on 64-bit versions of Windows. To ensure that it works, there is merely a requirement that the Oracle SQL\*Net client installed for TOAD usage also be the 32-bit version. We'll cover this special SQL\*Net client requirement in full detail in the next section on database connectivity.

What about older Windows versions such as Windows 95 and 98: Will TOAD run on those operating systems? The answer to this question is "probably." Unfortunately, the TOAD development team cannot reasonably or even realistically afford to undertake quality assurance (QA) testing for every possible Windows operating system version. Thus, while TOAD might function on those older operating systems, it will be more by luck than by intention. The same logic applies to newer but not yet commercially released versions such as Windows 7. TOAD may work on Windows 7 because it's based on Vista, but that platform has not yet been added to the officially supported TOAD QA list. Rest assured, however, that it will be supported once the new operating system becomes commercially available.

Another question that has come up a lot in recent times focuses on running TOAD on virtual machines that are themselves running Windows: Are there any problems with that setup? The basic answer is "no"; to TOAD, the virtual machine appears as just a Windows operating system as required. Nevertheless, we have seen some cases where memory management between the host operating system, virtualization layer, and client operating system can cause problems for applications such as TOAD. You may encounter these or other issues in your own system. For example, when scrolling a TOAD data grid all the way to the end via the slider control, TOAD may freeze up. So, when you are working on a vir-

tual machine, keep that possibility in mind during troubleshooting efforts. The problem could be something within that technology stack.

## Database Connectivity

TOAD is a database application that connects to, communicates with, and acts upon a database. As such, it requires a valid network pathway from itself to whatever target database you desire to connect to and work with. Regardless of whether that target database is on a database server on your company network or a local database running on your PC, TOAD must be able to see and communicate with it. As a consequence, database connectivity is a supremely critical aspect and step for proper setup and configuration. Figure 1.1 shows what such a valid basic network pathway should look like.

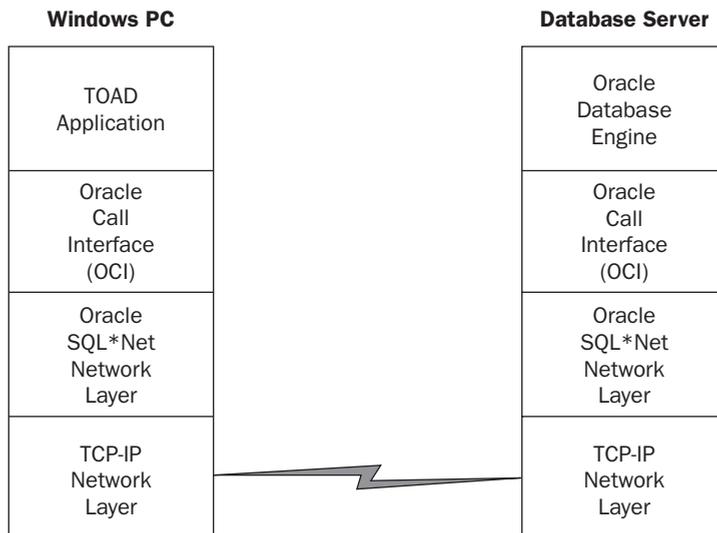


Figure 1.1 Network Pathway between TOAD and the Target Oracle Database

For your Windows PC, where do the four key parts (i.e., the four boxes on the left side of Figure 1.1) of that network pathway between TOAD and the database come from? The TCP/IP layer will already be there from your Windows installation and network card configuration. So that part's very easy—you have nothing to do. When you install TOAD, the “TOAD Application” part of Figure 1.1 is accomplished automatically. That leaves the “Oracle Call Interface (OCI)” and “Oracle SQL\*Net Network Layer” parts of Figure 1.1: Where do they come from? To implement them, you must install the Oracle 32-bit network client from the Oracle installation CD or DVD. Of course, you can also download the software from the Oracle Technology Network (OTN), but you must abide by the license agreement, which states that you have a “limited license to use the programs only for the purpose of

developing a single prototype of your application, and not for any other purpose.” If your target database is also running on your Windows PC, then the installation process for the Oracle database software on your PC would have already created those items for you. As a consequence, you would not need to run the Oracle software installer twice. However, if you plan to run a 64-bit database locally, then you would need to run the Oracle installer a second time to force an installation of the 32-bit client that TOAD requires.

A very common question is, Can TOAD use Microsoft’s Open Database Connect (ODBC)? The answer is an emphatic “no.” The data access layer component within TOAD has been designed to communicate with the database solely via the OCI API provided by Oracle. TOAD will not work with ODBC connections.

But you’re not done just yet—not by a long shot. Once the pieces shown in Figure 1.1 are in place on your Windows PC (i.e., the software is installed), you still need to provide network configuration information. This type of network information tends to be very detailed and site specific, such that any database applications using this framework know how to properly navigate the network pathway. An Oracle database usually has an address and a name by which you reference it. For example, the database might be named **ORCL** and might reside at network address **192.168.1.5**. Clearly, Figure 1.1 does not show or imply how to address any of that information. In other words, the figure provides the highway infrastructure for traffic to flow, but it does not know anything about the server addresses or database names. You will have to manually configure that part of the system yourself. This step is supremely critical, as TOAD cannot talk to an Oracle database whose address and name cannot be resolved. For further reading, we strongly advise that someone at your site be familiar with the *Oracle Database Net Services Administrator’s Guide*. In following examples, you’ll notice that we specify port 1521: What is that and why did we use it? It’s the default Oracle network port. This and a myriad of other Oracle issues are fully explained in the *Oracle Database Net Services Administrator’s Guide*.

If you are working with a remote database (i.e., the database is not running on the same Windows PC as where you’re running TOAD itself), then you need to configure just a single Oracle SQL\*Net file: *tnsnames.ora*. It can be found in the “\network\admin” subdirectory under where you instructed the Oracle installer to install all the files for the Oracle products selected, which in our case is “C:\Oracle\product\11.1.0\db\_1”. Listing 1.1 shows what a basic *tnsnames.ora* file looks like to provide the information required to reach the remote database named **ORCL** and found on the server whose address is **192.168.1.5**. When asking TOAD to connect to a database, the information contained within the *tnsnames.ora* file is absolutely critical; you can’t make a collect call to a person if you don’t know that individual’s name and phone number. The same is true for Oracle databases.

#### Listing 1.1 Remote Database *tnsnames.ora*

---

```
ORCL =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = 192.168.1.5)(PORT = 1521))
    )
  )
```

```

(CONNECT_DATA =
  (SERVICE_NAME = ORCL)
  (INSTANCE_NAME = ORCL)
)
)

```

---

If you're instead working with a local database (i.e., the Oracle database is running on your Windows PC where you are also running TOAD), then you have a second file that must be properly configured—the database listener file, known as *listener.ora*. Think of the Oracle listener as a “traffic cop” listening to all the network traffic that passes by his machine. If any network packets contain an address and name that resides on that machine, then the traffic cop (i.e., the listener) waves them onto that server’s streets. Otherwise, all the network traffic just sails on by. So now we have two Oracle SQL\*Net files to properly configure. Listing 1.2 shows what a basic *tnsnames.ora* file looks like to provide the information required to reach the database named **ORCL** that resides on the local Windows PC, which you can generally access via the network alias **localhost** or the address **127.0.0.1**. Listing 1.3 shows the corresponding *listener.ora* file. You will need both to connect TOAD to a local database; otherwise, you cannot traverse the network path even though it’s all on the same machine.

