

Oracle® Fusion Middleware

Oracle Exalytics In-Memory Machine Installation and
Administration Guide for Oracle Solaris

Exalytics Software Release 1 (1.0) for Exalytics T5-8

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Explains how to install and manage Oracle Business Intelligence products (including Oracle BI Enterprise Edition and Oracle BI Publisher) on the Oracle Exalytics In-Memory Machine T5-8. Includes how to monitor and administer an Oracle Business Intelligence system.

Oracle Fusion Middleware Oracle Exalytics In-Memory Machine Installation and Administration Guide for Oracle Solaris, Exalytics Software Release 1 (1.0) for Exalytics T5-8

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Preface

The Oracle Business Intelligence Foundation Suite is a complete, open, and integrated solution for all enterprise business intelligence needs, including reporting, ad hoc queries, OLAP, dashboards, scorecards, and what-if analysis. The Oracle Business Intelligence Foundation Suite includes Oracle Business Intelligence Enterprise Edition.

Oracle Business Intelligence Enterprise Edition (Oracle BI EE) is a comprehensive set of enterprise business intelligence tools and infrastructure, including a scalable and efficient query and analysis server, an ad-hoc query and analysis tool, interactive dashboards, proactive intelligence and alerts, and an enterprise reporting engine.

The components of Oracle BI EE share a common service-oriented architecture, data access services, analytic and calculation infrastructure, metadata management services, semantic business model, security model and user preferences, and administration tools. Oracle BI EE provides scalability and performance with data-source specific optimized request generation, optimized data access, advanced calculation, intelligent caching services, and clustering.

This guide contains information about installing and administering the Oracle Exalytics In-Memory Machine. The guide includes topics on installing, upgrading, and maintaining the Exalytics Machine.

This guide applies to: Oracle Exalytics Machine T5-8 for Oracle Solaris Release 1 (1.0)

Audience

This document is intended for installation engineers and middle-tier administrators who are responsible for managing Oracle Business Intelligence processes, upgrading, and installing.

Documentation Accessibility

For information about Oracle's commitment to accessibility, visit the Oracle Accessibility Program website at <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=docacc>.

Access to Oracle Support

Oracle customers that have purchased support have access to electronic support through My Oracle Support. For information, visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=info> or visit <http://www.oracle.com/pls/topic/lookup?ctx=acc&id=trs> if you are hearing impaired.

Related Documentation and Other Resources

See the Oracle Business Intelligence library for a list of related Oracle Business Intelligence documents.

In addition, go to the Oracle Learning Library for Oracle Business Intelligence-related online training resources.

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
monospace	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

New Features in Oracle Exalytics In-Memory Machine Installation and Administration Guide for Oracle Solaris Release 1 (1.0)

This preface describes the new features and certifications for the components in Oracle Exalytics T5-8 Machine for Oracle Solaris, Release 1 (1.0).

The Oracle Exalytics for Oracle Solaris Release 1 (1.0) includes additional certifications and new capabilities for the components that are described in the following sections:

- ["InfiniBand Support for Oracle Solaris Zones and Oracle VM for SPARC"](#)
- ["Application Software Components"](#)

InfiniBand Support for Oracle Solaris Zones and Oracle VM for SPARC

Oracle Solaris Zones and Oracle VM for SPARC supports connection to InfiniBand.

Application Software Components

The following new application software component releases are certified to run on Oracle Exalytics T5-8 Machine for Oracle Solaris, Release 1 (1.0).

For the latest application software component certifications on Exalytics, see the *Oracle Exalytics Certification Matrix* at the following location:

<http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html>

- ["Oracle Business Intelligence Enterprise Edition 11.1.1.7.x"](#)
- ["Oracle TimesTen 11.2.2.6 for Exalytics"](#)
- ["Oracle Essbase 11.1.2.3"](#)
- ["Oracle BI Applications 11.1.1.7.1"](#)

Oracle Business Intelligence Enterprise Edition 11.1.1.7.x

Oracle Business Intelligence Enterprise Edition 11.1.1.7.140715 includes a number of bug fixes for the components that comprise Oracle Exalytics. These bug fixes are described in the component-specific ReadMe files.

Oracle TimesTen 11.2.2.6 for Exalytics

Enhancements to Oracle TimesTen for Exalytics 11.2.2.6 include the following:

- Significant improvements on query performance for Oracle BI EE in Oracle Exalytics
 - Enhanced SQL Optimizer enables faster query response time for selected Oracle Business Intelligence applications (e.g. Financials, CRM)
 - Reduction in SQL prepare time enables faster data retrieval for Oracle BI EE Dashboard reporting
 - Additional star-join query optimizations speeds up query response time for data marts and aggregations
 - Improved SQL execution plan selection and generation
 - Enhanced Index Advisor enables more precise recommendation
- SQL Developer 4.0 Integration
 - New Data Loading wizard for populating TimesTen tables using existing data from the Oracle Database
 - New Index Advisor wizard for query performance tuning
 - New Performance Metrics wizard to simplify performance reporting
- Quick Start Guide: New How-To guide for data loading and query performance tuning

For information, see the "Oracle TimesTen In-Memory Database" documentation at the following link:

<http://www.oracle.com/technetwork/products/timesten/documentation/index.html>

The link to the "Oracle TimesTen In-Memory Database" documentation is also available from the Oracle Exalytics Documentation library.

Oracle Essbase 11.1.2.3

For information on using new Essbase features such as using runtime substitution variables in calculation scripts, see the following:

- The "Oracle Essbase New Features Release 11.1.2.3" document at the following location:

http://docs.oracle.com/cd/E40248_01/epm.1112/essbase_new_features/essbase_new_features.html
- *Oracle Enterprise Performance Management System Installation and Configuration Guide Release 11.1.2.3* at the following location:

http://docs.oracle.com/cd/E40248_01/epm.1112/epm_install.pdf

Oracle BI Applications 11.1.1.7.1

For information on using new Oracle BI Applications features see "Oracle Business Intelligence Applications 11.1.1.7.1" documentation, the link to which is available from the Oracle Exalytics Documentation Library.

Part I

Installation

This part describes how to install. It contains the following chapters:

- [Chapter 1, "Installation Overview"](#)
- [Chapter 2, "Configuring Exalytics Machine for Virtualization"](#)
- [Chapter 3, "Installing Software on an Exalytics Machine"](#)
- [Chapter 4, "Postinstallation Tasks for Oracle Business Intelligence Software"](#)
- [Chapter 5, "Deinstalling Business Intelligence Software on the Exalytics Machine"](#)

Installation Overview

This chapter provides an overview of installing software on the Oracle Exalytics In-Memory Machine. The Exalytics Machine is an engineered solution that includes a memory-centric hardware platform, proven in-memory technology from Oracle TimesTen, and an optimized version of Oracle Business Intelligence Foundation Suite functionality.

Oracle Business Intelligence applications and Oracle Enterprise Performance Management applications can be installed on an Exalytics Machine to provide greater value to Exalytics customers.

The Exalytics Machine enables Oracle Business Intelligence software users to gain quick insight, make better decisions, and take immediate actions. For system administrators, the pre-engineered system simplifies the process of configuring and maintaining an enterprise-level, high-performance Oracle Business Intelligence implementation. It eliminates the risks associated with procuring, deploying, maintaining, and tuning the system infrastructure from multiple vendors. Oracle's technology is designed to scale seamlessly from small workgroup installations to large scale enterprise Business Intelligence deployments.

The term "Oracle Business Intelligence" is used throughout this guide to collectively refer to Oracle BI Enterprise Edition and Oracle BI Publisher. In cases where a description or instruction specifically applies to one of these products, the individual product's name is used instead.

This chapter includes the following sections:

- [Section 1.1, "Installable Components"](#)
- [Section 1.2, "Oracle Exalytics Architecture"](#)
- [Section 1.3, "System Requirements and Certification"](#)

1.1 Installable Components

The Oracle Exalytics T5-8 Machine for Oracle Solaris, Release 1 (1.0) comprises a number of system and application software components that are installed on an Exalytics Machine to work together in an optimized manner.

This section includes the following topics:

- [Section 1.1.1, "System Components"](#)
- [Section 1.1.2, "Application Software Components"](#)

1.1.1 System Components

The system components include the following:

- Exalytics Base Image on Exalytics T5-8 is Solaris 11.
Base Image on Exalytics T5-8 is based on Oracle Solaris 11 specifically optimized and built for analytical workload. Exalytics base image also includes additional utilities like network utilities, Auto Service Request utilities, and other system configuration utilities.

1.1.2 Application Software Components

The application software components include the following:

- Oracle Business Intelligence Foundation Suite
- Oracle Enterprise Performance Management Applications
- Oracle TimesTen In-Memory Database for Exalytics
- Oracle Business Intelligence Applications

In addition, note the following:

- Oracle Real-Time Decisions is not available for installation on the Exalytics Machine.
- This guide does not provide information on installing Essbase on the Exalytics Machine using the Oracle Hyperion Enterprise Performance Management System Installer. For information about using the EPM System Installer to install Essbase, see *Oracle Hyperion Enterprise Performance Management System Installation and Configuration Guide*.

