

## **Oracle® Fusion Middleware**

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

Exalytics Software Release 1.0.0.4 for Exalytics X2-4 and X3-4

**E49602-04**

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

Oracle Fusion Middleware Oracle Exalytics In-Memory Machine Installation and Administration Guide for Linux, Exalytics Software Release 1.0.0.4 for Exalytics X2-4 and X3-4

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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 X2-4 and X3-4 Release 1 Patchset 4 (1.0.0.4)

## 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 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
<b>boldface</b>	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.
<code>monospace</code>	Monospace type indicates commands within a paragraph, URLs, code in examples, text that appears on the screen, or text that you enter.

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# New Features in Oracle Exalytics Release 1 Patchset 4 (1.0.0.4)

This preface describes the new features and certifications for the components in Oracle Exalytics Release 1 Patchset 4 (1.0.0.4).

For a list of new features and certifications in previous patchsets, see the "New Features" preface in *Oracle Fusion Middleware Installation and Administration Guide for Oracle Exalytics In-Memory Machine* which is available at the following location:

[http://docs.oracle.com/cd/E41246\\_01/bi.1/e39709/toc.htm](http://docs.oracle.com/cd/E41246_01/bi.1/e39709/toc.htm)

The Oracle Exalytics Release 1 Patchset 4 includes additional certifications and new capabilities for the components that are described in the following sections:

- "New Base Image 1.0.0.6, Upgrade Utility, and Security Updates"
- "Exalytics Domain Management Utility"
- "Oracle VM Upgrade to 3.2.7"
- "Application Software Components"

## New Base Image 1.0.0.6, Upgrade Utility, and Security Updates

The Base Image 1.0.0.6 upgrade utility includes the following enhancements for non-virtual deployments:

- Kernel upgraded from 2.6.100 to 2.6.32-400 with Oracle Enterprise Linux 5.8
- Security Updates
- Release 1 Patchset 4 Upgrade Utility: Existing customers on Release 1 Patchset 3 (Base Image 1.0.0.5) can use the utility to upgrade to Release 1 Patchset 4 (Base Image 1.0.0.6).

## Exalytics Domain Management Utility

The Exalytics Domain Management Utility (embedded in Base Image 1.0.0.6) enables you to perform the following Exalytics domain management and Oracle Business Intelligence life cycle management functions on both virtual and non-virtual deployments:

- Create multiple Exalytics domains on a single virtual or non-virtual Exalytics Machine

For each domain (on a virtual or non-virtual Exalytics Machine), the Exalytics Domain Management Utility automatically installs and configures Oracle

WebLogic Server, Oracle BI EE, Oracle Essbase, Oracle TimesTen, optionally creates schemas, and configures the BI domain.

- Start and stop an Exalytics domain
- View current status of an Exalytics domain
- List Exalytics domains
- Scale out an Exalytics domain
- Remove an Exalytics domain

For more information on running the Exalytics Domain Management Utility, see [Chapter 4, "Installing Software on an Exalytics Machine."](#)

## Oracle VM Upgrade to 3.2.7

For information, see *Oracle VM User's Guide for Release 3.2.1*.

## Application Software Components

The following new application software component releases are certified to run on Oracle Exalytics Release 1 Patchset 4:

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 Endeca 3.1"](#)
- ["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 Endeca 3.1**

Both Oracle Endeca Information Discovery (3.0 and 3.1) and Oracle Endeca Server (7.5.1 and 7.6.0) are certified to run on the Exalytics Machine. Key parts of Oracle's extensive range of business analytics products and solutions, these components are designed to help customers make smarter and faster decisions. For more information, see Oracle Exalytics Certification Matrix at the following location:

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

Also see "Oracle Endeca Information Discovery" documentation, the link to which is available from the Oracle Exalytics Documentation Library.