#### Listing 1.2 Local Database tnsnames.ora

---

```

ORCL =
  (DESCRIPTION =
    (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = 127.0.0.1)(PORT = 1521))
    )
    (CONNECT_DATA =
      (SERVICE_NAME = ORCL)
      (INSTANCE_NAME = ORCL)
    )
  )
)

```

---

#### Listing 1.3 Local Database listener.ora

---

```

SID_LIST_LISTENER =
  (SID_LIST =
    (SID_DESC=
      (GLOBAL_DBNAME=ORCL)
      (ORACLE_HOME=C:\oracle\product\11.1.0\db_1)
      (SID_NAME=ORCL)
    )
  )
)

LISTENER =
  (DESCRIPTION=(ADDRESS=(PROTOCOL=tcp)(HOST=127.0.0.1)(PORT=1521)))

```

---

Finally, there are other mechanisms besides the *tnsnames.ora* file for resolving database addresses. For example, when using the Lightweight Directory Access Protocol (LDAP) concept, and as offered by Oracle Internet Directory (OID) or Microsoft Active Directory (AD), you will see on the TOAD connection screen that TOAD can also connect to databases using either direct connect information or LDAP-based lookup. However, both these options are beyond the scope of this book. Again, we refer you to refer to the *Oracle Database Net Services Administrator's Guide*.

## Database Client Versions

Failure to install and configure the SQL\*Net client will prevent TOAD from functioning. However, you must also keep in mind the version of your client libraries versus the database that you're working with. Having client libraries from an older version of Oracle and working with newer versions of Oracle is a recipe for disaster. You may well encounter Oracle OCI API error messages from within TOAD. Such a problem might well occur as TOAD attempts to call an OCI function for some feature or capability of the newer database version that the older network client library does not support.

For example, using an 8i client with a 9i database and attempting to work with columns whose data type is XMLTYPE will yield the following cryptic message:

```
OCI-21500: internal error code, arguments: [kocgpn129], [2], [], [], [], [], [], []
```

This is not a TOAD bug, nor is it a sign of lack of TOAD support for new database features; rather, it represents a simple user configuration error of trying to use an old and/or incompatible network client library version with a newer version of the Oracle database. The best advice is to always install and use the latest and greatest Oracle network client version, as it will always be fully backward compatible with prior database versions.

For the most current and authoritative reference on this issue, you should consult the Oracle metalink document **207303.1**. At the time this book was written, the document recommended Oracle client versions 11.1 and 10.2, with version 9.2 being supported in some very limited and special scenarios.

We have found version incompatibility to be one of the most prevalent problems when people report a suspected TOAD bug. Because technical support will ask you this question upfront anyway, you might as well fix compatibility problems before the call and save yourself one step in the troubleshooting process.

## Which Version of TOAD to Use

This is the proverbial \$64 million question. The very obvious answer is “the latest and greatest”—always. But sometimes people cannot roll out new versions across large organizations very quickly or easily. At other times people have let their TOAD maintenance contract lapse, so upgrading is no longer free unless they either renew that maintenance agreement or repurchase the product if they've been out of the maintenance loop for too

long. But assuming you're current on your TOAD maintenance such that all TOAD upgrades are available to you for free, and assuming that you can deploy upgrades without restrictions or heartaches due to internal procedures, then our "latest and greatest" advice stands. Figure 1.2 shows the long TOAD versus Oracle Database version history, along with some key Oracle version support references.

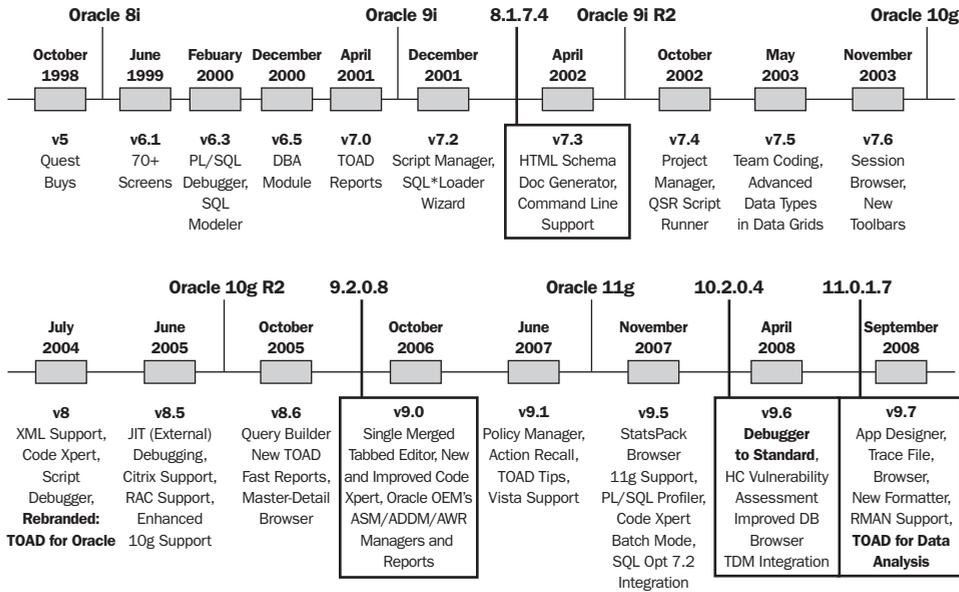


Figure 1.2 TOAD versus Oracle Version History

What, in a nutshell, does this very crowded and complex figure tell you? In short, if you're using Oracle 9.x, then you should be using at least TOAD 9.0; if you're using Oracle 10.x, then you should be using at least TOAD 9.6; and if you're using Oracle 11.x, then you should be using at least TOAD 9.7 (at the time of this writing, the current version). Anything else is like playing Russian roulette with your database work and data.

What's the logic behind our advice? Simple—much like the case with the prior section's client version advice, TOAD cannot work with database features or capabilities that came out years after the TOAD version was written. We find lots of people using TOAD 8.6 with Oracle 10g. Yes, Figure 1.2 shows that TOAD 8.6 came out after 10g Release 2 and, therefore, should support it. But Oracle often makes changes between even the minor database versions that can affect tools such as TOAD (i.e., tools that make heavy access to the internal data dictionary). For example, some Oracle data dictionary changes in version 10.2.0.2 broke a key TOAD screen. Because you should always be running the terminal Oracle release version (e.g., 10.2.0.4) for best Oracle support, then you should also choose your TOAD version based on that terminal Oracle version's release date—and not the

date when the original database version itself debuted. Thus, if you're using Oracle 10g, we recommend TOAD 9.6, because TOAD 9.6 is the very first TOAD version that came out after Oracle 10.2.0.4. It's the only one for which Quest can perform QA testing and guarantee that it works.

## Running the TOAD Installer

As a typical Win-32 app, TOAD provides a simple graphical installer—but you have several choices to make during that installation process. Most of these choices are quite simple and straightforward. Figure 1.3 shows the installer. There are two key items that you must decide during the installation process. First, will you be installing just TOAD by itself or will you install other members of the TOAD family of products (e.g., TOAD for Data Analysts, TOAD Group Policy Manager, TOAD Data Modeler, SQL Optimizer, Spotlight, Benchmark Factory)? The list of available programs to install will depend on which TOAD install image you download from Quest: the base install, the developer's bundle, or the DBA bundle. Second, into which directory are you installing TOAD? If you choose a new directory, that's considered a fresh install. But if you choose or let the installer choose an existing TOAD directory, then the process is actually an upgrade. You will probably want to do a fresh install in most situations so that you can keep your old version around in case you run into any problems with the newer version.

