

Oracle® Application Server TopLink

Getting Started Guide

10g Release 3 (10.1.3) for Microsoft Windows (64-Bit) on Intel
Itanium

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Oracle Application Server TopLink Getting Started Guide, 10g Release 3 (10.1.3) for Microsoft Windows (64-Bit) on Intel Itanium

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Primary Author: Brintha Bennet

Contributing Author: Preeti Shukla, Divya Shankar

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Contents

Preface	v
Intended Audience.....	v
Documentation Accessibility	v
Organization	vi
Related Documentation.....	vi
Conventions	vii
1 Prerequisites for Installing Oracle TopLink	
1.1 System Requirements and Certifications	1-1
1.2 Supported Databases.....	1-1
1.3 License Information.....	1-2
1.3.1 Third-Party License Information.....	1-2
1.3.1.1 Antlr.....	1-2
1.3.1.2 DOM.....	1-2
1.3.1.3 Java Runtime Environment.....	1-3
1.3.1.4 ASM.....	1-3
2 Installing and Configuring TopLink	
2.1 TopLink Installation Types.....	2-1
2.2 Installing TopLink.....	2-1
2.2.1 Using Oracle Universal Installer	2-1
2.2.2 Installing Silently	2-2
2.3 Configuring TopLink Runtime Environment.....	2-3
2.4 Configuring TopLink Workbench Environment.....	2-3
2.4.1 JRE Version.....	2-3
2.4.2 Online Help and Documentation	2-3
2.4.3 Driver Classpath Environment Variable	2-3
2.4.4 Third-party Libraries.....	2-4
2.5 Starting TopLink Workbench.....	2-4
2.6 TopLink Tutorial	2-4
2.7 Installation Troubleshooting	2-5
2.8 Installing Patch Sets.....	2-5

Index

Preface

This document provides installation procedures to install and configure Oracle TopLink. It also introduces the concepts with which you should be familiar to get the most out of TopLink.

This preface contains these topics:

- [Intended Audience](#)
- [Documentation Accessibility](#)
- [Organization](#)
- [Related Documentation](#)
- [Conventions](#)

Intended Audience

The *Oracle TopLink Getting Started Guide* is intended for new users who need to install and configure TopLink.

This document assumes that you are familiar with the concepts of object-oriented programming, the Enterprise JavaBeans (EJB) specification, and with your own particular Java development environment.

The document also assumes that you are familiar with your particular operating system (such as Windows or UNIX). The general operation of any operating system is described in the user documentation for that system, and is not repeated in this manual.

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Screen readers may not always correctly read the code examples in this document. The conventions for writing code require that closing braces should appear on an otherwise empty line; however, some screen readers may not always read a line of text that consists solely of a bracket or brace.

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Organization

Oracle TopLink Getting Started Guide

This document includes the following chapters:

Chapter 1, "Prerequisites for Installing Oracle TopLink"

This chapter contains important prerequisites information.

Chapter 2, "Installing and Configuring TopLink"

This chapter contains instructions for installing and configuring TopLink.

Related Documentation

For more information, see these Oracle resources:

- *Oracle TopLink Release Notes*
- *Oracle Application Server Release Notes*
- *Oracle TopLink API Reference*
- *Oracle TopLink Developer's Guide*
- *Oracle TopLink Release Notes*
- *Oracle Application Server Release Notes*
- *Oracle TopLink API Reference*
- *Oracle TopLink Developer's Guide*

Printed documentation is available for sale in the Oracle Store at:

<http://oraclestore.oracle.com>

To download free release notes, installation documentation, white papers, or other collateral, please visit the Oracle Technology Network (OTN). You must register online before using OTN; registration is free and can be done at:

<http://www.oracle.com/technology/membership>

If you already have a username and password for OTN, then you can go directly to the documentation section of the OTN Web site at:

<http://www.oracle.com/technology/docs>

Feedback

If you have questions about TopLink, you can consult the TopLink user's forum at:

<http://forums.oracle.com/forums/forum.jspa?forumID=48>

<http://forums.oracle.com/forums/forum.jspa?forumID=48>

If you have questions or feedback about this documentation, you can consult the documentation feedback forum at

<http://forums.oracle.com/forums/forum.jspa?forumID=165>

<http://forums.oracle.com/forums/forum.jspa?forumID=165>

Conventions

This section describes the conventions used in the text and code examples of this documentation set. It describes:

- [Conventions in Text](#)
- [Conventions in Code Examples](#)

Conventions in Text

We use various conventions in text to help you more quickly identify special terms. The following table describes those conventions and provides examples of their use.

Convention	Meaning	Example
Italics	Italic typeface indicates book titles or emphasis.	<i>Oracle10i Database Concepts</i> Ensure that the recovery catalog and target database do <i>not</i> reside on the same disk.
UPPERCASE monospace (fixed-width) font	Uppercase monospace typeface indicates elements supplied by the system. Such elements include parameters, privileges, datatypes, RMAN keywords, SQL keywords, SQL*Plus or utility commands, packages and methods, as well as system-supplied column names, database objects and structures, usernames, and roles.	You can specify this clause only for a NUMBER column. You can back up the database by using the BACKUP command. Query the TABLE_NAME column in the USER_TABLES data dictionary view. Use the DBMS_STATS.GENERATE_STATS procedure.
lowercase monospace (fixed-width) font	Lowercase monospace typeface indicates executables, filenames, directory names, and sample user-supplied elements. Such elements include computer and database names, net service names, and connect identifiers, as well as user-supplied database objects and structures, column names, packages and classes, usernames and roles, program units, and parameter values. Note: Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	Enter <code>sqlplus</code> to open SQL*Plus. The password is specified in the <code>orapwd</code> file. Back up the datafiles and control files in the <code>/disk1/oracle/dbs</code> directory. The <code>department_id</code> , <code>department_name</code> , and <code>location_id</code> columns are in the <code>hr.departments</code> table. Set the <code>QUERY_REWRITE_ENABLED</code> initialization parameter to <code>true</code> . Connect as <code>oe</code> user. The <code>JRepUtil</code> class implements these methods.

Convention	Meaning	Example
lowercase italic monospace (fixed-width) font	Lowercase italic monospace font represents placeholders or variables.	You can specify the <i>parallel_clause</i> . Run <i>Uold_release</i> .SQL where <i>old_release</i> refers to the release you installed prior to upgrading.

Conventions in Code Examples

Code examples illustrate SQL, PL/SQL, SQL*Plus, or other command-line statements. They are displayed in a monospace (fixed-width) font and separated from normal text as shown in this example:

```
SELECT username FROM dba_users WHERE username = 'MIGRATE';
```

The following table describes typographic conventions used in code examples and provides examples of their use.

Convention	Meaning	Example
[]	Brackets enclose one or more optional items. Do not enter the brackets.	DECIMAL (<i>digits</i> [, <i>precision</i>])
{ }	Braces enclose two or more items, one of which is required. Do not enter the braces.	{ENABLE DISABLE}
	A vertical bar represents a choice of two or more options within brackets or braces. Enter one of the options. Do not enter the vertical bar.	{ENABLE DISABLE} [COMPRESS NOCOMPRESS]
...	Horizontal ellipsis points indicate either: <ul style="list-style-type: none"> That we have omitted parts of the code that are not directly related to the example That you can repeat a portion of the code 	CREATE TABLE ... AS <i>subquery</i> ; SELECT <i>col1</i> , <i>col2</i> , ... , <i>coln</i> FROM employees;
.	Vertical ellipsis points indicate that we have omitted several lines of code not directly related to the example.	
Other notation	You must enter symbols other than brackets, braces, vertical bars, and ellipsis points as shown.	acctbal NUMBER(11,2); acct CONSTANT NUMBER(4) := 3;
<i>Italics</i>	Italicized text indicates placeholders or variables for which you must supply particular values.	CONNECT SYSTEM/ <i>system_password</i> DB_NAME = <i>database_name</i>
UPPERCASE	Uppercase typeface indicates elements supplied by the system. We show these terms in uppercase in order to distinguish them from terms you define. Unless terms appear in brackets, enter them in the order and with the spelling shown. However, because these terms are not case sensitive, you can enter them in lowercase.	SELECT last_name, employee_id FROM employees; SELECT * FROM USER_TABLES; DROP TABLE hr.employees;