### **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, "Applying Oracle Exalytics Release 1 Patchset 4 \(1.0.0.4\)"](#)
- [Chapter 3, "Configuring Exalytics Machine for Virtualization"](#)
- [Chapter 4, "Installing Software on an Exalytics Machine"](#)



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# 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, Oracle Enterprise Performance Management applications, and Oracle Endeca 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, "Existing Installations"](#)
- [Section 1.2, "New Installations"](#)
- [Section 1.3, "Installable Components"](#)
- [Section 1.4, "Oracle Exalytics Architecture"](#)
- [Section 1.5, "System Requirements and Certification"](#)

## 1.1 Existing Installations

If you are an existing customer running Oracle Exalytics Release 1 Patchset 3 (1.0.0.3) or Base Image 1.0.0.5, you must apply Oracle Exalytics Release 1 Patchset 4 (1.0.0.4) or Base Image 1.0.0.6. See [Chapter 2, "Applying Oracle Exalytics Release 1 Patchset 4 \(1.0.0.4\)."](#)

To access documentation for prior releases, see the Oracle Exalytics Release 1 Patchset 3 documentation in *Oracle Fusion Middleware Installation and Administration Guide for Oracle Exalytics In-Memory Machine* located at:

[http://docs.oracle.com/cd/E41246\\_01/bi.1/e39709/toc.htm](http://docs.oracle.com/cd/E41246_01/bi.1/e39709/toc.htm)

## 1.2 New Installations

If you are a new customer, perform the following actions:

- If you plan to install and configure the software on an Exalytics Machine configured for virtualization, see [Chapter 3, "Configuring Exalytics Machine for Virtualization."](#)
- If you plan to install and configure the software on an Exalytics Machine, see [Chapter 4, "Installing Software on an Exalytics Machine."](#)

## 1.3 Installable Components

Oracle Exalytics Release 1 Patchset 4 (1.0.0.4) 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 1.3.1, "System Components"](#)
- [Section 1.3.2, "Application Software Components"](#)

### 1.3.1 System Components

The system components include the following:

- Exalytics Base Image on Linux x86-64  
Base Image on Linux x86-64 is based on Oracle Enterprise Linux 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.
- Exalytics Base Image for Oracle VM x86-64  
Exalytics Base Image for Oracle VM is an Oracle VM based optimized and custom configured VM built for analytic usage. This image includes Exalytics specific VM system components and utilities.
- Exalytics Oracle VM Template  
Oracle Exalytics Oracle VM template is a customized Oracle VM template for analytics use cases on Exalytics.

### 1.3.2 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
- Oracle Endeca

In addition, note the following:

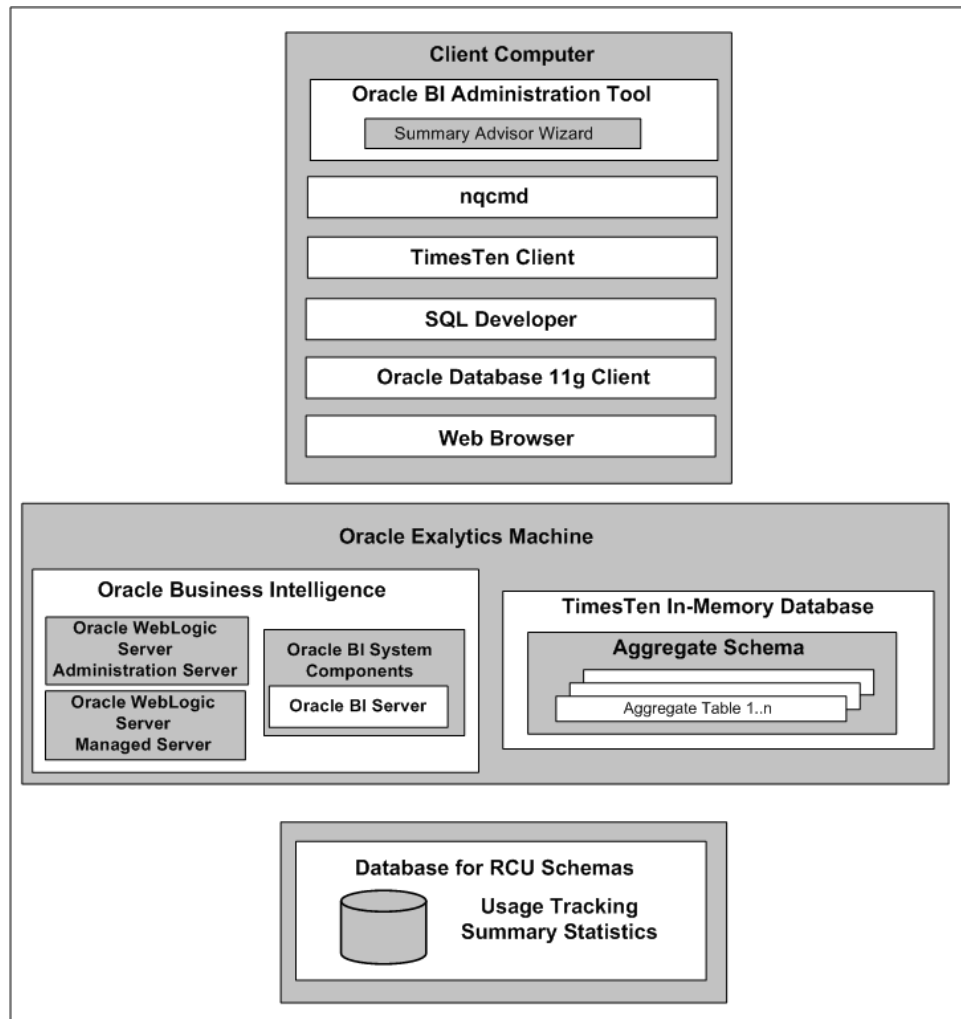
- Oracle Real-Time Decisions is not available for installation on the Exalytics Machine.
- This guide does not provide information on installing Essbase on the Exalytics Machine using the Oracle Hyperion Enterprise Performance Management System Installer. For information about using the EPM System Installer 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>