Sometimes, as with most Windows applications, you may find that your TOAD installation needs to be refreshed or removed and replaced. However, before you lay the blame

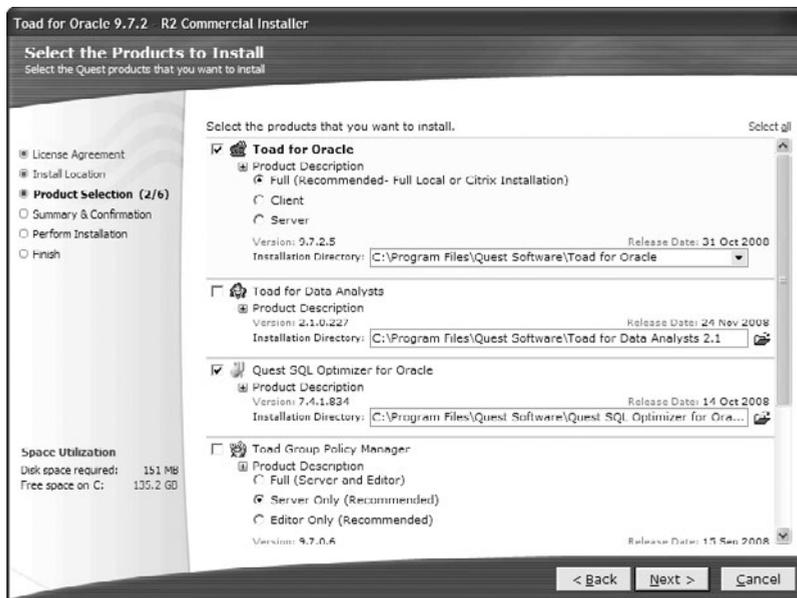


Figure 1.3 Running the TOAD Installer

on TOAD, make sure that your database connectivity is not the real issue. For example, sometimes people install Oracle updates or new tools that modify the Oracle Home setting, which is where the database connectivity information resides. In such a case, TOAD may seem to stop working. Once you're 100% sure it's not a connectivity issue related to something else and, therefore, you know you want to reinstall TOAD, then simply run the TOAD installer and uninstall TOAD.

Furthermore, TOAD creates directories in two key places. First, it places the executables under `C:\Program Files\Quest Software\Toad for Oracle`. You may decide to manually delete these files if the installer leaves any remnants. Second, TOAD places your custom files (i.e., those special to your Windows login) under `C:\Documents and Settings\%USER%\Application Data\Quest Software\Toad for Oracle`.

## Copying TOAD Settings

One of the most common TOAD questions we hear is, How do I copy all my TOAD settings from one machine to another? In older versions of TOAD, that process used to be difficult, as the files were not all collected in a central location. Now it's quite simple: Just zip up the directory where all your specific settings are kept—namely, `C:\Documents and Settings\%USER%\Application Data\Quest Software\Toad for Oracle\User Files`.

Note that some files may be encrypted using your source machine's login information. In this case, copying the password file from one machine to another will not allow you to use those passwords unless the target machine has the same login (i.e., the directory structure is identical). Other than this exception, the remaining files and their settings should port without problem.

## TOAD Adheres to Oracle Security

Probably the question most frequently asked by shops new to TOAD is, Will TOAD permit my developers to do things that they should not? The simple answer is definitely not, because TOAD cannot override or supersede Oracle's inherent security. A TOAD user has only whatever roles, system privileges, or object grants exist for the user within the database. Thus users can do no more in TOAD than they could in SQL\*Plus (they simply can do it more easily and faster via TOAD). To reiterate, TOAD permits database users to have only whatever rights the DBA has granted them—there are no loopholes or exceptions.

This approach does require the DBA managing the Oracle schemas (i.e., users) to have a very firm grasp of all the privileges being handed out. For example, far too many DBAs grant the predefined roles `CONNECT`, `RESOURCE`, and `DBA` to their users—even though Oracle states plainly that these roles are provided merely for backward-compatibility purposes and that you should create and grant your own customized roles. Unfortunately, many people seem to have missed this fact and still overuse the predefined roles. Some DBAs do not fully realize which system privileges the predefined roles grant. For example, granting a schema the `CONNECT` role means that the user can create clusters, database links, sequences, synonyms, tables, and views via TOAD, because those are

the privileges that CONNECT possesses. Know your predefined roles well if you plan to use them!

We recommend that you create your own custom roles and grant those to your TOAD users. Listing 1.4 shows some database roles we often create in our database for granting privileges to—and thus controlling—various TOAD users.

#### Listing 1.4 Example TOAD Database Roles

---

```
-- Role: Junior Developer
-- Trusted to do some things
CREATE ROLE DEVELOPER_JR NOT IDENTIFIED;
--
-- Obviously required privileges
GRANT CREATE SESSION TO DEVELOPER_JR;
GRANT ALTER SESSION TO DEVELOPER_JR;
GRANT ALTER USER TO DEVELOPER_JR;
--
-- Junior Developer privileges
GRANT CREATE PROCEDURE TO DEVELOPER_JR;
GRANT CREATE SEQUENCE TO DEVELOPER_JR;
GRANT CREATE SYNONYM TO DEVELOPER_JR;
GRANT CREATE TRIGGER TO DEVELOPER_JR;
GRANT CREATE TYPE TO DEVELOPER_JR;
GRANT CREATE VIEW TO DEVELOPER_JR;

-- Role: Senior Developer
-- Trusted to do most things
CREATE ROLE DEVELOPER_SR NOT IDENTIFIED;
--
-- Inherit All Junior Developer privileges
GRANT DEVELOPER_JR TO DEVELOPER_SR;
--
-- Senior Developer privileges
GRANT CREATE DATABASE LINK TO DEVELOPER_SR;
GRANT CREATE DIMENSION TO DEVELOPER_SR;
GRANT CREATE INDEXTYPE TO DEVELOPER_JR;
GRANT CREATE LIBRARY TO DEVELOPER_SR;
GRANT CREATE MATERIALIZED VIEW TO DEVELOPER_SR;
GRANT CREATE OPERATOR TO DEVELOPER_JR;
GRANT CREATE TABLE TO DEVELOPER_SR;
```

---

Another area of possible security oversight is not to forget the PUBLIC schema and its granted roles, system privileges, or object grants. For example, granting the privilege of SELECT ANY TABLE to PUBLIC (which generally isn't advisable) means that TOAD users can see the entire database's table data. Given this widespread authority of the grant, you should oversee PUBLIC rights management very wisely. TOAD will not disobey

your security paradigm, but if you leave loopholes open, people generally will find and abuse them. TOAD will simply make the process of locating them easier for users by its very nature of making anything Oracle related easier.

## Activating TOAD's Read-Only Mode

Most people don't realize that TOAD comes with two modes of operation entirely under their control: read/write or read-only. These modes are controlled by the license files in the TOAD install directory. When the TOAD.LIC file is a copy of (i.e., its contents are equivalent to) the FULLTOAD.LIC file (the default), then TOAD operates in read/write mode. When the TOAD.LIC file is a copy of the READONLY.LIC file, then TOAD operates in read-only mode. Here "read-only" refers to the fact that TOAD users cannot save or commit anything to the database. Read-only users are still permitted to create, modify, and save data and SQL files on their local Windows PC; they just cannot permanently affect anything on the database. Thus they cannot create objects, modify data, compile PL/SQL code, drop objects, or do anything else that would have either permanent or lasting effects on the database. For many analysts, this is a viable option.

## Advanced TOAD Security Options

The approach discussed in the prior section was the original method by which TOAD supported a read-only mode of operation (and it is still used today). Over time, however, administrators asked for additional and more complex methods to control their TOAD users. And even though we always said that's what Oracle database security is for, the requests nonetheless persisted. TOAD administrators wanted to manage and control TOAD user behavior based on screens, wizards and utilities. Thus began the quest to create TOAD security.

Beginning with version 7.3, TOAD offered an advanced security management screen permitting your site's TOAD administrator to specifically define which TOAD screens, wizards, and utilities were available and executable by special TOAD security roles granted to users. Unfortunately, this TOAD security approach proved quite resource intensive, as it had to be done at the database level. Thus, for each database you manage that has TOAD users, you had to define these special TOAD roles and then define what users could or could not do within TOAD.

Beginning with version 9.5, TOAD began offering the TOAD Group Policy Manager (TGPM), which totally centralizes the implementation of this application-level TOAD security. To use this functionality, you simply install the TGPM on a Windows server that is accessible by all TOAD users, and then define your security. Think of it as an "active directory" of sorts for controlling TOAD. This highly advanced security feature is beyond the scope of this chapter's basic setup and configuration theme. Because TGPM is not required for most general-purpose TOAD usage scenarios, it is not covered in this book. TOAD's online help and [www.toadworld.com](http://www.toadworld.com) provide more information if you're interested.