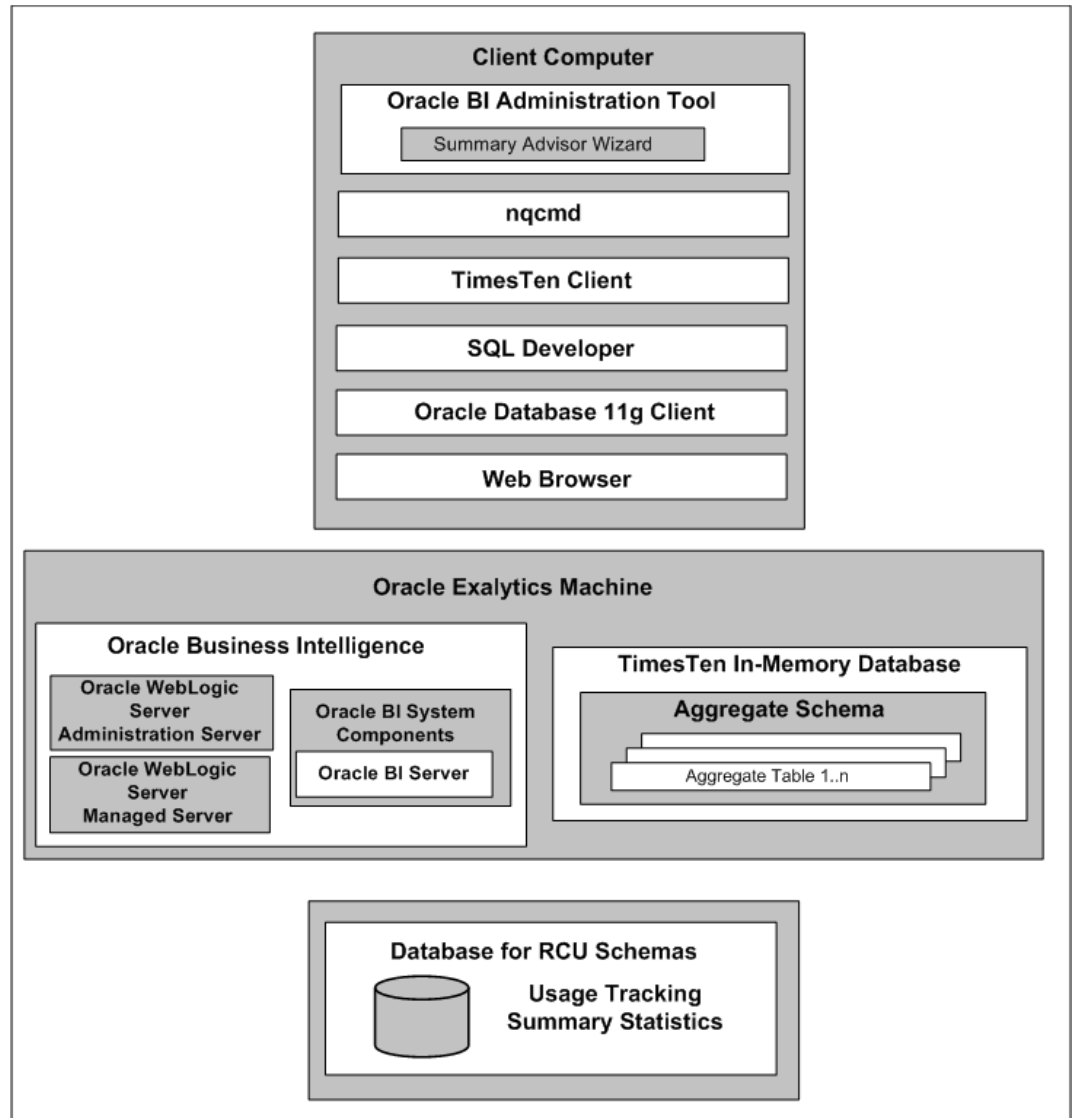
For detailed information about supported products on each component, see the Oracle Exalytics Certification Matrix at the following location:

<http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html>

1.2 Oracle Exalytics Architecture

[Figure 1-1](#) contains a diagram of the architecture for the Exalytics Machine. The Exalytics Machine includes software for the Oracle TimesTen In-Memory Database, Oracle Business Intelligence, and the Administration Server and Managed Server for Oracle WebLogic Server. The Exalytics Machine is connected to a client computer on which the Oracle BI Administration Tool runs, including the Summary Advisor wizard. Another computer holds the database on which schemas that are created with the Repository Creation Utility reside, including usage tracking summary statistics.

Figure 1-1 Oracle Exalytics Architecture



Architecture for Exalytics Machine as described in surrounding text

1.3 System Requirements and Certification

This guide provides specific information about system requirements and software versions that the Exalytics Machine uses. For information about the client computer that you use with the Exalytics Machine, refer to the system requirements and certification documentation for information about hardware and software requirements, platforms, databases, and other information. Both of these documents are available on Oracle Technology Network (OTN).

- The system requirements document covers information such as hardware and software requirements, minimum disk space and memory requirements, and required system libraries, packages, or patches:

<http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-requirements-100147.html>

- The certification document covers supported installation types, platforms, operating systems, databases, JDKs, and third-party products:

<http://www.oracle.com/technetwork/middleware/ias/downloads/fusion-certification-100350.html>

Configuring Exalytics Machine for Virtualization

This chapter describes the tasks to perform when configuring T5-8 Exalytics Machines for virtualization, and configuring the Exalytics Machine with Logical Domains and Zones using the Configuration Utility.

This chapter includes the following sections:

- [Section 2.1, "Before You Virtualize an Exalytics Machine"](#)
- [Section 2.2, "Configuring an Exalytics Machine for Virtualization"](#)
- [Section 2.3, "Installing and Configuring Exalytics Software on Virtual Machines"](#)

2.1 Before You Virtualize an Exalytics Machine

Before you virtualize an Exalytics Machine, review the following sections:

- [Section 2.1.1, "Documents to Review"](#)
- [Section 2.1.2, "Prerequisites for Configuring Exalytics Machines for Virtualization"](#)
- [Section 2.1.3, "Reconfiguring an Existing Configuration on a T5-8 Exalytics Machine"](#)

2.1.1 Documents to Review

As you prepare to virtualize an Exalytics Machine, review *Oracle Exalytics In-Memory Machine T5-8 Owner's Guide* to ensure that you have properly configured and commissioned the Exalytics Machine in your data center. The *Oracle Exalytics In-Memory Machine T5-8 Owner's Guide* is located at:

http://docs.oracle.com/cd/E41453_01/html/E41455/index.html

2.1.2 Prerequisites for Configuring Exalytics Machines for Virtualization

The following prerequisites must be met before you can virtualize an Exalytics Machine:

- The Exalytics Machine has been racked and mounted in a data center.
- Oracle Integrated Lights Out Manager is configured to be accessible from the network using the web interface.
- All networking information such as host name, IP address, subnet, gateway, and DNS are available.

- Spare, unassigned IP addresses are available for the server pool and for each virtual machine deployed on the Exalytics Machine.
- You have access to the internet from a computer (not necessarily the Exalytics Machine) to download required software.

2.1.3 Reconfiguring an Existing Configuration on a T5-8 Exalytics Machine

The T5-8 Exalytics Machine comprises eight hard disks and eight Flash cards. Each hard disk has a capacity of 1.2 TB. Each T5-8 Exalytics Machine supports two types of configurations: a single and double domain configuration.

A single domain configuration contains eight hard disks, eight Flash cards, and a single operating system. The first two disks contain the operating system, are configured as RAID1 (mirrored), and are built on a single zpool. The remaining disks are configured as a RAID-Z pool.

A double domain configuration consists of two domains, each domain containing four hard disks and its own operating system. The first two disks in each domain are configured as RAID1 (mirrored), built on a single zpool, and mounted on /u03. The remaining disks in each domain are configured as RAID1, built on a second zpool, and mounted on /u01. A two-domain configuration enables you to create four unique configuration layouts depending on the number of CPUs, memory, hard disks, and Flash cards you configure in each layout. For example, one configuration layout can have four hard disks and four Flash cards in the first domain, and four hard disks and four Flash cards in the second domain. Another configuration can have four hard disks and five Flash cards in the first domain and four hard disks and three Flash cards in the second domain, and so on. For more information, see "Understanding Configuration Details" in *Oracle Exalytics In-Memory Machine T5-8 Owner's Guide*. The guide is located at:

http://docs.oracle.com/cd/E41453_01/html/E41455/index.html

2.2 Configuring an Exalytics Machine for Virtualization

Tasks to initially configure the T5-8 Exalytics Machine for virtualization are performed by Oracle Advanced Customer Support (ACS). Do not attempt to initially configure the T5-8 Exalytics Machine manually without the assistance of Oracle Advanced Customer Support. You can configure Oracle Solaris Zones if you have the expertise or can request Oracle Advanced Customer Support.

2.3 Installing and Configuring Exalytics Software on Virtual Machines

The process of installing Exalytics software on virtual machines is identical to installing the software on the Exalytics Machine, except that the virtual machines cannot access the entire Exalytics memory. Keep in mind this limitation when setting kernel parameters related to shared memory for Oracle TimesTen.

You install Oracle Business Intelligence and Oracle TimesTen on one virtual machine, and Oracle Essbase (if deployed) on the second virtual machine.

2.3.1 Installing and Configuring Exalytics Software on Virtual Machines

This section consists of the following topics:

- [Section 2.3.1.1, "Modifying the Oracle User and Granting Permissions"](#)
- [Section 2.3.1.2, "Installing Oracle Business Intelligence and Oracle TimesTen"](#)

- [Section 2.3.1.3, "Installing Oracle Essbase"](#)

2.3.1.1 Modifying the Oracle User and Granting Permissions

The Virtual Machine template contains "oracle" as the operating system user name. Associate the user name with the "oinstall" group and create a password for it.

To modify the Oracle user and grant permissions:

1. Log in as root user.
2. Enter the following commands to associate the user name "oracle" with the group "oinstall" and to create a password:

```
groupadd oinstall
usermod -g oinstall oracle
passwd oracle
```

3. Enter the following commands to grant permissions to the /u01 drive where the software is to be installed:

```
chown oracle:oinstall /u01
chmod 775 /u01
```

4. Start the VNC Server on the virtual machine.

2.3.1.2 Installing Oracle Business Intelligence and Oracle TimesTen

For detailed instructions on installing Oracle Business Intelligence and Oracle TimesTen, see [Chapter 3, "Installing Software on an Exalytics Machine."](#)

2.3.1.3 Installing Oracle Essbase

If deploying Oracle Essbase, install Oracle Essbase on a separate virtual machine.

To install Oracle Essbase:

1. Connect to a virtual machine.
2. Navigate to the Oracle Software Delivery Cloud web site at the following link:
<http://edelivery.oracle.com>
3. For Product Pack, select **Oracle Enterprise Performance System**.
4. For Platform, select **Oracle Solaris on SPARC (64-bit)**.
5. Click **Go**.
6. Select and download **Oracle Enterprise Performance Management System Media Pack 11.1.2.3.0 for Oracle Solaris on SPARC (64-bit)**.
7. Download Oracle Essbase, which includes the following:
 - System Configurator
 - Foundation Services
 - Essbase and Static Content
8. Unzip the zip files to the MW_HOME directory.
9. Navigate to the folder where you unzipped the files (MW_HOME), and run the following command to install Oracle Essbase:

```
./installTool.sh
```

10. Navigate to MW_HOME/EPMSys11R1/common/config/11.1.2.0.

11. Run the following command to create a domain:

```
./configtool.sh
```

For more information, see *Oracle Enterprise Performance Management System Installation and Configuration Guide Release 11.1.2.3* at the following location:

http://docs.oracle.com/cd/E40248_01/epm.1112/epm_install.pdf

Installing Software on an Exalytics Machine

This chapter describes how to install software on the Exalytics Machine. The installation scripts provide a semi-automated way of creating a single-node Oracle Exalytics system by installing Oracle Business Intelligence 11.1.1.7 and Oracle TimesTen and configuring the two software components to communicate with each other.