Convention	Meaning	Example
lowercase	Lowercase typeface indicates programmatic elements that you supply. For example, lowercase indicates names of tables, columns, or files. Note: Some programmatic elements use a mixture of UPPERCASE and lowercase. Enter these elements as shown.	<pre>SELECT last_name, employee_id FROM employees; sqlplus hr/hr CREATE USER mjones IDENTIFIED BY ty3MU9;</pre>

Prerequisites for Installing Oracle TopLink

This chapter provides information that you should review before installing Oracle TopLink (TopLink). It contains the following topics:

- [System Requirements and Certifications](#)
- [Supported Databases](#)
- [License Information](#)

1.1 System Requirements and Certifications

The complete product requirements list and the latest certification information for 10g Release 3 (10.1.3) is available at:

http://www.oracle.com/technology/software/products/ias/files/as_certification_r3_1013.html

Additional Requirements

TopLink requires a Java Virtual Machine (JVM) compatible with JDK 1.5 (or higher). TopLink also requires internet access to use URL-based schemas and hosted documentation.

1.2 Supported Databases

TopLink is an infrastructure-based solution that simplifies the integration of Java objects to any JDBC (Java Database Connectivity) compliant database. TopLink supports JDBC 3.0 drivers that comply with JDBC 3.0 object-relational extensions. Contact your database and JDBC vendor to determine which object-relational extensions they support.

For TopLink Workbench to retrieve table information from the database, the database driver must support the following JDBC methods:

- `getTables ()`
- `getTablesTypes ()`
- `getImportedKeys ()`
- `getCatalogs ()`
- `getPrimaryKeys ()`

1.3 License Information

TopLink does not require a license file for TopLink Foundation Library or TopLink Workbench; however, you are not allowed to ship the TopLink Workbench or expose any of the TopLink APIs as part of an end-user application. Refer to the software license agreement for information about the limitations on including the Oracle TopLink Foundation Library JAR files, as part of a packaged end-user application.

Licensing information is available at

<http://oraclestore.oracle.com>

1.3.1 Third-Party License Information

TopLink uses and includes the following software:

- [Antlr](#)
- [DOM](#)
- [Java Runtime Environment](#)
- [ASM](#)

1.3.1.1 Antlr

<http://www.antlr.org/rights.html>

TopLink uses Antlr for EJB QL parsing. Antlr (ANother Tool for Language Recognition), is a language tool that provides a framework for constructing recognizers, compilers, and translators from grammatical descriptions containing C++ or Java actions. The ANTLR parser and translator generator is fully in the public domain.

1.3.1.2 DOM

<http://www.w3.org/Consortium/Legal/copyright-software.html>

The Document Object Model (DOM) is a specification that defines some programming language-neutral interfaces that can be used to manipulate XML and HTML documents. W3C maintains this specification. W3C also provides a Java "binding" for these interfaces. TopLink uses this "binding" to parse and manipulate XML documents.

This program contains third-party code from the World Wide Web Consortium ("W3C"). Under the terms of the W3C license, Oracle is required to provide the following notices. Note, however, that the Oracle program license that accompanied this product determines your right to use the Oracle program, including the W3C software, and the terms contained in the following notices do not change those rights.