## Customizing TOAD to User Taste

There are two key functionalities that any new TOAD user should spend a few moments investigating and adjusting to suit his or her likes or needs—because doing so will radically enhance your productivity. TOAD is shipped with many defaults chosen to apply to a universal and generic audience of millions. There’s no way that you’ll find all of these preselected defaults acceptable. TOAD is highly customizable, however, so it’s easy to make TOAD look and work the way you prefer. This process is painless—and well worth the time spent on it.

First, the TOAD menus and toolbars can be customized by navigating to them and pressing the right-hand mouse key. You will then see a context menu that offers several choices; simply choose the “Customize...” option. TOAD will display a window that shows all the menu and toolbar icons and commands that are available. You can then drag and drop items from this customize window onto the menus and toolbars, or from the menus and toolbars to this window. Doing so will move the selected items back and forth. You can also select items on the existing menus and toolbars and move them around (i.e., rearrange them). In just a few moments’ time, you can transform TOAD’s primary interface into something that better fits your own personal work style.

Second, and most important, TOAD is a mature application that includes more than 10 years’ worth of features. Many of those features have or offer options on how they should look and function. Again, TOAD is supremely customizable and offers you the ability to define numerous default behaviors. Simply click the toolbox icon with three check marks on the main toolbar, or choose the following items from the main menu: View → TOAD Options. Either will result in displaying the TOAD Options screen shown in Figure 1.4.

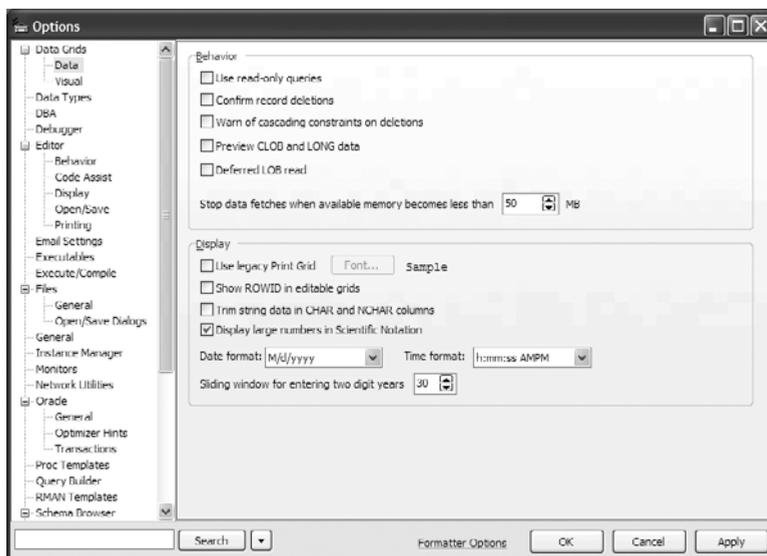


Figure 1.4 The TOAD Options Window

Take the time to navigate, learn, and set many of these values. Note that a search function is available to help you quickly locate items that you might be looking for among the plethora of choices. Use this search feature whenever necessary; it's the single best way to find things quickly. In fact, the majority of user questions about issues such as “Can TOAD do this?” and “Where do I set that?” could be answered by a quick options search. Think of this functionality as being equivalent to a Google search, and use it just as often as you do Web searches. You may need to be a little creative on what you search for, but you can also answer the vast majority of your TOAD-related questions by simply doing a search. So use the search function—you will find good things.

## Summary

In this chapter we reviewed the bare essential TOAD setup and configuration issues that you should address to maximize your TOAD experiences. Once issues such as database network connectivity and client setup are handled properly, running the TOAD installer successfully, running the TOAD product, and making user customizations are fairly straightforward. This chapter's content is critical to making that process simpler and more productive. Once TOAD's prerequisites are handled properly, you should see wonderful productivity gains from using this application.

# Index

---

## Symbols and Numbers

---

- \* (wildcards), Quick Filter using, 32
- . (period), for aliases, 66
- 32-bit applications, 6
- 64-bit applications, 6
- 10046 SQL Trace. See SQL Trace

---

## A

---

- Access. See Microsoft Access (.mdb)
- Action Console
  - activating, 93
  - evolving into App Designer, 247
  - PL/SQL Editor, 92–93
- Action Properties, App Designer, 259
- Active Directory (AD), 10
- AD (Active Directory), 10
- Add Report button, 141
- ADDM/AWR Reports, 168–171
  - accessing, 168
  - ASH report, 169
  - AWR Browser, 170–171
  - workload repository report, 169

**Adjust Content panel, explain plans, 81, 151**

**Advanced debugging, PL/SQL Editor, 118–119**

**Advanced security options, 15**

**Aggregation capability, Database Browser, 24–25**

**Aliases**  
 PL/SQL Editor, 101–102  
 table aliases, 66–67

**Alter operations, database management, 183**

**Analyze All Objects screen, 193–195**

**Analyze Tables, Schema Browser, 195**

**App Designer**  
 action code, 254–258  
 Action Properties, 259  
 availability within TOAD, 258  
 Command Line mode compared with, 247–248  
 correcting shortcomings of Command Line mode, 251  
 launching, 252  
 main screen and scheduling, 253  
 overview of, 247  
 programmatic controls, 259–260  
 Save/Load Window Snapshot option, 251–252  
 toolbars, 252

**Auto add button, external tools, 239**

**Auto-replacement substitutions**  
 PL/SQL Editor, 101–102  
 SQL Editor, 67

**Auto-starting browsers, 20–21**

**Auto trace**  
 displaying SQL statement statistics, 154  
 enabling, 153  
 overview of, 149  
 tracking performance information, 82–83

**AWR (Automated Workload Repository)**  
 AWR Browser, 170–171  
 overview of, 149

---

## B

---

**Bandwidth, 180**

**.BAT files**  
 Command Line feature used with, 250  
 creating new databases and, 177

**Bind variables**  
 capturing bind variable information in trace files, 158  
 SQL Editor using, 63–64

**Bookmarks, for navigating PL/SQL code, 94**

**Bottlenecks, resource use and, 199**

**Breakpoints, PL/SQL Editor**  
 adding, changing, deleting, 110–111  
 options, 115–117  
 setting, 94, 114–115  
 viewing, 94

**Browsers**  
 accessing from SQL Editor toolbar, 46  
 Database Browser. *See* Database Browser

Master–Detail Browser, 223–227  
 Schema Browser. *See* Schema Browser  
 Session Browser. *See* Session Browser

## C

---

**Calculated Field editor, Query Builder, 237**

**Call stacks**

advanced debugging and, 117–118  
 debugging process and, 111  
 PL/SQL Editor, 94

**Character-mode report, StatsPack, 167**

**Checks and Options tab, Database Health Check, 174**

**Clients, Oracle Database, 10**

**Clipboard, importing data from, 41, 221**

**Code Assist, Insights, 65**

**Code dependencies, 232**

**Code formatter, 58–59**

**Code, PL/SQL**

advanced debugging, 118–119  
 basic debugging, 109–114  
 breakpoint options, 115–117  
 compiling, 105  
 executing, 105–107  
 profiling, 120–122  
 saving, 107–108  
 source code control, 123

**Code review**

Code Road Map and, 230  
 ER Diagram and, 227

**Code Road Map, 229–232**

handling code dependencies, 232  
 launching, 230  
 New Diagram option, 231  
 overview of, 229–230

**Code Snippets**

Optimizer Hints option, 79  
 PL/SQL Editor, 101–102  
 SQL Editor, 70–71

**Code, SQL Editor**

executing, 50–51  
 saving/retrieving, 48–49

**Code templates**

Code Completion Templates, 70, 102–104  
 Code Snippets, 70–71  
 overview of, 69–70

**Coding styles, 53–54**

**Column headers**

customizing data grid, 40–41  
 including in Save As process, 208

**Columns**

auto-sizing, 43  
 name select lists in SQL Editor, 64–66  
 selecting multiple, 65  
 Show Column Select Window, 64