This chapter includes the following sections:

- [Section 3.1, "Before You Install Software on the Exalytics Machine"](#)
- [Section 3.2, "Installing the Software"](#)
- [Section 3.3, "Troubleshooting the Installation and Configuration Processes"](#)

3.1 Before You Install Software on the Exalytics Machine

Before you install software on the Exalytics Machine, review the following sections:

- [Section 3.1.1, "Documents to Review"](#)
- [Section 3.1.2, "Prerequisites for Installing on the Exalytics Machine"](#)

3.1.1 Documents to Review

As you prepare to install software on the Exalytics Machine, do the following:

- Review the Oracle Business Intelligence chapter in the *Oracle Fusion Middleware Release Notes*, to ensure that you understand the differences between Oracle Business Intelligence and its documented functionality, and any other issues that apply to the current release.
- Review the latest *Oracle Exalytics In-Memory Machine Release Notes for Oracle Solaris* for any late-breaking information.
- Review the *Oracle TimesTen In-Memory Database Release Notes* to ensure that you understand the differences between Oracle TimesTen and its documented functionality, and any other issues that apply to the current release.
- Review *Oracle Exalytics In-Memory Machine T5-8 Owner's Guide* to ensure that you have properly configured and commissioned the Exalytics Machine in your data center. The *Oracle Exalytics In-Memory Machine T5-8 Owner's Guide* is available at the following location:

http://docs.oracle.com/cd/E41453_01/html/E41455/index.html

3.1.2 Prerequisites for Installing on the Exalytics Machine

The following prerequisites must be met before installing Oracle Business Intelligence on the Exalytics Machine:

- The Exalytics Machine has been racked and mounted in a data center.
- The Exalytics Machine is configured with the base operating system at the factory with the Oracle Solaris 11.1 image at the factory.

If you need assistance, then Oracle provides Advanced Customer Services for installing software on the Exalytics Machine.

- Oracle Service engineers have configured the Configuration Utility.
- Network configuration is complete and the computer is accessible from the network.

Contact Oracle Advanced Customer Services to configure the systems with Oracle VM for SPARC and Zones per your requirements.

- A supported database is available (but not on Oracle Exalytics) and accessible from the Exalytics Machine to host the schemas that are required by the software installation and that you create as part of the installation process. Ensure that the database is running during the installation and that the database is not hardened for security purposes. Installing Oracle Business Intelligence against a hardened database is not supported.

For information about hardened databases, see *Oracle Database Vault Administrator's Guide*.

- You have access to the internet from a computer (not necessarily the Exalytics Machine) to download required packages.

3.2 Installing the Software

Installing software on the Exalytics Machine involves a combination of manual steps and automated scripts. The manual steps are to install WebLogic and Oracle BI EE while the installation script provides an automated way of installing Oracle TimesTen In-Memory Database and configuring communication with Oracle BI EE (a Software-Only Installation).

The steps in the process are:

- [Section 3.2.1, "Creating the User, Group, and Password on the Operating System"](#)
- [Section 3.2.2, "Creating the Inventory for Oracle TimesTen"](#)
- [Section 3.2.3, "Setting Resource Limits for Oracle TimesTen"](#)
- [Section 3.2.4, "Downloading Oracle Files into the Directory Structure"](#)
- [Section 3.2.5, "Staging the Middleware Home"](#)
- [Section 3.2.6, "Creating the Database Schemas"](#)
- [Section 3.2.7, "Installing WebLogic Server"](#)
- [Section 3.2.8, "Performing a Software Only Install"](#)
- [Section 3.2.9, "Creating a New Oracle BI Enterprise Edition Instance"](#)
- [Section 3.2.10, "Editing the Properties File"](#)
- [Section 3.2.11, "Verifying the Checklist"](#)

- [Section 3.2.12, "Running the Script"](#)
- [Section 3.2.13, "Verifying the Installation"](#)

3.2.1 Creating the User, Group, and Password on the Operating System

On the operating system, create a user with a name such as "oracle" and an appropriate password and a group with a name such as "oinstall". The following are sample commands for creating this user and group:

```
groupadd oinstall
useradd -g oinstall oracle
useradd -b /export/home/oracle -m -s /bin/bash -g oinstall oracle
```

Enter the following commands to grant permissions to the /u01 drive where the software is to be installed:

```
chown oracle:oinstall /u01
chmod 775 /u01
```

The procedures throughout this section assume a user named "oracle" and a group named "oinstall".

3.2.2 Creating the Inventory for Oracle TimesTen

Create the inventory for Oracle TimesTen after you log in as the root user by entering the following commands:

```
mkdir /etc/TimesTen
chmod 770 /etc/TimesTen
chgrp oinstall /etc/TimesTen
touch /etc/TimesTen/instance_info
chmod 770 /etc/TimesTen/instance_info
chgrp oinstall /etc/TimesTen/instance_info
```

Ensure that the group who runs the script has write access to the /etc/TimesTen directory.

3.2.3 Setting Resource Limits for Oracle TimesTen

In Oracle Solaris, you must create a project to manage system resources, such as shared memory and semaphores. You can create a group project or a user project.

Note: If you create a group project, the instance administrator must run the *newtask* command before the TimesTen daemons are restarted. If the TimesTen daemons start at system start time, add the *newtask* command to the system startup scripts.

Every user and group is associated to a default project, which is the project under which their processes are run. Modify the /etc/project file so that the project settings of the user occur first in the /etc/project file.

Note: Do not remove the default project settings from the project file. Instead, edit the project file and place your project settings at the top of the project file above the default settings.

To set the resource limits for Oracle TimesTen:

1. Log in as root user.
2. Create a project. For information on creating a project, see "Administering Projects" in *System Administration Guide: Oracle Solaris Containers-Resource Management and Oracle Solaris Zones*.

Note: The following procedure modifies the performance settings and semaphores for the "obiee" project for the user "oracle".

3. Add the project to the user by entering the following command:

```
# projadd -U oracle obiee -c "Oracle OBIEE Project"
```

4. Modify the shared memory settings by entering a command.

For example, to modify the shared memory settings to 2 TB, enter the following command:

```
# projmod -a -K "process.max-shm-memory=(priv,2TB,deny)" obiee
```

Note: Oracle recommends that you set the size of the memory settings not to exceed 75% of the size of the physical memory. The physical memory available on the host depends upon the system configuration. To check physical memory on the host, run the following command as the root user:

```
prtconf |grep Memory
```

5. Modify the maximum number of semaphores to 4096 by entering the following command:

```
# projmod -a -K "process.max-sem-nsems=(priv,4096,deny)" obiee
```

6. Validate the project by entering the following command:

```
project -l or cat /etc/project
```

3.2.4 Downloading Oracle Files into the Directory Structure

Before installing the software you must download the required files into an organized directory structure. Please note that the directory structures detailed in Task 2 below and [Section 3.2.5, "Staging the Middleware Home"](#) is not mandatory, but is just an example. You can choose any structure to organize the files.

Note: You must reference the same chosen directory structure in the properties files when editing the install script.

To download files into the directory structure:

1. Log in as "oracle" user.
2. Download the following required software installers from the Media Pack and for Oracle Exalytics under Oracle Business Intelligence software for Linux X86-64 Oracle Solaris on Oracle Software Delivery Cloud at the following location:

<http://edelivery.oracle.com/>

- Oracle BI Enterprise Edition Release 11g
 - Repository Creation Utility that corresponds with the appropriate Oracle BI EE Release
 - Oracle TimesTen Release 11g
 - Oracle WebLogic Server Release 10g
3. As the user who owns the installation of the Oracle Exalytics software, create a directory structure such as the following for staging the software installation programs, if the user name is "oracle" and the home directory is export/home/oracle:
- export/home/oracle/EXALYTICS_RCU
Copy the rcuHome.zip file for the Repository Creation Utility (RCU) into this directory and unzip it.
 - export/home/oracle/EXALYTICS_INSTALLERS/bi
Copy the Oracle BI EE installation ZIP files into this directory and unzip them using the following command. The -q parameter reduces the number of lines of output that are sent to the console.

```
unzip -q '*.zip'
```


The unzip process creates a subdirectory called bishiphome that contains subdirectories with names of Disk1 through Disk5.
 - export/home/oracle/EXALYTICS_INSTALLERS/tt
Copy the TimesTen for Exalytics distribution file into this directory and do not unzip it. The file has an extension such as .zip or .tar.gz. The installation scripts work with a file of either extension.
 - export/home/oracle/EXALYTICS_INSTALLERS/wls
Obtain the ZIP file for Oracle WebLogic Server on 64-bit Linux Oracle Solaris and extract the file with a name such as wls1036_linux64.binwls1036_generic.jar into this directory. If the file is not executable, then use a command such as the following to allow it to be executed:

```
chmod +x wls1036_generic.jar
```
 - export/home/oracle/EXALYTICS_INSTALL_LOG
The installation scripts use this directory for storing the log files from the installation. You use these log files for troubleshooting, as described in [Section 3.3, "Troubleshooting the Installation and Configuration Processes."](#)
 - export/home/oracle/EXALYTICS_INSTALL_TEMP
The installation scripts use this directory for storing temporary files.

3.2.5 Staging the Middleware Home

Create a directory structure such as the following for staging the Middleware Home:

```
/u01/app/oracle/product/fmw
```

The installation scripts use this directory as the target directory for the Oracle BI EE installation, which is known as the Middleware Home. In this guide, this directory is referred to as EXALYTICS_MWHOME.

3.2.6 Creating the Database Schemas

Follow the instructions in the "Create Database Schemas Using the Repository Creation Utility (RCU)" section in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*.

You must first create required Oracle Business Intelligence schemas in a database (note that the database must not be hardened). You use a tool called the Repository Creation Utility (RCU) to create these schemas with the appropriate permissions and data.

Before you begin using RCU, review the "Repository Creation Utility (RCU) Requirements" section in the Oracle Fusion Middleware System Requirements document:

http://docs.oracle.com/html/E18558_01/fusion_requirements.htm

This section contains important information about your system and component-specific database requirements that should be met before you run RCU.

Ensure that you record the following details, because you use them later in the installation process:

- The database connection details in the following form:
host-name:port-number:service-name
- The names and passwords of the schemas that you create, which have names such as *prefix_BIPLATFORM* and *prefix_MDS*.

3.2.7 Installing WebLogic Server

If not already installed, install the WebLogic Server.

To install a WebLogic Server:

1. Configure the JAVA_HOME and PATH variables for the JDK by performing the following actions:

- a. Run the following commands:

```
# export JAVA_HOME=/usr/jdk/instances/jdk1.6.0
# export PATH=/usr/jdk/instances/jdk1.6.0/bin:$PATH
```

- b. Run the following command to verify that JDK is configured correctly:

```
# java -version
```

The output should look similar to the following:

```
bash-4.1$ java -version
java version "1.6.0_45"
Java(TM) SE Runtime Environment (build 1.6.0_45-b06)
Java HotSpot(TM) Server VM (build 20.45-b01, mixed mode)
bash-4.1$
```

2. Navigate to the directory where you downloaded the WebLogic Server zip file (export/home/oracle/EXALYTICS_INSTALLERS/wls.)