## 1.4 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**

## 1.5 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>

---

# Applying Oracle Exalytics Release 1 Patchset 4 (1.0.0.4)

This chapter provides information on applying Oracle Exalytics Release 1 Patchset 4 (1.0.0.4) on the Exalytics Machine.

This chapter includes the following sections:

- [Section 2.1, "About Oracle Exalytics Patchsets"](#)
- [Section 2.2, "Applying the Oracle Exalytics Release 1 Patchset 4 \(1.0.0.4\)"](#)
- [Section 2.3, "Configuring Flash and Replacing a Defective Flash Card on a Non-Virtual Exalytics Machine"](#)

## 2.1 About Oracle Exalytics Patchsets

An Oracle Exalytics Patchset for X2-4 and X3-4 Exalytics Machines consists of system software components which are delivered regularly, typically every three months.

For software components, an Oracle Exalytics Patchset might contain updates to one or all of the following:

- Exalytics Base Image on Linux x86-64
- Exalytics Base Image for Oracle VM x86-64
- Exalytics VM Template (Guest)

Oracle Business Intelligence, Oracle Enterprise Performance Management, Oracle TimesTen for Exalytics, and Oracle Endeca software releases are certified on Exalytics patchsets. These software updates may contain new capabilities built for Exalytics only. Customers are advised to update the application software stack with the latest Exalytics certified version.

For detailed information on system components and supported application product components, see *Oracle Exalytics Certification Matrix* at the following location:

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

## 2.2 Applying the Oracle Exalytics Release 1 Patchset 4 (1.0.0.4)

This section consists of the following topics:

- [Section 2.2.1, "About the Oracle Exalytics Release 1 Patchset 4"](#)
- [Section 2.2.2, "Applying the Oracle Exalytics Release 1 Patchset 4"](#)

- [Section 2.2.3, "Postinstallation Instructions for Upgrading or Patching Oracle Business Intelligence Software"](#)
- [Section 2.2.4, "Deinstallation Instructions for the Oracle Exalytics Release 1 Patchset 4"](#)

## 2.2.1 About the Oracle Exalytics Release 1 Patchset 4

The Oracle Exalytics Release 1 Patchset 4 comprises of updates to the system components that are listed in [Table 2-1](#).

**Table 2-1 System Components and Supported Versions in Oracle Exalytics Patchset 4**

System Component	Version in Patchset 4 Release
Oracle Exalytics Base Image	1.0.0.6
Oracle Exalytics Base Image for Oracle VM	2.0.1.3
Oracle Exalytics VM Template (Guest)	2.0.1.3

For the latest information on the supported Application Software Components, see *Oracle Exalytics Certification Matrix* at the following location:

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

## 2.2.2 Applying the Oracle Exalytics Release 1 Patchset 4

This section consists of the following topics:

- [Section 2.2.2.1, "Applying Oracle Exalytics Release 1 Patchset 4 \(1.0.0.4\) on a Non-Virtual Exalytics Machine"](#)
- [Section 2.2.2.2, "Applying Oracle Exalytics Release 1 Patchset 4 \(1.0.0.4\) on an Exalytics Machine Configured for Virtualization"](#)

### 2.2.2.1 Applying Oracle Exalytics Release 1 Patchset 4 (1.0.0.4) on a Non-Virtual Exalytics Machine

This section contains the following topics:

- [Section 2.2.2.1.1, "Who Should Install Oracle Exalytics Release 1 Patchset 4?"](#)
- [Section 2.2.2.1.2, "Guidelines for Installing Oracle Exalytics Release 1 Patchset 4"](#)
- [Section 2.2.2.1.3, "Installing Oracle Exalytics Release 1 Patchset 4"](#)
- [Section 2.2.2.1.4, "Upgrading or Patching Application Software Components."](#)

**2.2.2.1.1 Who Should Install Oracle Exalytics Release 1 Patchset 4?** The Patchset is available for all Oracle Exalytics customers who are currently on Oracle Exalytics Release 1 Patchset 3 (Oracle Exalytics Base Image 1.0.0.5).

---

**Note:** If you are on a release prior to Oracle Exalytics Release 1 Patchset 3, you must upgrade to Oracle Exalytics Release 1 Patchset 3 (Base Image 1.0.0.5) before you can upgrade to Oracle Exalytics Release 1 Patchset 4. For information on applying Oracle Exalytics Release 1 Patchset 3, see "Chapter 7 Patching" in *Oracle Fusion Middleware Installation and Administration Guide for Oracle Exalytics In-Memory Machine* available at the following location:

[http://docs.oracle.com/cd/E41246\\_01/bi.1/e39709/toc.htm](http://docs.oracle.com/cd/E41246_01/bi.1/e39709/toc.htm)

---

#### 2.2.2.1.2 Guidelines for Installing Oracle Exalytics Release 1 Patchset 4 Review the following guidelines before installing the Patchset:

- Ensure that you are currently on Oracle Exalytics Release 1 Patchset 3 (Oracle Exalytics Base Image 1.0.0.5).
- Before applying the patches that are included in the Patchset, ensure that you back up your current installation, configuration files, and any user-specific artifacts, and stop all applicable services.
- If you have installed Oracle Enterprise Performance Management components on the Exalytics Machine, stop all Enterprise Performance Management services before applying the patch. Also, ensure that you start all services after applying the patch. For more information, see "Chapter 12, Starting and Stopping EPM System Products" in *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](http://docs.oracle.com/cd/E40248_01/epm.1112/epm_install.pdf)
- When installing Oracle Exalytics Release 1 Patchset 4 on Oracle Exalytics Release 1 Patchset 3, delete aggregates in Oracle TimesTen using the nqcmd utility. For more information, see "Creating and Persisting Aggregates for Oracle BI Server Queries" in *Oracle Fusion Middleware Metadata Repository Builder's Guide for Oracle Business Intelligence Enterprise Edition*.
- For late-breaking information, see Oracle Exalytics In-Memory Machine Release Notes for Linux

#### 2.2.2.1.3 Installing Oracle Exalytics Release 1 Patchset 4 To install Oracle Exalytics Release 1 Patchset 4 on Oracle Exalytics Release 1 Patchset 3, perform the following steps:

- ["Step 1: Upgrade Firmware"](#)
- ["Step 2: Download and Mount the Exalytics Base Image 1.0.0.6"](#)
- ["Step 3: Run the Oracle Exalytics Base Image 1.0.0.6 Upgrade Script"](#)
- ["Step 4: Configure ASR"](#)
- ["Step 5: \(Optional\) Configure Exalytics Host for Enterprise Manager Cloud Control Discovery"](#)

#### Step 1: Upgrade Firmware

If not already done, upgrade your firmware to 3.1.2.24b. Oracle Integrated Lights Out Manager 3.1.2.24b (ILOM) has a new user interface and navigation.

---

**Note:** To check the ILOM version, in ILOM, click the **About** button.

---

For information about Oracle Integrated Lights Out Manager (ILOM) consult the Sun Server X2-4 Documentation manuals which are available in the Oracle Exalytics Library at:

[http://docs.oracle.com/cd/E27027\\_01/index.htm](http://docs.oracle.com/cd/E27027_01/index.htm)

**To upgrade firmware:**

1. Navigate to My Oracle Support and download patch number 16404931.  
The patch zip file contains the ILOM-3\_1\_2\_24.b\_r79266-Sun\_Fire\_X4470M2.pkg.
2. Extract the zip file into a temporary folder.
3. On the Exalytics Machine, connect and log on to Oracle Integrated Lights Out Manager (ILOM).
4. In ILOM, select **Maintenance**, and then select the **Firm Upgrade** tab.
5. Click **Enter Upgrade Mode**.
6. Click **OK**.
7. Click **Browse**, navigate to the temporary folder, and select the ILOM-3\_1\_2\_24.b\_r79266-Sun\_Fire\_X4470M2.pkg that you downloaded.
8. Click **Upload**.
9. If not already selected, select **Preserve Existing Configuration**.
10. Click **Start Upgrade**.
11. Click **OK**.