**Command-line. *See also* App Designer**

Command Line mode in TOAD, 247–248  
 Oracle export utility and, 211–213  
 report file, 130

**Command-line**, *continued*  
 running command-line files, 250  
 settings file, 248–250

**Compare Databases screen**  
 overview of, 190  
 tab options, 191

**Compare Files utility, 240–241**

**Compare Schemas screen, 191–193**

**Compare to Another Plan, Explain plans, 152**

**Compatibility**  
 ODBC and, 8  
 SQL\*Plus and, 84–86

**Compiling PL/SQL code, 105**

**Configuration parameters, Oracle and NLS, 183–186**

**Configure LHS Object Types screen, Schema Browser, 30**

**Connectivity, database, 7–10**

**Content tab, HTML Schema Doc Generator, 146**

**Context menus**  
 accessing Code Road Map from Schema Browser, 231  
 for custom options, 16  
 Database Browser, 25–26  
 Delete Current Node in Master-Detail Browser, 226  
 exporting via Save As function, 206  
 formatting code from, 96–97  
 list of options, 41  
 Optimizer Mode in, 79  
 Schema Browser, 36–37

**Controls, programmatic controls in App Designer, 259–260**

**Copy-and-paste, adding reports to Report Manager, 143**

**Copying TOAD settings, between machines, 13**

**Create INSERT for Selected Rows, 209–210**

**CRLOOP (Cursor Loop template), 103**  
 .CRM files, 232

**Ctrl+e (explain plans), 79**

**Ctrl+F12 (accessing external editors), 54, 95**

**Ctrl+S (Save), 108**

**Cursor Attributes, Code Snippets, 102**

**Cursor Loop template (CRLOOP), 103**

**Customization, 16–17**

**Cut-and-paste**  
 adding PL/SQL code to PL/SQL editor, 95  
 adding SQL code to SQL Editor, 55

---

## D

**Data**  
 browsing. See Browsers  
 extraction. See Exporting table data files, 178–181  
 Schema Browser options, 42

**Data Export window, Create INSERT for Selected Rows, 210**

**Data File IO tab, Database Browser, 24–25**

**Data grids**  
 customizing column headers, 40–41  
 customizing from Schema Browser, 41

- editing result-set data, 73–75
- printing result-set data, 76–79
- saving grid content to PC or to other PC applications, 206–208
- saving result-set data, 75–76
- shortcut for full screen view, 52
- uses of, 205

#### **Data Pump Job Manager, 217**

#### **Data Pump utility, 214–217**

- launching, 214
- multistep interface for, 215–216
- overview of, 214
- scheduling, 216–217

#### **Data Subset Wizard, 218–219**

#### **Data tab, Schema Browser RHS (right-hand side), 39–41**

#### **Database Admin Module, 21**

#### **Database Browser, 21–27**

- accessing, 21–22
- aggregation capability in, 24–25
- auto-starting, 20–21
- context menus, 25–26
- data grids and, 205
- database objects, 26–27
- Instance Management, 181–183
- overview of, 19–20
- Parameters tab, 183–184
- purpose of, 21
- summary, 44
- tree views and tabs, 22–23
- working with tablespaces, 179–180

#### **Database Configuration Assistant (DCBA), 176**

#### **Database connectivity, 7–10**

- local databases and, 9
- mechanism for resolving database addresses, 10
- network configuration information, 8
- network path between PC and server, 7–8
- remote databases and, 8–9

#### **Database Creation Wizard, 176–178**

#### **Database definition (DEF) files**

- comparing differences in databases, 190
- overview of, 187

#### **Database Health Check, 174–176**

- Checks and Options tab, 174
- Diff's Since Last Run tab, 176
- overview of, 174
- Report Output tab, 175
- Schemas tab, 175

#### **Database management**

- Analyze All Objects screen, 193–195
- Analyze Tables, 195
- comparing database differences, 190–191
- comparing schema differences, 191–193
- creating new databases, 176–178
- Database Health Check, 174–176
- generating database scripts, 186–188
- generating schema scripts, 188–189
- Oracle and NLS parameters, 183–186
- overview of, 173–174
- rebuilding multiple objects, 195–197

**Database management, *continued***

- Session Browser, 200–202
- SGA Trace/Optimization, 198–199
- start-up/shut-down, 181–183
- summary, 203–204
- tablespaces and data files, 178–181
- Top Session Finder, 197–198

**Databases (Oracle)**

- client versions, 10
- comparing differences, 190–195
- creating new, 176–178
- health check, 174–176
- managing instances, 181–183
- reporting. *See* Reporting
- TOAD version compatibility, 5, 11–12

**Databases tab, Compare Databases screen, 190****DB Admin Module**

- features in, 203–204
- overview of, 173–174

**DB Artisan, Embarcadero, 173****Db block gets, Auto trace, 83****DBAs (database administrators)**

- managing user rights, 13–14
- value of TOAD for, 173

**.dbf (Dbase database file), 221****DBMS\_Output tab, PL/SQL Editor, 94, 106–107, 111****DBMS\_PROFILE package, 120–122****DBMS\_REDEFINITION package, 195****DBMS\_SESSION package, 156****DBMS\_STATS package, 194****DCBA (Database Configuration Assistant), 176****DDL (Data Definition Language)**

- customizing generation of, 37
- Schema Browser options for generating, 210
- scripts for generating, 186–187

**Dead locks, 201–202****Debug sessions, 112****Debug toolbar, 109****Debugger, PL/SQL Editor**

- advanced debugging, 118–119
- basic debugging, 109–114
- breakpoint options, 115–117
- overview of, 49
- setting up, 108
- toolbar for, 92

**Debugging triggers, 114****DEF files (database definition)**

- comparing differences in databases, 190
- overview of, 187

**Defined Exceptions attributes, Code Snippets, 102****Delete Current Node, Master-Detail Browser, 226****Delphi 7, 6****Design Selected Reports button, Report Manager, 143****Desktop Panel menu, SQL Editor, 73****Detail Log, Instance Manager, 183****Development features, in SQL Editor, 45**

**Diagramming**

- Code Road Map, 229–232
- ER Diagram, 227–229

**Dictionary views**

- auto trace statistics and, 153
- SGA Trace statistics and, 154

**Differs Since Last Run tab, Database Health Check, 176****Directories**

- choosing for TOAD installation, 12
- location of, 13

**Disk space, tablespaces and, 179, 181****.DML files, 238****Drop-down boxes, Schema Browser, 31****Dynamic SQL scripting, 87–88**


---

## E

---

**Editors**

- data grids and, 205
- external, 54, 95
- PL/SQL Editor. *See* PL/SQL Editor
- SQL Editor. *See* SQL Editor
- TNS Editor, 241–242
- types of, 95

**Embarcadero DB Artisan, 173****ER Diagram, 227–229****.ERD files, 229****Errors**

- auto-replacement substitutions and, 67
- PL/SQL Action Console and, 93
- Excel. *See* Microsoft Excel (.xls and .xlsx)

**Executing PL/SQL code, 105–107****Executing SQL statements, 71–72****EXP utility, Oracle, 211–213****Expert tab, Query Builder, 235****Explain plans**

- accessing, 150
- Adjust Content, 151
- Compare to Another Plan, 152
- display options, 151
- examining in SQL Editor, 79–81

**Export Table as Flat File, 208–209****Export Utility Wizard, 211–213****Exporting table data**

- creating inserts, 209–210
- Data Pump utility, 214–217
- Data Subset Wizard, 218–219
- flat file exports, 208–209
- Oracle Export, 211–213
- overview of, 205
- saving grid contents, 205–208
- Schema Browser script for, 210–211
- summary, 222

**External Tools Options, 238–240**

- defining external tools, 239
- launching application with, 240
- overview of, 238