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1.3.1.3 Java Runtime Environment

<http://java.sun.com/j2se/>

The Java Runtime Environment is maintained by Sun Microsystems, Inc. The Oracle TopLink installation includes JRE 1.5 by default. You may configure TopLink to run using any other compliant Java 2 VM. Java and all Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems, Inc., in the U.S. and other countries.

1.3.1.4 ASM

ASM is a Java bytecode manipulation framework. It can be used to dynamically generate stub classes or other proxy classes, directly in binary form, or to dynamically modify classes at load time, that is, just before they are loaded into the Java Virtual Machine.

<http://asm.objectweb.org/license.html>

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Installing and Configuring TopLink

This chapter includes the following information to install and configure Oracle TopLink:

- [TopLink Installation Types](#)
- [Installing TopLink](#)
- [Configuring TopLink Runtime Environment](#)
- [Configuring TopLink Workbench Environment](#)
- [Starting TopLink Workbench](#)
- [TopLink Tutorial](#)
- [Installation Troubleshooting](#)
- [Installing Patch Sets](#)

2.1 TopLink Installation Types

The Oracle Universal Installer includes TopLink with the basic Oracle Application Server installation. To install only TopLink, select the Advanced installation type, then choose Oracle TopLink. This will install the TopLink Foundation Library and TopLink Workbench.

2.2 Installing TopLink

Use the following procedures to install TopLink (including TopLink Foundation Library and TopLink Workbench). Before you install TopLink, back up all existing project data.

This section includes information on:

- [Using Oracle Universal Installer](#)
- [Installing Silently](#)

2.2.1 Using Oracle Universal Installer

Use this procedure to start the Oracle Universal Installer and install TopLink 10g Release 3 (10.1.3).

1. For **Windows** operating systems:
 - Ensure that you are logged in to the computer as a member of the Windows Administrators group.

- When configuring TopLink for use with J2EE containers, you must modify the **System Variables**—not the **User Variables**.
2. Insert the TopLink installation disk into the CD-ROM drive to launch Oracle Universal Installer, or download the installer from:

<http://www.oracle.com/technology/products/ias/toplink/index.html>

For **Windows** operating systems:

- If your computer supports the auto run feature, the installer will automatically launch on your computer.
 - If your computer does not support the auto run feature, execute the `G:\setup.exe` program (where G is the letter for your CD-ROM drive) to start the installer.
3. Insert the TopLink installation disk into the CD-ROM drive to launch Oracle Universal Installer, or download the installer from:
 4. Complete each screen of the installer.
 5. When the installation is complete, you must configure the TopLink Workbench environment.

For more information, see "Configuring the TopLink Workbench Environment" in the *Oracle TopLink Developer's Guide*.

6. Refer to `ORACLE_HOME\toplink\doc\index.htm` for the latest Oracle TopLink Release Notes.

2.2.2 Installing Silently

Silent installation mode is available for all installation types. You can use the silent installation when you wish to make multiple installations simultaneously or when you perform installations from a remote location. Silent installation eliminates the need to monitor the installation because there is no graphical output and no input by the user.

1. Insert the TopLink installation disk into the CD-ROM drive.
2. Open the `\Stage\Response` directory and select the `oracle.as.j2ee.top.toplink.rsp` file.
3. Copy the `oracle.as.j2ee.top.toplink.rsp` file to a temporary (`c:\temp`) location.
4. Edit the following parameters in the `oracle.as.j2ee.top.toplink.rsp` file:

```
ORACLE_HOME
ORACLE_HOME_NAME
FROM_LOCATION
```

5. Start the installer.

Open a command prompt window and enter:

```
setup.exe -responseFile c:\temp\oracle.as.j2ee.top.toplink.rsp -silent
```

To check if the installation was successful, search for the following line in the `silentInstall.log` file:

"The installation of Oracle Application Server 10g was successful."

2.3 Configuring TopLink Runtime Environment

At runtime, the TopLink Foundation Library requires the Java Runtime Environment 1.5 (or higher). By default, the TopLink installation includes the JRE 1.5.0_04.