3. If the file is not executable, run the following command:

```
#java -d64 -jar wls1036_generic.jar
```

4. On the Welcome screen, click **Next**.

The Choose Middleware Home Directory is displayed.

5. Select **Create a new Middleware Home** and create a new Middleware home in the `/u01/app/oracle/product/fmw` directory, and click **Next**.
The Register for Security Updates screen is displayed.
6. Specify whether you want to register for security updates, and click **Next**.
The Choose Install screen is displayed.
7. Select **Typical**, and click **Next**.
The Choose Product Installation Directories screen is displayed.
8. Specify the directories in which you want to install the products, and click **Next**.
The Installation Summary screen is displayed.
9. Click **Next**.
The Status screen is displayed.
10. When the installation is complete, click **Next**.
The Installation Complete screen is displayed.
11. If selected, deselect **Run Quickstart**, and then click **Done**.

For more information on installing Oracle WebLogic Server, including custom installations, see *Oracle Fusion Middleware Installation Guide for Oracle WebLogic Server*.

3.2.8 Performing a Software Only Install

The Software Only Install type enables you to install Oracle Business Intelligence software binary files in an Oracle home for later configuration.

To perform a Software Only Install:

1. Navigate to the `export/home/oracle/EXALYTICS_INSTALLERS/bi/bishiphome/Disk1` directory.
2. Navigate to the `/home/oracle/EXALYTICS_INSTALLERS/bi/bishiphome/Disk1` directory.
3. Start Oracle Business Intelligence 11g Installer by running the following command:
`./runInstaller`
The Specify Inventory directory screen is displayed.
4. If this is your first Oracle installation, perform the following actions:
 - On the Specify Inventory directory screen, specify the location of the inventory directory and the group whose members you want to grant access to the inventory, and click **OK**.
 - Navigate to the location chosen in the previous step (Step 3, first sub-step) and enter the following command as root user:
`/createCentralInventory.sh`
Click **OK**.
5. On the Welcome screen, click **Next**.
6. On the Software Updates screen, specify your My Oracle Support information and software update preferences, and click **Next**.
7. On the Select Installation Type screen, select **Software Only Install**, and click **Next**.

8. On the Prerequisite Checks screen, after the prerequisite checks conclude with no errors, click **Next**.
9. On the Specify Installation Location screen, in the **Oracle Middleware Home** field, enter the path `/u01/app/oracle/product/fmw` for the Middleware home directory, and click **Next**.
10. On the Application Server screen, confirm that the application server installed is Oracle WebLogic Server, and click **Next**.
11. On the Security Updates screen, enter your My Oracle Support account information, and then click **Next**.
12. On the Summary screen, Click **Install**.
13. On the Installation Progress screen, monitor the progress of your installation. To stop the installation, click **Cancel**.
14. On the Installation Complete screen, click **Finish** to exit Oracle Business Intelligence 11g Installer.

For more information, see "Software Only Install" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*.

3.2.9 Creating a New Oracle BI Enterprise Edition Instance

After completing the Software Only Install, you must create a new Oracle BI Enterprise Edition (Oracle BI EE) instance using the Configuration Assistant.

To create a new Oracle BI Enterprise Edition instance:

1. Navigate to the `EXALYTICS_MWHOME/Oracle_BI1/bin` directory.
2. Start the Oracle Business Intelligence Configuration Assistant by entering the following command:

```
./config.sh
```
3. On the Welcome screen, click **Next**.
4. On the Prerequisite Checks screen, after the prerequisite checks conclude with no errors, click **Next**.
5. On the Create, Scale Out, or Extend BI System screen, select **Create New BI System**, and then enter the following information:
 - The user name and password for the system administrator for the new Oracle Business Intelligence system
 - The domain name for the new Oracle Business Intelligence systemClick **Next**.
6. On the Specify Installation Location (Enterprise) screen, review the current Middleware home and other key locations for the new installation, and click **Next**.
7. On the Configure Components screen, all products (including Essbase) are selected by default. Deselect **Real-Time Decisions**, and then click **Next**.

Note: When you configure Oracle BI EE, Oracle BI Publisher is configured automatically. Also, if you want to install Essbase, you must select it now as it's not possible to install Essbase later.

8. On the BIPLATFORM and MDS Schema screens, specify the details of the database schemas you previously created in [Section 3.2.6, "Creating the Database Schemas"](#).
9. Click **Next**.
10. On the Configuration Ports screen, click **Auto Port Configuration** or **Specify Ports Using Configuration File**.

If you select the latter option, you must specify a configuration file that contains the custom port values for the Oracle Business Intelligence installation.

Note: The Oracle Business Intelligence Configuration Assistant automatically assigns the Node Manager port (default is 9556), unless you specify the Oracle Business Intelligence ports manually using a configuration file such as staticports.ini.

Click **Next**.

11. On the Security Updates screen, enter your My Oracle Support account information, and then click **Next**.
12. On the Summary screen, click **Configure** to start the configuration process.
13. On the Configuration Progress screen, confirm the configuration completes successfully, and then click **Next**.
14. On the Complete screen, click **Finish** to exit the Oracle Business Intelligence Configuration Assistant.

For more information, see "Configuring Oracle Business Intelligence with the Configuration Assistant" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*.

3.2.10 Editing the Properties File

Note: Before you edit the properties file, navigate to My Oracle Support and download patch 17173039. The patch contains the p17173039_111170_SOLARIS64.zip file. Unzip and install the file by following the instructions in the Readme file.

Edit carefully the properties file that contains values that the installation scripts use. The file is named bim-setup.properties and is stored in the following directory:

/EXALYTICS_MWHOME/Oracle_BI1/bifoundation/exalytics/properties

Keep the following points in mind as you edit the file:

- Ensure that you use proper spelling and capitalization in the lines of the file.
- The file contains comments that provide details on how to edit the values to be appropriate for your system.

The following is the contents of the properties file:

```
#####
# BI Machine Properties
#####
#####
```

```

[Generic properties to be used across all the Oracle Products]
# [Generic properties to be used across all the Oracle Products]
#bim.tt.installer.root=The directory location where the timesten installer zips
are present
#bim.tt.install.dir=The directory location where the timesten needs to be
installed
#bim.tt.daemon.port=The daemon port for timesten,if value is not provided default
value of port is used as 53396. For multiple install of timesten this property is
mandatory. The port number specified should be a number between 1024 and 65527.
#bim.tt.server.port=The server port used to configure timesten,if value is not
provided default value of port is used as 53397. For multiple install of timesten
this property is mandatory. The port number specified should be a number between
1024 and 65527.
#bim.tt.instance.name=The instance name for timesten,if value is not provided
default value used is tt1122. For multiple install of timesten this property is
mandatory.

#####
bim.tt.installer.root=/home/oracle/EXALYTICS_INSTALLERS/tt
bim.tt.install.dir=/u01/TT1
bim.tt.daemon.port=53396
bim.tt.server.port=53397
bim.tt.instance.name=tt1122

#####
[BI specific properties]
#bim.bi.host=The host name where BI is installed.
#bim.mw.home=This directory location BI Middleware home
#bim.bi.admin.user=The admin username of BI
#bim.bi.wls.admin.port=The port where AdminServer is running of BI
#####

bim.bi.host=<hostname>
bim.mw.home=/u01/INSTANCE1
bim.bi.admin.user=biadmin
bim.bi.wls.admin.port=7001

```

3.2.11 Verifying the Checklist

Before running the script, ensure that you verify the items in the following checklist:

- TimesTen install file is present.
- You carefully edited the properties file for the script and ensured that it contains no errors.

3.2.12 Running the Script

To run the script:

1. Log in to the Exalytics Machine as the user that you created in [Section 3.2.1, "Creating the User, Group, and Password on the Operating System."](#)
2. Change to the directory that contains the Oracle Exalytics software, such as the following one:


```
/EXALYTICS_MWHOME/Oracle_BI1/bifoundation/exalytics
```
3. Start a shell session (such as `csh`), ensure that the `GROUP` environment variable is set to the group that the user belongs to (for example in this section, "oracle" user

belongs to the "oinstall" group), then run the main installation script, which is named `bim-setup.sh`, using a command such as the following one:

```
./bim-setup.sh /EXALYTICS_MWHOME/Oracle_
BI1/bifoundation/exalytics/properties/bim-setup.properties
```

You can store the properties file in any directory when you update it as specified in [Section 3.2.10, "Editing the Properties File"](#) and specify the full path name when you run the installation script.

The installer script for Oracle Exalytics performs the following tasks:

- Prompts you to enter the Oracle BI Administration password when it runs.
- Enables the HardwareAcceleration MBean attribute.

If you must modify the attribute, then you can update it as described in [Section 3.3.4, "Manually Setting the HardwareAcceleration MBean Attribute."](#)

- Installs Oracle TimesTen.
- Makes configuration changes in the `opmn.xml` file to point to the Oracle TimesTen libraries.
- Configures the `sys.odbc.ini` file for Oracle TimesTen and the `odbc.ini` file for Oracle Business Intelligence with DSN details for Oracle TimesTen.

3.2.13 Verifying the Installation

To verify that the installation is successful, you open a web browser and attempt to display the following URLs. If you can display and interact with the pages at the following URLs, then the installation succeeded.

- Oracle BI Enterprise Edition:
`http://server-name:9704/analytics`
- Oracle WebLogic Server Console:
`http://server-name:7001/console`
- Fusion Middleware Control:
`http://server-name:7001/em`

3.3 Troubleshooting the Installation and Configuration Processes

This section provides the following information on troubleshooting:

- [Section 3.3.1, "Resolving Issues with the Installation"](#)
- [Section 3.3.2, "Viewing Log Files"](#)
- [Section 3.3.3, "Reinstalling Software on the Exalytics Machine"](#)
- [Section 3.3.4, "Manually Setting the HardwareAcceleration MBean Attribute"](#)
- [Section 3.3.5, "For More Information"](#)

3.3.1 Resolving Issues with the Installation

If you have any issues installing software on the Exalytics Machine, check the following items:

- Ensure that the database in which you ran the Repository Creation Utility to create the schemas is running.
- Check the networking configuration of the machine including the `/etc/hosts` file.
- Check the contents of the `bim-setup.properties` file to ensure that all entries are accurate with no misspellings.
- If the installation scripts fail, then perform the following steps:
 1. Deinstall the Oracle TimesTen software.
 2. Verify the contents of the `bim-setup.properties` file, as described in [Section 3.2.10, "Editing the Properties File."](#)
 3. Restart the installation process.

3.3.2 Viewing Log Files

After installing the software, you can check the log files for Oracle WebLogic Server, Oracle Business Intelligence, and Oracle TimesTen in the `MW_HOME/Oracle_BI1/bifoundation/exalytics/logs` directories. The files have names such as `tt_install.log` for Oracle TimesTen.