---

## F

---

**F1 (help), 46****F2 (full-screen editor), 52****F4 (describe object operation), 68****F8 (SQL Recall), 55**

**F9 (Compile)**

- compiling PL/SQL code, 105
- compiling SQL code, 72

**F11 (Run), 105–107****Fast Reports**

- accessing, 131
- adding to Report Manager, 141–144
- building, 135–136
- executing, 134–135
- interface, 132
- modifying, 139
- previewing/saving, 139–140
- printing, 76
- Report Wizard, 132–134
- toolbars, 137–139
- Variables tab, 136–137

**Feature X, Schema Browser, 30****Files**

- Compare Files utility, 240–241
- data, 178–181
- location of TOAD files, 13
- saving PL/SQL code to, 107–108

**Filters, for schema selection, 31–34**

- complex filters, 33–34
- overview of, 31–32
- Quick Filter, 32

**Filters, Oracle Parameters, 184–185****Flat file exports, 208–209****Formats**

- exporting table data and, 206
- importing table data and, 221
- PL/SQL code, 96–97

reports, 128

SQL statements, 58–59

**Formatter Options, 96–97****FROM operations, Query Builder, 234****Full-screen view, SQL Editor, 52****Funnel icons, indicating filters, 33**


---

## G

**Generate Command Line File for Selected Reports, 130****Generate Database Script screen, 186–188****Generate Schema Script screen, 188–189, 232****Generated Query tab, Query Builder, 237****Graphical user interface (GUI), 28****GROUP BY, Query Builder, 236****GUI (graphical user interface), 28**


---

## H

**Health check, Database Health Check, 174–176****Help (F1), 46****History option, Schema Browser, 38–39****HTML Schema Doc Generator, 144–147, 232****HTML tables, exporting, 207****Hyperlinked documents. See HTML Schema Doc Generator**


---

## I

**IDE (integrated development environment), 5****Import from Clipboard, RHM options, 41**

**Importing table data, 220–222**  
**Initialization parameters, Oracle, 158–159**  
**init.ora file, 178, 183**  
**INSERT statements, Create INSERT for Selected Rows, 209–210**  
**Insights, Code Assist, 65**  
**Installer, running TOAD installer, 12–13**  
**Instance Management, Database Browser, 181–183**  
**Integrated development environment (IDE), 5**  
**Interfaces**  
     Fast Reports, 132–134  
     Graphical user interface (GUI), 28  
     PL/SQL Editor, 90–91, 93–94  
     Report Manager, 126–127  
     Report Writer, 135  
     Schema Browser, 29–31  
     SQL Editor, 45–46  
**IO History tab, in Database Browser, 180**

---

## J

---

**JIT (just in time) debugging, 119**  
**JOIN operations, Query Builder, 234**  
**Jump To option, Schema Browser, 38–39**  
**just in time (JIT) debugging, 119**

---

## K

---

**Keyboard shortcuts, PL/SQL Editor**  
     overview of, 92–93  
     predefined, 98–101  
     TOAD Debugger, 110  
     user-defined, 101

**Keyboard shortcuts, SQL Editor**

    overview of, 46  
     predefined, 59–62  
     user-defined, 62–63

---

## L

---

**Layout, report, 132–134**

**LDAP (Lightweight Directory Access Protocol), 10**

**Legacy Print Grid, 76–78**

**LHS (left-hand side), Schema Browser**

    adding extra columns to LHS grid, 34  
     Configure LHS Object Types screen, 30  
     customizing display options, 30  
     filters for schema selection, 31–34  
     performing database action on objects, 36

**Lightweight Directory Access Protocol (LDAP), 10**

**listener.ora file, 9**

**Load File button, getting code into PL/SQL Editor, 96**

**Locks, session, 201–202**

**Loop\_counter, breakpoints and, 115**

**Loops, debugging, 114**

---

## M

---

**Master-Detail Browser, 223–227**

    adding child objects, 225–226  
     choosing base object, 225  
     data grids and, 205

**Master-Detail Browser**, *continued*

- Define Master/Detail Relationship, 226
- launching, 224
- manually defining relationship links, 227
- overview of, 223

**.mdb (Microsoft Access)**

- exporting data to, 205–206
- importing data from, 220

**Menus**

- context menus. See Context menus
- customizing, 16
- Desktop Panel menu, 73

**Metrics, Database Health Check, 174****Microsoft Access (.mdb)**

- exporting data to, 205–206
- importing data from, 220

**Microsoft Excel (.xls and .xlsx)**

- exporting data to, 206–207
- importing data from, 220

**Modeling**

- Code Road Map, 229–232
- ER Diagram for, 227–229

---

## N

---

**N rows, limiting fetch to, 43****Navigation, Jump To options in Schema Browser, 38–39****Net Configuration Assistant (NETCA), 241****Net Manager, 241****NETCA (Net Configuration Assistant), 241****Network configuration, setting up database connectivity, 8****New Diagram option**

- Code Road Map, 231
- ER Diagram, 229

**NLS parameters, 186****NOPARALLEL hint option, Schema Browser, 43****Notepad, as default external editor, 54, 95****NULL text, 208**


---

## O

---

**Object Description Panel, 68****Object Palette**

- adding/removing objects to ER Diagram, 228–229
- adding/removing objects to Query Builder, 233–234
- displaying available tables in, 64–65

**Objects**

- access privileges and, 31–32
- adding child objects in Master-Detail Browser, 225–226
- adding/removing from ER Diagram, 228–229
- Analyze All Objects screen, 193–195
- choosing base object in Master-Detail Browser, 225
- comparing differences in database objects, 190
- database objects in Database Browser, 26–27
- editing multiple PL/SQL objects, 93

- generating script for database objects, 187–188
- generating script for schema-level objects, 188
- grants, 13–14
- Object Description Panel, 68
- opening PL/SQL object, 90
- rebuilding multiple, 195–197
- Selection, of multiple objects, 136
- templates in PL/SQL Editor, 102–104
- turning off superfluous objects in Schema Browser, 30–31

**OCI (Oracle Call Interface), 7**

**ODBC (Open Database Connect), 8**

**OEM (Oracle Enterprise Manager), 84, 173**

**OID (Oracle Internet Directory), 10**

**Open Database Connect (ODBC), 8**

**Operating systems (OSs)**

- creating databases for, 177
- Windows platform support, 6

**Operation modes, read-only and read/write, 15**

**Optimizer Hints option, Code Snippets, 79**

**Optimizer Mode, in context menus, 79**

**Options tab, Compare Databases screen, 191**

**Options (TOAD)**

- auto-starting browsers, 20
- customization options, 16–17
- defining external editor, 54–55
- Formatter Options, 96–97
- SQL Editor, 52–53

## Oracle

- AWR (Automated Workload Repository) in Oracle 10g, 149
- databases. *See* databases (Oracle)
- Export, 211–213
- Import, 214
- Initialization parameters, 158–159
- Parameters, 184–185, 205
- security, 13–15
- Trace. *See* SQL Trace

**Oracle Call Interface (OCI), 7**

**Oracle Database Net Services Administrator's Guide, 8**

**Oracle Enterprise Manager (OEM), 84, 173**

**Oracle Internet Directory (OID), 10**

**Oracle Probe API, 111**

**Oracle RDBMS SQL pool, 63**

**Oracle Technology Network (OTN), 7**

**ORDER BY, Query Builder, 236**

**OSs (operating systems)**

- creating databases for, 177
- Windows platform support, 6

**OTN (Oracle Technology Network), 7**

---

## P

**Packages, splitting PL/SQL packages into package specification and package body, 90**

**Parameters**

- Database Browser Parameters tab, 183
- NLS parameters, 186

**Parameters, *continued***

- Oracle Initialization Parameters, 158–159
- Oracle Parameters, 184–185, 205

**Parameters tab, Database Browser, 183****Performance. *See also* Tuning tools**

- optimization with SGA Trace, 198–199
- Thresholds and Performance Options, 196
- Top Session Finder, 197–198
- tracking basic performance information, 82–83

**pfile settings, 183****Physical reads, Auto trace, 83****Pick lists**

- PL/SQL Editor, 101–102
- SQL Editor, 64–66

**PL/SQL code**

- Code Completion Templates, 70
- compiling, 105
- executing, 105–107
- formatting, 96–97
- profiling, 120–122
- saving to files, 107–108
- ways to get PL/SQL code into PL/SQL Editor, 95–96