After the upgrade completes successfully, ILOM restarts automatically.

**Step 2: Download and Mount the Exalytics Base Image 1.0.0.6**

**To download and mount the Exalytics base image 1.0.0.6:**

1. Navigate to the Oracle Software Delivery Cloud web site at the following link:  
<http://edelivery.oracle.com>
2. For Product Pack, select **Oracle Business Intelligence**.
3. For Platform, select **Linux x86-64**.
4. Click **Go**.
5. Select and click **Oracle Exalytics Software Media Pack for Linux x86-64 (Release 1.0.0.4.0)**.
6. Download **Oracle Exalytics Base Image 1.0.0.6 for Linux x86-64**.

The base image contains two zip files.

7. Extract the two zip files into a directory of your choice.

The two zip files contains the following files:

Exalytics-1.0.0.6-20140128-245\_BM-dvd.iso\_part1

Exalytics-1.0.0.6-20140128-245\_BM-dvd.iso\_part2

runme.sh

readme.txt

8. Follow the instructions in the readme to combine dvd.iso\_part1 and dvd.iso\_part2 to produce the final DVD ISO file named Exalytics-1.0.0.6-20140128-245\_BM-dvd.iso.
9. To create a directory, enter the following command:
 

```
# mkdir /mnt/exalyticsPS4
```
10. To mount the base image on the directory, enter the following command:
 

```
# mount -t iso9660 -o loop,ro Exalytics-1.0.0.6-20140128-245_BM-dvd.iso /mnt/exalyticsPS4
```

### Step 3: Run the Oracle Exalytics Base Image 1.0.0.6 Upgrade Script

You run the upgrade script to upgrade Oracle Exalytics base image to 1.0.0.6.

---

**Note:** If you are installing Oracle Exalytics Release 1 Patchset 4 (Base Image 1.0.0.6) on Oracle Exalytics Release 1 Patchset 3 (Base Image 1.0.0.5), the script installs new rpms without affecting your existing installation.

---

#### To run the Oracle Exalytics Base Image 1.0.0.6 Upgrade Script:

1. Stop and backup all Oracle Business Intelligence, Oracle TimesTen, and (if installed) Enterprise Performance Management services.

For information on stopping Oracle Business Intelligence services, see "Starting and Stopping Oracle Business Intelligence" in *Oracle Fusion Middleware System Administrator's Guide for Oracle Business Intelligence Enterprise Edition*.

For information on starting and stopping Oracle TimesTen services, see "Working with the TimesTen Data Manager Daemon" in *Oracle® TimesTen In-Memory Database Operations Guide*.

For more information on starting and stopping Enterprise Performance Management services, see "Chapter 12, Starting and Stopping EPM System Products" in *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](http://docs.oracle.com/cd/E40248_01/epm.1112/epm_install.pdf)

2. To copy the Exalytics rpms into a temporary (/tmp) directory, enter the following command:

```
# cp /mnt/exalyticsPS4/Server/exalytics-update-1.0.0.6-110.noarch.rpm /tmp
```

3. To navigate to the temporary (tmp) directory, enter the following command:

```
# cd /tmp
```

4. To install the upgrade script (*exalytics-scripts-1.0.0.6-110.noarch.rpm*), enter the following command:

```
# rpm -Uv --replacefiles exalytics-update-1.0.0.6-110.noarch.rpm
```

The script is installed.

The output looks similar to the following:

```
Preparing packages for installation...
exalytics-update-1.0.0.6-110
postInstall (exalytics-scripts) 1 ...
```

```
[EXALYTICS_INFO:GENERAL] starting; Day Month Date HOUR:MIN:SEC YEAR ...
[EXALYTICS_INFO:GENERAL] Updating exalytics-node-config file to set EXALYTICS_
INSTALL_TYPE=BM ...
[EXALYTICS_INFO:GENERAL] finished; Day Month Date HOUR:MIN:SEC YEAR
postInstall (exalytics-scripts) 1; done
```

5. To navigate to the Oracle Exalytics bin directory, enter the following command:

```
# cd /opt/exalytics/bin
```

6. To upgrade the Oracle Exalytics base image, enter the following command:

```
# ./update_bm_1.0.0.5_to_1.0.0.6.sh file:///mnt/exalyticsPS4/Server
```

7. **Optional:** View the log files at `/var/log/exalytics/update-1.0.0.6.log` and `/var/log/exalytics/exalytics.log`.