3.3.3 Reinstalling Software on the Exalytics Machine

You might want to reinstall the software. The installer does not allow reinstallation of Oracle Business Intelligence in a directory that contains another Oracle Business Intelligence installation on an Exalytics Machine.

To reinstall Oracle Business Intelligence in the same directory as before:

1. Deinstall the software as described in [Chapter 5, "Deinstalling Business Intelligence Software on the Exalytics Machine."](#)
2. Reboot the computer to ensure that if any processes are running, they are stopped.
3. If you used the Repository Creation Utility to create the `BISHIPHOME` and `MDS` schemas, then either drop the schemas or use a new prefix to create schemas.
4. To uninstall Oracle TimesTen, enter the following command:


```
/u01/app/oracle/product/fmw/./TimesTen/tt1122/bin/setup.sh -uininstall
```
5. Delete the `/etc/TimesTen/*` files.
6. Return to this chapter and follow the installation instructions again.

3.3.4 Manually Setting the HardwareAcceleration MBean Attribute

The `HardwareAcceleration` MBean attribute specifies whether you are using the Exalytics Machine, as described in the following procedure. This MBean attribute is turned on automatically when you run the script to install Oracle Business Intelligence on the Exalytics Machine. The MBean attribute sets the `ORACLEHARDWAREACCELERATION` parameter in the `NQSCConfig.ini` file and the `OracleHardwareAcceleration` element in the `instanceconfig.ini` file.

To specify the use of the Exalytics Machine using the System MBean Browser:

1. In Fusion Middleware Control, in the Navigator window, expand the `WebLogic Domain` folder and the `bifoundation_domain` node.
2. Right-click the `AdminServer` node and select **System MBean Browser**.

3. Expand Application Defined MBeans, then expand oracle.biee.admin, then expand Domain: bifoundation_domain.
4. Lock the domain, as follows:
 - a. Expand BIDomain and select the BIDomain MBean where group=Service.
 - b. Display the Operations tab.
 - c. Click the **lock** link.
5. Display the Attributes tab for the same MBean.
6. Ensure that the HardwareAcceleration attribute is set to **true**.
7. After applying your changes, release the lock on the domain by displaying the Operations tab and clicking one of the commit operations.
8. Restart Oracle Business Intelligence.

3.3.5 For More Information

For additional information, see the following:

- "Troubleshooting the Installation and Configuration Processes" of *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*

Postinstallation Tasks for Oracle Business Intelligence Software

This chapter describes tasks to perform after installing software on the Exalytics Machine. The postinstallation tasks vary depending on whether you are deploying on multiple computers, as described in [Chapter 7, "Deploying Oracle Exalytics for High Availability."](#) The tasks include updating files and configuring an ODBC connection.

For a single-node installation, the semi-automated installation scripts perform many of the configuration tasks. For a multiple node system, you must perform the configuration tasks manually. The sections of this chapter indicate on which computers to perform the tasks.

The chapter includes the following sections:

- [Section 4.1, "Installing and Deinstalling Oracle Business Intelligence Client Tools"](#)
- [Section 4.2, "Creating the boot.properties File"](#)
- [Section 4.3, "Starting and Stopping Components on the Exalytics Machine"](#)
- [Section 4.4, "Running the Daemon Configuration Scripts for Oracle TimesTen"](#)
- [Section 4.5, "Configuring Memory Settings on the Server"](#)
- [Section 4.6, "Instantiating the Oracle TimesTen In-Memory Database"](#)
- [Section 4.7, "Configuring the ODBC Connection from Oracle Business Intelligence to Oracle TimesTen"](#)
- [Section 4.8, "Mapping Instances of Oracle TimesTen into the Physical Layer of the Oracle BI Repository"](#)
- [Section 4.9, "Installing and Configuring BI Composer for Oracle BI EE"](#)
- [Section 4.10, "Creating a DSN for IBM DB2 or Microsoft SQL Server"](#)
- [Section 4.11, "Configuring IBM DB2 to Support Multibyte Data"](#)
- [Section 4.12, "Configuring Sample Reports for Oracle BI Publisher"](#)
- [Section 4.13, "Changing the Default Password for SampleAppLite.rpd"](#)
- [Section 4.14, "Adding the ORACLEHARDWAREACCELERATION TRUE Parameter for Essbase"](#)
- [Section 4.15, "Enabling Bursting Optimization for BI Publisher"](#)

4.1 Installing and Deinstalling Oracle Business Intelligence Client Tools

Perform this task one time regardless of the number of computers in the cluster.

You must install the Oracle Business Intelligence Administration Tool, Oracle Business Intelligence Job Manager, and Oracle Business Intelligence Catalog Manager on a Windows computer. See "Installing and Deinstalling Oracle Business Intelligence Client Tools" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*.

4.2 Creating the boot.properties File

Perform this task on each computer in the cluster.

For information on creating the boot.properties file, see "Creating boot.properties for the Administration Server on APPHOST1" in *Oracle Fusion Middleware Enterprise Deployment Guide for Oracle Business Intelligence*.

4.3 Starting and Stopping Components on the Exalytics Machine

Perform this task on each computer in the cluster.

After making configuration changes, you stop and start components to enable those changes to take effect.

To stop components on the Exalytics Machine:

1. Log into Fusion Middleware Control and stop all Oracle Business Intelligence system components.
2. Stop Node Manager. Use the `ps` command to find the process identifier, then use the `kill` command to stop Node Manager.
3. Stop OPMN by entering the following commands:

```
cd /EXALYTICS_MWHOME/instances/instance1/bin
./opmnctl stopall
```
4. Stop the Oracle TimesTen Server. See "Running the TimesTen Server" in *Oracle TimesTen In-Memory Database Operations Guide*.

To start components on the Exalytics Machine:

1. Change to the following directory:

```
/EXALYTICS_MWHOME/user_projects/domains/bifoundation_domain
```
2. Enter the command to start Oracle WebLogic Server:

```
nohup ./startWebLogic.sh &
```
3. Use the command line to start Node Manager and OPMN if they are not started.
4. Log into the Oracle WebLogic Server console and start the managed servers.
5. Log into Fusion Middleware Control and verify whether the Oracle Business Intelligence system components are running. If they are not running, then start them.
6. Start the Oracle TimesTen Server. See "Running the TimesTen Server" in *Oracle TimesTen In-Memory Database Operations Guide*.

4.4 Running the Daemon Configuration Scripts for Oracle TimesTen

Perform this task on each computer in the cluster.

Run the daemon configuration scripts for Oracle TimesTen as root, using the following command:

```
/u01/app/oracle/product/TimesTen/tt1122/bin/setuproot -install
```

4.5 Configuring Memory Settings on the Server

Perform this task on each computer in the cluster.

When you configure memory settings, keep the following in mind:

- The largest recommended size for a Oracle TimesTen In-Memory Database on a single machine is a total of 3 TB, which includes the values for the PermSize and TempSize attributes.

Note: Increasing large page settings for more memory will result in other applications (Oracle BI EE, Oracle Essbase) unable to allocate memory. Exceeding more than 80% of the physical memory is not recommended. Depending on how much more PermSize memory is required, you can transfer memory from the TempSize.

4.5.1 Increasing PermSize on Existing Oracle TimesTen In-Memory Databases

After configuring large pages for the Oracle TimesTen In-Memory Database, you can increase the PermSize on existing Oracle TimesTen In-Memory Databases.

To increase PermSize on existing Oracle TimesTen In-Memory Databases:

1. Disconnect all applications, including Oracle BI EE, from the Oracle TimesTen In-Memory Database.
2. Enter the following command to check the RAM policy:

```
ttstatus
```

3. If needed, change the RAM policy from inUse to Manual, by entering the following command:

```
ttadmin -ramPolicy manual <Your_TT_DSN>
```

4. Unload the RAM memory from the Oracle TimesTen In-Memory Database by executing the following command:

```
ttAdmin- ramunload <Your_TT_DSN>
```

For example:

```
ttAdmin- ramunload TT_AGGR_STORE
```

5. Modify the *timesten-install-dir/info/sys.odbc.ini* file in the Oracle TimesTen In-Memory Database to increase the PermSize.
6. Reload the RAM memory in the Oracle TimesTen In-Memory Database, by executing the following command:

```
ttAdmin- ramload <Your_TT_DSN>
```

For example:

```
ttAdmin- ramload TT_AGGR_STORE
```

7. Reconnect all applications, including Oracle BI EE, to the Oracle TimesTen In-Memory Database.

For more information, see the "Oracle TimesTen In-Memory Database". The link to "Oracle TimesTen In-Memory Database Documentation" is available on the Oracle Exalytics Documentation Library.

4.6 Instantiating the Oracle TimesTen In-Memory Database

Perform this task on each computer in the cluster. For the first computer, the installation scripts update the `sys.odbci.ini` file, then you perform the rest of the task manually.

The Oracle TimesTen In-Memory Databases are defined using a DSN that is contained in the `sys.odbci.ini` file in the following directory:

```
/u01/app/oracle/product/TimesTen/tt1122/info
```

The semi-automated installation scripts automatically update the `sys.odbci.ini` file for Oracle TimesTen with a default configuration for the in-memory aggregate store for Oracle Exalytics, as shown in the following excerpts from a sample file on an Exalytics Machine:

```
[ODBC Data Sources]
TT_AGGR_STORE=TimesTen 11.2.2 Driver

[TT_AGGR_STORE]
Driver=/u01/app/oracle/product/TimesTen/tt1122/lib/libtten.so
DataStore=/u01/app/oracle/product/aggregate_store/tt_aggr_store
LogDir=/u01/app/oracle/product/aggregate_store/logs
DatabaseCharacterSet=AL32UTF8
ConnectionCharacterSet=AL32UTF8
LogFileSize=1024
LogBufMB=1024
LogBufParallelism=16
Preallocate=0
PermSize=25000
TempSize=25000
MemoryLock=4
CkptFrequency=0
CkptLogVolume=4096
CkptRate=0
PrivateCommands=1
RecoveryThreads=40
```

This DSN supports an Oracle TimesTen In-Memory Database of 25GB with overall memory consumption of approximately 50GB. To support larger in-memory data stores, increase the settings of the `PermSize` and `TempSize` parameters. To support this DSN definition, the semi-automated installation process creates the following directories on the Exalytics Machine:

```
/u01/app/oracle/product/aggregate_store
/u01/app/oracle/product/aggregate_store/logs
```

On computers other than the first one in the cluster, manually edit the `sys.odbci.ini` file for Oracle TimesTen to add the DSN definition. Before instantiating this DSN, remove the comment character (`#`) that the semi-automated scripts included for the lines that define the `DataStore` and `LogDir` parameters in the `sys.odbci.ini` file.