**PL/SQL Debugger, 49****PL/SQL Editor**

- accessing, 89–90
- advanced debugging, 118–119
- basic debugging, 109–114

- basic features, 89
- compiling PL/SQL code, 105
- debugging breakpoint options, 115–117
- executing PL/SQL code, 105–107
- formatting PL/SQL code, 96–97
- object templates, 102–104
- predefined shortcuts, 98–101
- profiling PL/SQL code, 120–122
- saving PL/SQL code to files, 107–108
- setting up debugging, 108
- setting up/using source code control, 123
- summary, 123
- tabs, 94–95
- toolbars, 91–92
- using aliases, pick lists, shortcuts, snippets and auto-replacement substitutions, 101–102
- ways to get PL/SQL code into, 95–96
- window interface for, 90–91, 93–94

**Port 1521, 8****Predefined reports, Report Manager, 125–126****Predefined shortcuts**

- PL/SQL Editor, 98–101
- SQL Editor, 59–62

**Print Grid, accessing via context menus, 41****Print Selected Report button, 128–129****Printing result-set data, 76–79****Privileges, object access, 31–32**

**Profiling PL/SQL code, 120–122**  
**Programmatic controls, App Designer, 259–260**  
**Project Manager, Schema Browser, 32**  
**PUBLIC schema, 14**

---

## Q

---

**Queries. See SQL Editor**  
**Query Builder, 232–238**  
     Calculated Field editor, 237  
     data grids and, 205  
     Generated Query tab and Query Results tab, 237  
     FROM and JOIN operations, 234  
     Object Palette for adding/removing objects, 233–234  
     ORDER BY and GROUP BY, 236  
     overview of, 232  
     reverse engineering SELECT statements, 238  
     SELECT section, 234  
     WHERE section, 234–235  
**Query Results tab, Query Builder, 237**  
**Quick Filter, Schema Browser, 32**  
**Quick Scripts, 244–245**

---

## R

---

**Read-only operation mode, 15**  
**Read/write operation mode, 15**  
**Real-time statistics, AWR, 168**

**Rebuild Multiple Objects screen, 195–197**  
     Storage Clause Adjustments, 197  
     Thresholds and Performance Options, 196  
**Record types (rec), setting watches on, 117–118**  
**Recursive call, Auto trace, 83**  
**Remote databases, database connectivity and, 8**  
**Report Category Dialog Box, 142**  
**Report Manager, 125–128**  
     accessing, 126  
     adding reports to, 141–144  
     executing reports, 128–130  
     interface, 126–127  
     Oracle Initialization Parameters, 158–159  
     overview of, 125  
     predefined reports, 125–126  
     toolbar, 127–128  
**Report Name Dialog Box, 142**  
**Report Output tab, Database Health Check, 175**  
**Report Wizard, Fast Reports, 132–134**  
**Report Writer interface, 135**  
**Reporting**  
     adding reports to Report Manager, 141–144  
     building Fast Reports, 135–140  
     building regular reports using Fast Reports, 131–132  
     executing, 128–130  
     executing Fast Reports, 134–135

**Reporting, *continued***

- Fast Reports interface, 132–134
- HTML Schema Doc Generator, 144–147
- overview of, 125
- Reports Manager, 125–128
- RHM options, 41
- summary, 148

**Result output tabs, SQL Editor, 84****Result-set data, SQL Editor**

- editing, 73–75
- printing, 76–79
- saving, 75–76

**Results tab, Compare Databases screen, 191****RHM (right-hand mouse) context menus.**

See **Context menus**

**RHS (right-hand side), Schema Browser**

- customizing tabs, 35–36
- Data tab, 39–41
- drop-down box for customizing, 29
- Jump To and History options, 38–39
- performing database action on things associated with objects, 36
- populated with data when database objects selected on LHS, 35
- Script tab, 37–38

**Right-mouse menus. See Context menus****Roles, Oracle security an, 13–14****ROWID, editing result-set data, 74****Rows**

- Create INSERT for Selected Rows, 209–210
- exporting selected, 208

**Run button, executing PL/SQL code, 105–107****Run Selected Report button, 128****Run-time statistics, auto trace, 153****Run to Cursor button, debugging process and, 114**


---

## S

**Save As**

- check box options, 208
- exporting via, 206
- RHM options, 41
- saving PL/SQL code to files, 107–108
- saving result-set data, 75–76

**Schedulers, running reports from, 128, 130****Schema Browser, 27–41**

- accessing, 27
- adding extra columns to LHS grid, 34
- Analyze Tables, 195
- auto-starting, 20–21
- Code Road Map accessed from, 231
- context menus, 36–37
- customizing script generation, 37–38
- customizing RHS tabs, 35–36
- data grids and, 205
- Data tab, 39–41
- filters, 31–34
- importing table data, 220–221
- interface display options, 29–31
- Jump To and History options, 38–39
- loading code into PL/SQL editor, 91

- options, 42–43
- overview of, 19–20
- performing database actions from, 36
- script for exporting table data, 210–211
- summary, 44
- working with tablespaces, 179–180
- Schemas**
  - Compare Schemas screen, 191–193
  - generating schema scripts, 188–189
- Schemas tab, Database Health Check, 175**
- Script Manager, 243–245**
  - overview of, 243
  - Quick Scripts, 244–245
- Script tab, Schema Browser, 37–38, 210–211**
- Scripts**
  - creating SQL\*Plus scripts, 84
  - customizing script generation, 37–38
  - dynamic SQL scripting, 87–88
  - executing with SQL Editor, 72–73
  - exporting table data, 210–211
  - generating database scripts, 186–188
  - generating schema scripts, 188–189
  - predefined, 243
  - Script Manager, 243–245
- .SDF files, 243**
- Security**
  - advanced options, 15
  - object access and, 31–32
  - Oracle security, 13–15
- SELECT section, Query Builder, 234**
- SELECT statements, reverse engineering into Query Builder, 238**
- Selection, of multiple objects, 136**
- Server Manager role, 84**
- Session Browser**
  - accessing from Database Browser, 23
  - data grids and, 205
  - overview of, 200
  - tab options, 201–202
  - toolbar, 157
  - turning SQL Trace on/off, 156
- Sessions**
  - aggregating session info from Database Browser, 24
  - Debug sessions, 112
  - investigating, 200–202
  - Top Session Finder, 197–198
  - V\$Session dictionary view, 153
- Sessions tab, Database Browser, 22–23**
- Setup and configuration**
  - activating read-only mode, 15
  - advanced security options, 15
  - copying TOAD settings, 13
  - customization, 16–17
  - database client versions, 10
  - database connectivity, 7–10
  - Oracle security and, 13–15
  - overview of, 5
  - running TOAD installer, 12–13
  - summary, 17
  - TOAD versions, 10–12
  - Windows platform support, 6–7

**SGA (System Global Area), 198****SGA Trace/Optimization**

- accessing from Database Browser, 23
- performance optimization, 198–199
- statistics, 154–155

**.SH files, 177****Shared Pool, SGA Trace, 198****Shift button, selecting multiple objects with, 136****Shift+Ctrl+S (Save As), 108****Shift+F2 shortcut (full-screen data grid), 52****Shift+F4 shortcut (Action Console), 93****Shift+F5 shortcut (Breakpoints), 114****Shortcuts. See Keyboard shortcuts, SQL Editor****Show Column Select Window, 64****Source code control, PL/SQL Editor, 123****Sources tab, HTML Schema Doc Generator, 145****Space History tab, View Tablespace screen, 180–181****Space Usage tab, Database Browser, 24–25, 179, 181****spfile settings, 183****SQL Editor**

- auto-replacement substitutions, 67
- basic development features, 45
- bind variables and, 63–64
- Code Snippets, 70–71
- coding styles and, 53–54
- customizing toolbars, 50–51
- Desktop Panel menu, 73