To configure TopLink for a different version of the JRE, change the `ORACLE_HOME\toplink\bin\setenv.cmd` file to point `JAVA_HOME` to the alternate directory.

2.4 Configuring TopLink Workbench Environment

After installing TopLink Workbench, you must configure the following:

- [JRE Version](#)
- [Online Help and Documentation](#)

2.4.1 JRE Version

TopLink Workbench requires the Java Runtime Environment 1.4.2_06 (or higher). By default, the TopLink installation includes the JRE 1.5.

To configure TopLink for a different version of the JRE, change the `ORACLE_HOME\toplink\bin\setenv` file to point `JAVA_HOME` to the alternate directory.

Java Cryptography Extension (JCE)

The TopLink Workbench uses JCE to encrypt database login information. JCE is included with JDK 1.4 (or higher).

2.4.2 Online Help and Documentation

By default, TopLink installs only a portion of TopLink Workbench online Help system on your computer. To access the complete documentation from Oracle, ensure that your computer is connected to the internet and the proxy information (if necessary) is correct.

For more information on how to specify the help mode, see the *Oracle TopLink Developer's Guide*.

From the TopLink Workbench menu, select **Tools, Preferences**. On the Preferences dialog, select **General** to configure your proxy information.

2.4.3 Driver Classpath Environment Variable

Depending on the TopLink Workbench project, you are required to update the `DRIVER_CLASSPATH` environment variable to add the location of the following (if necessary):

- JDBC drivers – If you are using relational projects.
- J2EE Connector Architecture (J2C) adapters – If you are using TopLink Workbench Enterprise Information System (EIS) projects.
- Oracle Database `<ORACLE_HOME>\rdbsms\jlib\xdb.jar` file – If you are using direct to XML type mappings with an *Oracle10g* or higher database.
- Custom `Collection` class that you use to override the default `Collection` class that TopLink uses with a mapping container policy.

For more information on how to update the `DRIVER_CLASSPATH` environment variable, see "Configuring the TopLink Workbench Environment" section in the Using TopLink Workbench chapter in the *Oracle TopLink Developer's Guide*.

2.4.4 Third-party Libraries

If you plan to use additional, third-party libraries (such as XMLType Mappings or EIS with Attunity), when deploying your Oracle TopLink project, you must copy the appropriate JAR file to `ORACLE_HOME\toplink\jlib`. Additionally, you must include the libraries on the server's classpath.

2.5 Starting TopLink Workbench

To start TopLink Workbench, simply execute the `workbench.cmd` file in the `INSTALL_DIR\toplink\bin` directory. The TopLink Welcome Screen appears.

If you receive a "Cannot Find Main Class" error, ensure that you have configured `JAVA_HOME` correctly. See "JRE Version" on page 2-3.

Note: On Microsoft Windows XP platforms with mapped network drives, the TopLink Workbench File Chooser dialogs (such as Save File or Open File) may experience slow responses for opening and traversing directory trees. Unmapping the network drives eliminates this behavior.

2.6 TopLink Tutorial

TopLink provides a tutorial with which you can create an Employment Management System for your company to be deployed in a three-tier environment using JSP servlets. The tutorial shows you how to store data from a Java class into a relational database and access existing database information from Java classes.

Specifically, you will learn how to:

- Create a new TopLink Workbench project
- Enable and add Java classes
- Create and import database tables
- Associate descriptors to tables
- Implement direct and relationship mappings (including self-relationships)
- Use indirection and value holders
- Apply several advanced features such as multiple tables and optimistic locking
- Write TopLink queries
- Create and manage database sessions
- Package and deploy a TopLink application

See Also:

- *Oracle TopLink Developer's Guide*
- http://www.oracle.com/technology/products/ias/toplink/doc/1013/MAIN/_html/prt_tut.htm

2.7 Installation Troubleshooting

After you install TopLink, if you encounter problems either starting the application or connecting to a database, try the following solutions:

- Ensure that the driver class name is correct. Many vendors have several different driver classes to choose from.
- Check your login information.
- Ensure that your path includes all .dll files your driver requires.
- Check with your database administrator that:
 - Any drivers that require special set-up in the database server (such as Sybase JConnect) have been set up correctly.
 - Any drivers that require special permissions in the database server have been set up correctly.
 - You are not exceeding the number of available concurrent connections to your database. This may occur during development time, when many people are testing connections.
- If you use database servers that requires an extra Windows NT service to be running for JDBC connections, ensure that one is running.
- Check with your vendor to ensure that you are using the latest version of both your JDBC driver and the database to which it is connecting.
- If it takes an extremely long time to start TopLink Workbench after the splash screen appears (for example, more than 30 seconds), ensure that your proxy help mode and proxy information is correct. See "[Online Help and Documentation](#)" on page 2-3 for details.

2.8 Installing Patch Sets

When available, you can download the latest patch sets for 10g Release 3 (10.1.3) from OracleMetaLink at:

<http://metalink.oracle.com>

OracleMetaLink is the Oracle Support Services site where customers can get information about released patches and outstanding bugs.

Index

A

additional requirements, 1-1
Antlr
 licensing, 1-2

C

case-sensitive, 2-1
certification, 1-1
classpath
 configuring JDBC_CLASSPATH, 2-3
 custom Collection class, 2-3
 DRIVER_CLASSPATH, Oracle TopLink
 Workbench, 2-3
 JCA adapter, 2-3
 JDBC driver, 2-3
 Oracle TopLink Workbench DRIVER_
 CLASSPATH, 2-3
 xdb.jar, 2-3
configuring
 setenv.cmd file, 2-2
 Sun JDK and JRE, 2-3
container policy
 custom Collection class, 2-3

D

databases
 supported, 1-1
 troubleshooting, 2-5
DOM
 licensing, 1-2
DRIVER_CLASSPATH
 Oracle TopLink Workbench environment, 2-3

E

encryption, password, 2-3
environment
 JDBC_CLASSPATH, 2-3
 JRE, 2-3

H

help system
 configuring, 2-3

I

installation, 2-1
 log, 2-2
 Oracle Universal Installer (OUI), 2-1
 overview, 1-1
 prerequisites, 2-1
 silent, 2-2
 types, 2-1
installation types, Oracle TopLink, 2-1

J

Java
 Java 2, 2-3
 Java Cryptography Extension (JCE), 2-3
 Java Runtime Environment (JRE)
 licensing, 1-3
 requirements, 1-1
 JCA adapter, 2-3
 JDBC drivers
 classpath, 2-2
 environment variables, 2-3
 requirements, 1-1
 JDBC_CLASSPATH, 2-2, 2-3
 JVM (Java Virtual Machine), 1-1

L

license information
 Antlr, 1-2
 DOM, 1-2
 Java Runtime Environment (JRE), 1-3
 Oracle TopLink, 1-2
log, installation, 2-2

O

Oracle Metalink, 2-5
Oracle Support Services, 2-5
Oracle TopLink Workbench
 DRIVER_CLASSPATH, 2-3
 environment, 2-3
 JDBC_CLASSPATH, 2-3
Oracle Universal Installer (OUI), 2-1
OUI. *see* Oracle Universal Installer

P

package names, case sensitivity, 2-1
password encryption, 2-3
patch sets, 2-5
proxy
 configuring, 2-3

R

requirements
 additional, 1-1
 JDBC driver, 1-1

S

setenv.cmd file, 2-2
silent installation
 about, 2-2
 log, 2-2
silentInstall.log file, 2-2
system variables, 2-1

T

tutorial
 about, 2-4
 planning, 2-4

U

user variables, 2-1

W

Windows
 administrator group, 2-1

X

xdb.jar<DefaultParaFont>, 2-3