The Oracle TimesTen In-Memory Database is instantiated when the first connection is made to the database. Navigate to the `bin` directory, run the `ttIsql` utility, and create a user (with a name such as "exalytics" and password such as "welcome1") as shown in the following sample commands:

```
cd /u01/app/oracle/product/TimesTen/tt1122/bin
./ttIsql
connect dsn=TT_AGGR_STORE;
create user exalytics identified by welcome1;
grant create session to exalytics;
grant create table to exalytics;
grant select on SYS.OBJ$ to exalytics;
```

Use the following sample commands to test the connection to the Oracle TimesTen In-Memory Database. There are no tables of data yet configured to return.

```
connect "DSN=TT_AGGR_STORE;uid=exalytics";
tables;
exit
```

You can use a tool such as SQL Developer on the client computer, if the Windows TimesTen client drivers that are installed can make a connection to the Oracle TimesTen instance that is used for aggregate storage. This tool can allow you to easily view the contents of the Oracle TimesTen In-Memory Database and to create a dummy table that facilitates the mapping of the Oracle TimesTen schema into the physical layer of the repository for Oracle Business Intelligence.

4.7 Configuring the ODBC Connection from Oracle Business Intelligence to Oracle TimesTen

Perform this task on each computer in the cluster. The semi-automatic installation scripts perform this task on the first computer.

The Client/Server DSN in Oracle TimesTen spans computer boundaries and the remote Oracle TimesTen server can be configured as part of the DSN. You create the DSN for the two Oracle TimesTen instances by modifying the following file:

```
/EXALYTICS_
MWHOME/instances/instance1/bifoundation/OracleBIApplication/coreapplication
/setup/odbc.ini
```

On the second computer in a cluster, the directory name includes the string "instance2" for the second computer instead of "instance1".

The following provides sample modifications to the file:

```
[ODBC Data Sources]
AnalyticsWeb = Oracle BI Server
Cluster = Oracle BI Server
SSL_Sample = Oracle BI Server
TT_AGGR_STORE = TimesTen 11.2.2 Driver

[TT_AGGR_STORE]
Driver = /u01/app/oracle/product/TimesTen/tt1122/lib/libttclient.so
TTC_SERVER_DSN = TT_AGGR_STORE
TTC_SERVER = <tt_hostname>
TTC_TIMEOUT = 0
```

Define the DSN Servers for Oracle TimesTen by modifying the following file:

```
TimesTen-root-dir/tt1122/info/sys.ttconnect.ini
```

The following provides sample modifications to the file:

```
[tt_hostname]
Description=TimesTen Server
```

```
Network_Address=example1.com
TCP_PORT=53397
```

In a multiple node cluster, you achieve high availability of in-memory aggregates by installing a Oracle TimesTen instance on each computer and ensuring that each instance is aware of the Oracle TimesTen instance on the other computer. You edit the `odbc.ini` file for Oracle Business Intelligence to contain references to both Oracle TimesTen instances. A two-node cluster might contain the following configuration details in the `odbc.ini` file on each computer:

```
[ODBC Data Sources]
AnalyticsWeb = Oracle BI Server
Cluster = Oracle BI Server
SSL_Sample = Oracle BI Server
TT_AGGR_STORE1 = TimesTen 11.2.2 Driver
TT_AGGR_STORE2 = TimesTen 11.2.2 Driver

[TT_AGGR_STORE1]
Driver = /u01/app/oracle/product/TimesTen/tt1122/lib/libttclient.so
TTC_SERVER_DSN = TT_AGGR_STORE
TTC_SERVER = <tt_hostname1>
TTC_TIMEOUT = 0

[TT_AGGR_STORE2]
Driver = /u01/app/oracle/product/TimesTen/tt1122/lib/libttclient.so
TTC_SERVER_DSN = TT_AGGR_STORE
TTC_SERVER = <tt_hostname2>
TTC_TIMEOUT = 0
```

With this configuration, edit the `sys.ttconnect.ini` in the `/home/oracle/TimesTen/tt1122/info` directory to correspond to the `odbc.ini` file as shown in the following example:

```
[tt_hostname1]
Description=TimesTen Server
Network_Address=<fully qualified hostname>
TCP_PORT=53397

[tt_hostname2]
Description=TimesTen Server
Network_Address=<fully qualified hostname>
TCP_PORT=53397
```

4.8 Mapping Instances of Oracle TimesTen into the Physical Layer of the Oracle BI Repository

You must map all instances of Oracle TimesTen into the Physical layer of the Oracle BI repository. To map the instances, manually create the necessary database, connection pool, and physical schema objects using the Administration Tool. Then, upload the changed repository using the Repository tab of the Deployment page in Fusion Middleware Control.

When mapping an Oracle TimesTen source into the Physical layer of the Oracle BI repository, ensure that the database type and version are set correctly in the **Database** field of the General tab of the Database dialog. You must also ensure that the **Call interface** field in the General tab of the Connection Pool dialog is set correctly. For example, for Oracle TimesTen version 11.2.2., use the ODBC 3.5 call interface.

For more information, see the following:

- "Setting Up Database Objects and Connection Pools" in *Oracle Fusion Middleware Metadata Repository Builder's Guide for Oracle Business Intelligence Enterprise Edition*
- "Configuring Repositories" in *Oracle Fusion Middleware System Administrator's Guide for Oracle Business Intelligence Enterprise Edition*

4.9 Installing and Configuring BI Composer for Oracle BI EE

Perform this task on each computer in the cluster.

See "Installing and Configuring BI Composer for Oracle BI EE" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*.

4.10 Creating a DSN for IBM DB2 or Microsoft SQL Server

Perform this task one time regardless of the number of computers in the cluster if you use IBM DB2 or Microsoft SQL Server.

See "Creating a DSN for IBM DB2 or Microsoft SQL Server" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*.

4.11 Configuring IBM DB2 to Support Multibyte Data

Perform this task one time regardless of the number of computers in the cluster if you use IBM DB2.

See "Configuring IBM DB2 to Support Multibyte Data" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*.

4.12 Configuring Sample Reports for Oracle BI Publisher

Perform this task on each computer in the cluster.

See "Configuring Sample Reports for Oracle BI Publisher" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*.

4.13 Changing the Default Password for SampleAppLite.rpd

Perform this task once for the domain.

When you install Oracle Business Intelligence, the Oracle Business Intelligence installer automatically installs the SampleAppLite.rpd file with a default repository password of Admin123. If you intend to use the SampleAppLite.rpd file in a production system, then Oracle recommends that you change the default password for security reasons. For complete information on changing the password, see "Changing the Repository Password" in *Oracle Fusion Middleware Metadata Repository Builder's Guide for Oracle Business Intelligence Enterprise Edition*.

You can download the Sample Application (full version) from the following location on Oracle Technology Network:

<http://www.oracle.com/technetwork/middleware/bi-foundation/obiee-samples-167534.html>

4.14 Adding the ORACLEHARDWAREACCELERATION TRUE Parameter for Essbase

If Essbase is installed, you must add the ORACLEHARDWAREACCELERATION TRUE parameter to the essbase.cfg file.

To add the ORACLEHARDWAREACCELERATION TRUE parameter:

1. Open the essbase.cfg file for editing.

The essbase.cfg file is located in:

ORACLE_INSTANCE/Essbase/essbaseserver1/bin/essbase.cfg

2. Edit the essbase.cfg file by adding the following parameter:

ORACLEHARDWAREACCELERATION TRUE

3. Save the file.

4. Stop and restart the Essbase server by performing the following actions:

- a. Log in to Fusion Middleware Control.

For information, see Section 2.2.2, "Logging into Fusion Middleware Control to Manage Oracle Business Intelligence" in *Oracle Fusion Middleware System Administrator's Guide for Oracle Business Intelligence Enterprise Edition*.

- b. Select **Business Intelligence** then **coreapplication**.

- c. Display the Processes page in the Availability tab.

For example, expand Essbase Agents and select essbaseserver1 in the Processes section.

This enables you to start or stop just the Essbase Server process.

- d. Click **Stop Selected** to stop the selected process.

- e. Click **Start Selected** to start the selected process.

4.15 Enabling Bursting Optimization for BI Publisher

Enabling bursting optimization mode for BI Publisher significantly enhances the performance of bursting jobs run through the BI Publisher scheduler.

To enable bursting optimization:

1. Open the xmlp-server-config.xml file located at:

DOMAIN_
HOME/config/bipublisher/repository/Admin/Configuration/xmlp-server-config.xml

2. Add the following property and value setting to the file:

```
<property name="OPTIMIZE_BURST" value="true" />
```

3. Save the xmlp-server-config.xml.

4. Restart the BI Publisher application.

To handle high volume jobs (normal scheduled jobs or bursting jobs) configure the system temporary directory and the JMS shared directory in the BI Publisher Administration pages. For best performance configure these temp directories to use RAM disk (for non-clustered environments only) or solid-state drive. For information, see "Setting the System Temporary Directory" and "Configuring the Shared Directory"

in the Oracle Fusion Middleware Administrator's Guide for Oracle Business Intelligence Publisher.

Deinstalling Business Intelligence Software on the Exalytics Machine

This chapter provides high-level information on deinstalling software on the Exalytics Machine.

On the Exalytics Machine, you perform deinstallation both for Oracle TimesTen and Oracle Business Intelligence, as described in the following list:

- Deinstallation for Oracle TimesTen is described in "Uninstalling TimesTen on UNIX systems" in *Oracle TimesTen In-Memory Database Installation Guide*.
- Deinstallation for Oracle Business Intelligence is described in "Deinstalling Oracle Business Intelligence" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*.

Part II

System Management

This part describes system management. It contains the following chapters:

- [Chapter 6, "System Management \(Configuration, Diagnostics, and Monitoring\)"](#)
- [Chapter 7, "Deploying Oracle Exalytics for High Availability"](#)
- [Chapter 8, "Backup and Recovery"](#)
- [Chapter 9, "Disaster Recovery"](#)

System Management (Configuration, Diagnostics, and Monitoring)

This chapter provides high-level information for managing the Exalytics Machine by performing system tasks such as configuration, diagnostics, and monitoring. See the remaining chapters of this part for details on other system management tasks for the Exalytics Machine, such as patching and backup and recovery.