- dynamic SQL scripting, 87–88
- editing result-set data, 73–75
- examining explain plans, 79–81
- examining performance information, 82–83
- executing SQL scripts, 72–73
- executing SQL statements, 71–72
- Explain Plan tab, 150
- format options for SQL statements, 58–59
- full-screen view, 52
- getting SQL statement into, 55–57
- Options (TOAD), 52–53
- PL/SQL Editor compared with, 91
- predefined shortcuts, 59–62
- printing result-set data, 76–79
- result output tabs, 84
- saving result-set data, 75–76
- SQL\*Plus compatibility, 84–86
- summary, 88
- table aliases, 66–67
- table and column name select lists, 64–66
- templates, 68–70
- thread management, 54–55
- toolbar options, 46–50
- user-defined shortcuts, 62–63
- window interface, 45–46

**.SQL files, 178****SQL Recall, 55****SQL scripts, 72–73**

**SQL statements**

- adding to PL/SQL Editor, 95
- adding to SQL Editor, 55–57
- auto trace statistics, 153
- canceling execution of, 54
- constructing with Query Builder. *See* Query Builder
- customizing generation of, 37
- executing with SQL Editor, 71–72
- export formats, 207
- format options for, 58–59
- monitoring resource use, 199
- templates, 68–70

**SQL Trace**

- analyzing trace files, 160–165
- creating trace files, 156–160
- overview of, 149, 155

**SQL\*Forms, using bind variables from, 63–64****SQL\*Loader, 207****SQL\*Net**

- 32-bit client for TOAD compatibility, 6
- setting up database connectivity on Network Layer, 7

**SQL\*Plus**

- compatibility with TOAD, 84–86
- dynamic SQL scripting, 87–88
- executing SQL scripts, 72–73
- SQL Trace initiated on SQL\*Plus session, 159

**Start Trace button, Session Browser, 157****Start-Up options, browsers, 20****Start-up/shut-down, database management, 181–183****Statistics**

- auto trace statistics, 153–154
- AWR (Automated Workload Repository), 168–171
- Database Health Check, 174
- SGA trace statistics, 154–155
- StatsPack reports, 165–167

**StatsPack Browser**

- accessing, 166
- overview of, 149
- tasks performed with, 165
- view options, 167

**Status Change History, Instance Manager, 183****Step Over, debugging process and, 111****Stop Trace button, Session Browser, 157****Storage Clause Adjustments, Rebuild Multiple Objects screen, 197****Styles, report, 132–133****Substitution variables, resolving, 64****Substitutions**

- auto-replacement in PL/SQL Editor, 101–102
- auto-replacement in SQL Editor, 67
- table aliases and, 66

**Symbolic debugging, 108****Sync Script tab, Compare Databases screen, 191****Syntax, auto-replacement substitutions, 67**

**System Global Area (SGA), 198.** *See also*  
**SGA Trace/Optimization**

**System privileges, Oracle security and,**  
**13–14**

---

## T

---

**Tabbed design, of GUI, 28**

**Tables**

- aliases, 66–67
- Analyze All Objects screen, 193
- Analyze Tables, 195
- diagramming, 227
- exporting table data. *See* Exporting table data
- importing table data, 220–221
- name select lists in SQL Editor, 64–66
- Rebuild Multiple Objects screen, 196

**Tablespaces**

- manual vs. automatic tablespace allocation, 177
- overview of, 178
- performing administrative tasks, 178–179
- View Tablespace screen, 180–181
- working with from Database Browser of Schema Browser, 179–180

**Templates**

- object templates in PL/SQL Editor, 102–104
- SQL templates, 68–70

**Terminate Execution button, canceling SQL statements, 54**

**Text editors, 241**

**Text files (.txt)**

- auto-replacement substitutions, 67
- Compare Files utility, 240–241
- export formats, 206
- exporting data to, 205
- importing table data, 220

**TGPM (TOAD Group Policy Manager), 15**

**Threads, SQL Editor, 54–55**

**Thresholds and Performance Options, Rebuild Multiple Objects screen, 196**

**TKProf tool, 160–163**

**TNS Names Editor, 241–242**

**TNS Names file, 241–242**

**tnsnames.ora file, 9–10**

**tnsping, 241**

**TOAD Group Policy Manager (TGPM), 15**

**TOAD (Tool for Oracle Application Development)**

- adhering to Oracle security, 13–14
- Debugger. *See* Debugger, PL/SQL Editor
- family of products, 12
- options. *See* Options (TOAD)
- setup and configuration. *See* Setup and configuration
- version compatibility, 5, 11–12

**Toolbars**

- app Designer, 252
- customizing, 16
- Debug toolbar, 109
- Fast Reports, 137–139

PL/SQL Editor, 91–92  
 Report Manager, 127–128  
 Session Browser, 157

#### **Toolbars, SQL Editor**

customizing, 50–51  
 options on first SQL Editor toolbar,  
 46–47  
 options on second (middle) SQL  
 Editor toolbar, 48–49  
 options on third SQL Editor toolbar,  
 49–50

#### **Tools**

Code Road Map, 229–232  
 Compare Files utility, 240–241  
 ER Diagram, 227–229  
 External Tools, 238–240  
 Master-Detail Browser, 223–227  
 Query Builder, 232–238  
 Script Manager, 243–245  
 summary, 245  
 TNS Editor, 241–242  
 tuning tools. *See* Tuning tools

#### **Top Session Finder, 197–198, 205**

#### **Trace File Browser, 160, 164–165**

#### **Trace files**

analyzing with TKProf, 160–163  
 analyzing with Trace File Browser,  
 164–165  
 creating, 156–160  
 organizing and displaying with  
 TKProf, 160

#### **Trace Into, 111**

**Trace/Kill.** *See* **Session Browser**

**Trace options, Debugger, 110**

**.trc files.** *See* **Trace files**

#### **Tree views**

Code Road Map, 230–231  
 Database Browser, 22–23  
 ER Diagram, 228  
 Query Builder, 233  
 vs. tabbed GUI design, 28

#### **Tuning tools**

analyzing trace files, 160–165  
 auto trace statistics, 153–154  
 AWR (Automated Workload  
 Repository), 168–171  
 creating trace files, 156–160  
 explain plans, 150–152  
 overview of, 149  
 SGA trace statistics, 154–155  
 SQL Trace, 155  
 StatsPack reports, 165–167  
 summary, 168–171

**.txt files.** *See* **Text files (.txt)**

---

## U

#### **UNIX OSs, 177**

#### **User-defined shortcuts**

PL/SQL Editor, 101–102  
 SQL Editor, 62–63

**User rights, Oracle security an, 13–14**

**USER\_DUMP\_DEST location, 160**

V

---

**Variables**

- setting watches on implicit variables, 117–118
- watches for reviewing/editing variable content, 111

**Variables tab, Fast Reports, 136–137**

**Versions, TOAD, 10–12**

**View Tablespace screen, 180–181**

**Virtual machines, running TOAD on, 6–7**

**V\$Session, 153**

**V\$Sesstat, 153**

**V\$Statname, 153**

W

---

**Wait events, sessions, 202**

**Wait variables, capturing wait variable information in trace files, 158**

**Watches**

- setting for reviewing/editing variable content, 111
- setting on implicit variables and record types, 117–118

**WHERE section, Query Builder, 234–235**

**Wildcards (\*), Quick Filter using, 32**

**Win-32 apps, 6**

**Window interface**

- for Fast Reports, 132–134
- for Schema Browser, 29–31
- for PL/SQL Editor, 90–91, 93–94
- for Report Manager, 126–127
- for Report Writer, 135
- for SQL Editor, 45–46

**Windows OSs**

- creating databases for, 177
- running TOAD on Windows virtual machines, 6–7
- support for, 6–7

X

---

**.xls and.xlsx (Microsoft Excel)**

- exporting data to, 206–207
- importing data from, 220

**XML files, 205, 207**

Z

---

**Zip capability, 208**