The Exalytics Machine includes hardware and software for Oracle Business Intelligence and for the Oracle TimesTen In-Memory Database. You manage these pieces as follows:

- Hardware — For information on managing the hardware, see *Oracle Enterprise Manager Ops Center User's Guide*.
- Oracle Business Intelligence — All the Oracle Business Intelligence components on the Exalytics Machine are managed through the same mechanisms as described in *Oracle Fusion Middleware System Administrator's Guide for Oracle Business Intelligence Enterprise Edition*. For example, you use Fusion Middleware Control for configuration, diagnostics, process control, and monitoring.
- Oracle TimesTen — For information on managing Oracle TimesTen, see the following guides:
 - *Oracle TimesTen In-Memory Database Operations Guide*
 - *Oracle Enterprise Manager for Oracle TimesTen In-Memory Database User's Guide for Oracle Enterprise Manager Cloud Control*

Deploying Oracle Exalytics for High Availability

This chapter describes how to horizontally scale out the Exalytics Machine for scalability (high-availability) and performance (load balancing). [Chapter 3](#) describes using the installation scripts for a single computer. For multiple computers (such as a two-node cluster), you use the installation scripts for the first computer, then you install the software manually on other computers, without the use of scripts. After performing the steps in this chapter, see [Chapter 4, "Postinstallation Tasks for Oracle Business Intelligence Software."](#)

For additional details, see "Deploying Oracle Business Intelligence for High Availability" in *Oracle Fusion Middleware System Administrator's Guide for Oracle Business Intelligence Enterprise Edition*.

The chapter includes the following sections:

- [Section 7.1, "Requirements for High Availability"](#)
- [Section 7.2, "Diagram of High Availability"](#)
- [Section 7.3, "Configuring for High Availability"](#)
- [Section 7.4, "Troubleshooting the Highly Available Deployment"](#)

7.1 Requirements for High Availability

The following are required for a high availability configuration:

- Each computer has an independent instance of Oracle TimesTen.
- Each computer has an `odbc.ini` file that contains a separate DSN for each instance of Oracle TimesTen. Each Oracle TimesTen DSN uses the client/server mode of connection.
- A BI Server repository can point to one or more physical repositories, but one set of aggregates exists per physical data source. Each physical data source has its own connection pool.

7.2 Diagram of High Availability

[Figure 7-1](#) shows a diagram of high availability for the Exalytics Machine. In certain scenarios, the system might benefit from using Oracle HTTP Server in the web tier.

Figure 7-1 High-Availability for the Exalytics Machine

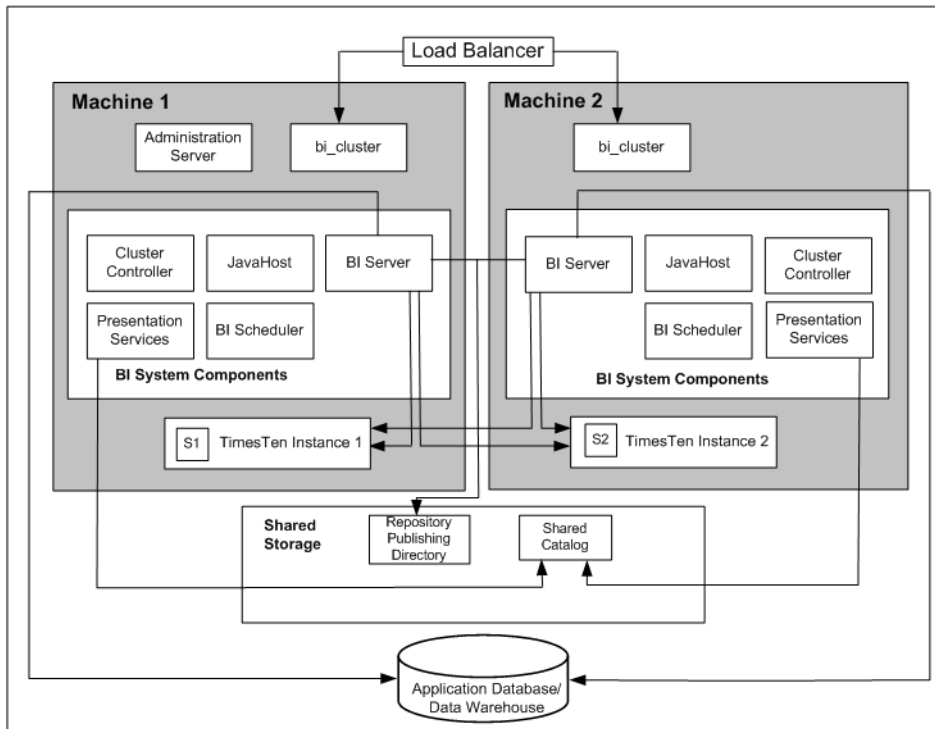


Diagram of high availability as described in surrounding text

7.3 Configuring for High Availability

This section describes the steps for configuring a highly available deployment:

- [Section 7.3.1, "Step 1: Preparing the First Exalytics Machine"](#)
- [Section 7.3.2, "Step 2: Preparing the Second Exalytics Machine"](#)
- [Section 7.3.3, "Step 3: Installing Oracle WebLogic Server"](#)
- [Section 7.3.4, "Step 4: Installing Oracle Business Intelligence"](#)
- [Section 7.3.5, "Step 5: Scaling Out the Existing BI Domain"](#)
- [Section 7.3.6, "Step 6: Installing and Configuring Oracle TimesTen"](#)
- [Section 7.3.7, "Step 7: Scaling Out System Components to the Second Exalytics Machine"](#)
- [Section 7.3.8, "Step 8: Configuring Shared Storage for Persistent Stores"](#)
- [Section 7.3.9, "Step 9: Configuring the Front-End Load Balancer"](#)

Tip: Because the installation process for the second node involves mostly manual steps using the Oracle Universal Installer, connect to the Exalytics Machine using a tool such as RealVNC remote control software.

7.3.1 Step 1: Preparing the First Exalytics Machine

Install Oracle Exalytics on the first Exalytics Machine using the instructions that are provided in [Part I, "Installation"](#) of this guide before installing on the second Exalytics Machine.

7.3.2 Step 2: Preparing the Second Exalytics Machine

To prepare the second Exalytics Machine:

1. Create the user, as described in [Section 3.2.1, "Creating the User, Group, and Password on the Operating System."](#)
2. Create the inventory for Oracle TimesTen, as described in [Section 3.2.2, "Creating the Inventory for Oracle TimesTen."](#)
3. Create the following directory structure:
 - The location of the Middleware home, which must be the same logical directory name as on the first Exalytics Machine:


```
/u01/app/oracle/product/fmw
```
 - The target directory for the Oracle TimesTen installation:


```
/u01/app/oracle/product/TimesTen
```
4. Download the files into the directory structure, as described in [Section 3.2.4, "Downloading Oracle Files into the Directory Structure."](#) You do not have to download the files for the Repository Creation Utility.

7.3.3 Step 3: Installing Oracle WebLogic Server

Install Oracle WebLogic Server into the following directory, which becomes the Middleware home on the second Exalytics Machine:

```
/u01/app/oracle/product/fmw
```

To install Oracle WebLogic Server on the second Exalytics Machine:

1. Configure the JAVA_HOME and PATH variables for the JDK by performing the following actions:

- a. Run the following commands:

```
# export JAVA_HOME=/usr/jdk/instances/jdk1.6.0
# export PATH=/usr/jdk/instances/jdk1.6.0/bin:$PATH
```

- b. Run the following command to verify that JDK is configured correctly:

```
# java -version
```

The output should look similar to the following:

```
bash-4.1$ java -version
java version "1.6.0_45"
Java(TM) SE Runtime Environment (build 1.6.0_45-b06)
Java HotSpot(TM) Server VM (build 20.45-b01, mixed mode)
bash-4.1$
```

2. Download wls1036_generic.jar from Oracle Software Delivery Cloud at the following location:

<http://edelivery.oracle.com/>

3. Navigate to the directory where you downloaded the WebLogic Server zip file.
4. Run the following command to install Oracle WebLogic Server:

```
# java -d64 -jar wls1036_generic.jar
```
5. Select the custom option in the wizard and deselect **Coherence**, because the component does not need to be installed.

7.3.4 Step 4: Installing Oracle Business Intelligence

To perform a Software Only Install of Oracle Business Intelligence on the second Exalytics Machine:

1. Enter the following commands:

```
cd /home/oracle/EXALYTICS_INSTALLERS/bi/bishiphome/disk1
>./runInstaller
```

2. The first time that you install on the second Exalytics Machine, you are prompted to log in as "root" and to run a script to create the Oracle Inventory. Ensure that the location specified is /home/oracle/oraInventory.
3. Navigate through the pages of the wizard until you can select the option to perform a Software Only Install.
4. On the next page, ensure that the Oracle Middleware Home property is set to the directory where you installed Oracle WebLogic Server.
The Oracle Home directory can be the default of Oracle_BI1.
5. Navigate through the remaining pages of the wizard until the installation is complete.

7.3.5 Step 5: Scaling Out the Existing BI Domain

You scale out the existing BI domain from the second Exalytics Machine.

To scale out the BI Domain:

1. Log on to the second Exalytics Machine.
2. Enter the following commands:

```
cd /u01/app/oracle/product/fmw/Oracle_BI1/bin
>./config.sh
```
3. Navigate through the pages of the wizard and select **Scale Out BI System**.
4. Enter details of the first Exalytics Machine and the directory locations for the installation are populated automatically.
5. Navigate through the remaining pages of the wizard until you can initiate the process by pressing **Configure**.

See "Using the Configuration Assistant to Scale Out the BI System" in *Oracle Fusion Middleware Enterprise Deployment Guide for Oracle Business Intelligence* for information on running the config.sh script.

7.3.6 Step 6: Installing and Configuring Oracle TimesTen

To install and configure Oracle TimesTen:

1. Enter the following commands:

```

cd /home/oracle/EXALYTICS_INSTALLERS/tt
>./setup.sh
instance name tt1122 [default chosen]
install client/server and data manager [default chosen]
specify particular location for install [3]
enter location [custom location chosen /u01/app/oracle/product/TimesTen]
create daemon home - [default chosen]
daemon logs - [default chosen]
accept default port no - 53396
restrict access to TT to group oracle? - Yes
enable PL/SQL - yes [default chosen]
TNS_ADMIN - not chosen during install.
port for TT server - 53397
quickstart and doc - no [default chosen]
doc without quickstart - yes [default chosen] - location default
TT replication with clusterware - no - [default chosen]

```

2. Run the daemon configuration scripts for Oracle TimesTen as root, as described in [Section 4.4, "Running the Daemon Configuration Scripts for Oracle TimesTen."](#)
3. On the first Exalytics Machine, configure the BI Server to communicate with either instance of Oracle TimesTen by creating two DSNs for Oracle TimesTen, as described in [Section 4.7, "Configuring the ODBC Connection from Oracle Business Intelligence to Oracle TimesTen."](#)
4. On the second Exalytics Machine, perform the same procedure as in the previous step to create DSNs for Oracle TimesTen to configure the connectivity from the second BI Server to either instance of Oracle TimesTen.
5. Update the opmn.xml file on the second Exalytics Machine to point to the driver location for ODBC for Oracle TimesTen by editing the following "variable" elements. The edited text is shown in bold.

```

<variable id="LD_LIBRARY_PATH" value="$ORACLE_
HOME/common/ODBC/Merant/5.3/lib$:$ORACLE_HOME/bifoundation/server/bin$:$ORACLE_
HOME/bifoundation/web/bin$:$ORACLE_
HOME/clients/epm/Essbase/EssbaseRTC/bin$:$ORACLE_
HOME/bifoundation/odbc/lib$:$ORACLE_INSTANCE$:$ORACLE_
HOME/lib:/u01/app/oracle/product/TimesTen/tt1122/lib" append="true"/>
<variable id="TIMESTEN_DLL"
value="/u01/app/oracle/product/TimesTen/tt1122/lib/libttclient.so"/>

```

The opmn.xml file is in the following directory:

```
/u01/app/oracle/product/fmw/instances/instance2/config/OPMN
```

6. Stop and start the Notification Server (OPMN).
 - a. Go to the following directory that contains the OPMN command-line tool:

```
/u01/app/oracle/product/fmw/instances/instance2/bin
```
 - b. Run the following command:

```
./opmnctl stopall
```

Stops OPMN and all Oracle Business Intelligence system components.
 - c. Go to the following directory that contains the OPMN command-line tool:

```
/u01/app/oracle/product/fmw/instances/instance2/bin
```
 - d. Run the following command:

```
./opmnctl startall
```

Starts OPMN and all Oracle Business Intelligence system components.

For more information, see "Using the OPMN Command Line to Start, Stop, Restart, and View the Status of System Components" in *Oracle Fusion Middleware System Administrator's Guide for Oracle Business Intelligence Enterprise Edition*.

7. Validate that you can use a client/server DSN for Oracle TimesTen from the first Exalytics Machine by entering the following commands:

```
cd $ORACLE_INSTANCE/bifoundation/OracleBIApplication/coreapplication/setup/
. ./bi-init.sh (bash shell)
cd Times-Ten-root-dir/tt1122/bin
./ttisqlcs -connstr "uid=oracle;pwd=welcome1;dsn=bim_tt1";
```

These commands use the SQL client for Oracle TimesTen to connect to the Oracle TimesTen server on the first Exalytics Machine and validate that the BI Server can communicate with Oracle TimesTen.

8. Repeat the previous step for the client/server DSN for Oracle TimesTen from the second Exalytics Machine.

7.3.7 Step 7: Scaling Out System Components to the Second Exalytics Machine

To configure the communication between Oracle Business Intelligence and Oracle TimesTen, you must scale out using Fusion Middleware Control to deploy the required Oracle Business Intelligence system component servers onto the second Exalytics Machine. This scale-out results in entries in the `opmn.xml` file on the second Exalytics Machine that can then be edited as needed.

To scale out system components to the second Exalytics Machine:

1. Using Fusion Middleware Control, scale out the following system components as described in *Oracle Fusion Middleware System Administrator's Guide for Oracle Business Intelligence Enterprise Edition*:
 - The Oracle BI Server
 - Oracle BI Presentation Services
 - JavaHost

You should also scale out the following single components in the Oracle BI domain as a standby component: the Cluster Controller and the Oracle BI Scheduler.

7.3.8 Step 8: Configuring Shared Storage for Persistent Stores

As part of the process of configuring the Exalytics Machine, you must configure various persistent stores to be located on a shared directory location such as a NAS (network attached storage). The following list outlines those stores and includes link for information on configuring them:

- Repository for the Oracle BI Server. Specify a shared RPD publishing directory in Fusion Middleware Control to propagate online repository changes in a cluster. The master BI Server copies its local repository to this directory when online changes are made. When slave BI Servers start, if the version in the publishing directory is newer, then each slave server copies the version in the shared directory to its local disk.

For information, see "Using Fusion Middleware Control to Upload a Repository and Set the Oracle BI Presentation Catalog Location" in *Oracle Fusion Middleware System Administrator's Guide for Oracle Business Intelligence Enterprise Edition*.

- Oracle BI Presentation Catalog. Each Oracle BI Presentation Services instance loads the catalog from the catalog location that is specified in Fusion Middleware Control. Copy any existing catalogs to shared storage before reconfiguring this location to shared storage.

For information, see "Using Fusion Middleware Control to Upload a Repository and Set the Oracle BI Presentation Catalog Location" in *Oracle Fusion Middleware System Administrator's Guide for Oracle Business Intelligence Enterprise Edition*.

- Global cache. The global cache resides on a shared file system and stores purging events, seeding events (which are often generated by agents), and results sets that are associated with seeding events. Each BI Server maintains its own local query cache for regular queries. The query cache for the BI Server continues to be located on the local node.

For information, see "Using Fusion Middleware Control to Set Global Cache Parameters" in *Oracle Fusion Middleware System Administrator's Guide for Oracle Business Intelligence Enterprise Edition*.

7.3.9 Step 9: Configuring the Front-End Load Balancer

Configure a front-end load balancer, which is properly configured with the Oracle WebLogic Server Cluster Plug-in. For information, see "Configuring High Availability for Oracle Business Intelligence and EPM" in *Oracle Fusion Middleware High Availability Guide*.

7.4 Troubleshooting the Highly Available Deployment

This section contains solutions that are related to a highly available deployment:

- [Section 7.4.1, "Connection Issues with the Oracle BI Server and Oracle TimesTen"](#)
- [Section 7.4.2, "Client Installer Cannot Locate the Driver for Oracle TimesTen"](#)
- [Section 7.4.3, "Oracle BI Server Does Not Fail Over to the Instance of Oracle TimesTen"](#)
- [Section 7.4.4, "Aggregates Are Not Present in Second Instance"](#)

7.4.1 Connection Issues with the Oracle BI Server and Oracle TimesTen

You might find that the BI Server cannot connect to Oracle TimesTen on either the first or the second node. To resolve this issue, check the following:

- Verify that the DSNs for Oracle TimesTen are configured correctly in the `odbc.ini` and `opmn.xml` files, as described in the following list:
 - The `odbc.ini` file in the `$ORACLE_INSTANCE/bifoundation/OracleBIApplication/coreapplication/setup` directory has the proper DSNs defined to connect to both instances of Oracle TimesTen, as described in [Section 4.7, "Configuring the ODBC Connection from Oracle Business Intelligence to Oracle TimesTen."](#)
 - The `opmn.xml` file in the `$ORACLE_INSTANCE/config/OPMN/opmn/` directory has the `LD_LIBRARY_PATH` variable set correctly to point to the shared library folder for Oracle TimesTen. The `TIMESTEN_DLL` variable must also be defined correctly, as shown in the following example:

```
<variable id="TIMESTEN_DLL"
value="u01/app/oracle/product/TimesTen/tt1122/lib/libttclient.so"/>
```

- The BI Server must use the ODBC driver for Oracle TimesTen Version 3.5 for connection.

During deployment of a repository, ensure that you use ODBC driver for Oracle TimesTen Version 3.5 for the database connection pool. Without the use of this driver version, the BI Server cannot connect to Oracle TimesTen.

7.4.2 Client Installer Cannot Locate the Driver for Oracle TimesTen

After you use the Client Installer to install the Oracle BI Administration Tool on a Windows computer, you might notice that the Administration Tool displays an error message such as the following:

Unable to load Times Ten Driver ttclient.dll.

This error message indicates that you cannot use the ODBC drivers in Oracle TimesTen to import metadata from a physical table source for Oracle TimesTen. To resolve this issue, set the TIMESTEN_DLL environment variable to point explicitly to the driver location for Oracle TimesTen, as shown in the following example:

```
set TIMESTEN_DLL=C:\TimesTen\tt1122_32\bin\ttclient1122.dll
```

7.4.3 Oracle BI Server Does Not Fail Over to the Instance of Oracle TimesTen

If the BI Server does not fail over to the second Oracle TimesTen instance on the scaled-out node, then ensure that the logical table source (LTS) for the repository has mapped both the physical data sources for Oracle TimesTen. This mapping ensures that at the logical table source level, a mapping exists to both instances of Oracle TimesTen. If one instance of Oracle TimesTen is not available, then failover logic for the BI Server at the DSN level tries to connect to the other instance of Oracle TimesTen.

7.4.4 Aggregates Are Not Present in Second Instance

You might notice that aggregates that were created on the first instance of Oracle TimesTen are not available on the second instance of Oracle TimesTen. Keep in mind that no automatic replication exists between the Oracle TimesTen instances in the scaled-out deployment. The two instances are distinct and run on different computers but have the same deployed data stores. If you create aggregates using SQL scripts from Oracle BI Summary Advisor or the Aggregate Persistence Wizard on one instance of Oracle TimesTen, then you must manually create the same aggregates on the second instance of Oracle TimesTen. You must ensure that you keep the two instances of Oracle TimesTen synchronized. For information, see "Life Cycle Use Cases for Aggregate Persistence" in *Oracle Fusion Middleware Metadata Repository Builder's Guide for Oracle Business Intelligence Enterprise Edition*.

Backup and Recovery

This chapter provides high-level information to perform backup and recovery on the Exalytics Machine. Backup and recovery refers to the various strategies and procedures involved in guarding against hardware failures and data loss and in reconstructing data should loss occur.

On the Exalytics Machine, you perform backup and recovery both for Oracle Business Intelligence and Oracle TimesTen, as described in the following list:

- Backup and recovery for Oracle Business Intelligence is described in "Backup and Recovery Recommendations for Oracle Business Intelligence" in *Oracle Fusion Middleware Administrator's Guide*.
- Backup and recovery for Oracle TimesTen is described in "Backing up and restoring a database" in *Oracle TimesTen In-Memory Database Installation Guide*.

In addition, if data was updated since the last backup, then run the aggregate scripts again after recovering the data. For information, see "Using Oracle BI Summary Advisor to Identify Query Candidates for Aggregation" in *Oracle Fusion Middleware Metadata Repository Builder's Guide for Oracle Business Intelligence Enterprise Edition*.

Disaster Recovery

This chapter provides high-level information for configuring for disaster recovery on the Exalytics Machine.

You can find information about disaster recovery in the following sources:

- For Oracle Business Intelligence, see "Recommendations for Oracle Business Intelligence" in *Oracle Fusion Middleware Disaster Recovery Guide*.
- For Oracle TimesTen, you must carefully manage the way in which an Oracle BI repository and aggregates are replicated from the main site to the disaster recovery site. You must exactly mirror on the disaster recovery site system the sequence of operations that you apply on the production system for the repository and aggregates, in particular:
 - When a new repository is uploaded to the production system, then the same repository must be uploaded on the disaster recovery site system.
 - When aggregate scripts are run against the production repository and instances of Oracle TimesTen, then the same aggregate scripts must be run against the disaster recovery site system.

For information, see "Using Oracle BI Summary Advisor to Identify Query Candidates for Aggregation" in *Oracle Fusion Middleware Metadata Repository Builder's Guide for Oracle Business Intelligence Enterprise Edition*.