8. To restart the Exalytics Machine, enter the following command:

```
# /sbin/shutdown -r now
```

---

---

**Note:** You can also start the Exalytics Machine using Integrated Lights Out Manager (ILOM).

---

---

9. Restart the Oracle Business Intelligence, Oracle TimesTen, and Enterprise Performance Management services.

10. To confirm the base image, enter the following command as a root user:

```
# /opt/exalytics/bin/exalytics_imageinfo
```

The output looks similar to the following:

```
Image version : 1.0.0.6
Creation timestamp : Day Date Month YEAR HOUR:MIN:SEC
Kernel version : 2.6.32-400.11.1.el5uek

RPM versions:
kernel-uek-2.6.32-400.11.1.el5uek
kernel-2.6.18-308.24.1.0.1.el5
exalytics-container-bm-1.0.0.6-64
exalytics-scripts-1.0.0.6-110
exalytics-flash-1.0.0.6-90
exalytics-domain-configure-1.0.0.6-122
exalytics-deps-exact-1.0.0.6-64
exalytics-deps-minimum-1.0.0.6-64
```

---

---

**Note:** Even though the build numbers may be different than the ones listed above, ensure that the updated kernel version is the same as the one displayed above.

---

---

## Step 4: Configure ASR

To configure ASR:

- If you installed Oracle Exalytics Release 1 Patchset 4 on a new machine, then configure ASR as follows:

1. Follow instructions detailed in "Installing Auto Service Request (ASR)" in *Oracle Exalytics In-Memory Machine Owner's Guide*, but change the following steps:
2. Replace Step 5 in "Section 9.3 Before You Begin" with the following steps:
  - a. Navigate to the `/opt/exalytics/asr` directory and add the following line to the `/etc/inittab` file
 

```
emh1:345:respawn:/opt/exalytics/asr/bda_mon_hw_asr.pl -server
```
  - b. At the command line, enter the following command to initialize and start the `bda_mon` server
 

```
init q
```
3. Replace the commands in Step 2 in "Section 9.7 Configuring Telemetry Sources" with the following commands:
 

```
# cd /opt/exalytics/asr
# ./setup_asr_ilom.pl -host <hostname OR ip>
```
- If you installed Oracle Exalytics Release 1 Patchset 4 on Oracle Exalytics Release 1 Patchset 3 and ASR is already configured, complete the following step to verify that ASR is running:
  - Execute the `ps -ef | grep bda` command to ensure that `bda_mon_hw_asr.pl` is running.

For more information, see "Installing Auto Service Request Software" in *Oracle Exalytics In-Memory Machine Owner's Guide*.

### Step 5: (Optional) Configure Exalytics Host for Enterprise Manager Cloud Control Discovery

To configure Exalytics Host for Enterprise Manager Cloud Control Discovery:

- If you installed Oracle Exalytics Release 1 Patchset 4 on a new machine with Enterprise Manager Cloud Control (EMCC) deployed, then perform the following steps to configure EMCC to identify the Exalytics host.
  - a. Log on to Oracle Integrated Lights Out Manager (ILOM) and select **ILOM Administration**, then **Identification**, and then **System Information**. Ensure that the SP System Identifier value is populated with a unique value, such as "Oracle Exalytics AK00026925".
  - b. Log on to the Exalytics Machine.
  - c. Execute the command `chmod +x exalytics_configure_for_emcc.sh` to grant execute permissions.
  - d. Execute the following command as a root user to create the file:
 

```
./exalytics_configure_for_emcc.sh
```
  - e. Review the output and ensure that the contents of the `/var/exalytics/info/em-context.info` file correctly displays the system identifier for the Oracle Exalytics machine. The system identifier should be identical to the system identifier you saw in Step (a) of this procedure.
- If you installed Oracle Exalytics Release 1 Patchset 4 on Oracle Exalytics Release 1 Patchset 3 with Enterprise Manager Cloud Control (EMCC) deployed, then complete the following step to verify that EMCC identifies the Exalytics host:

- Review the contents of the `/var/exalytics/info/em-context.info` file and ensure that it correctly displays the system identifier for the Oracle Exalytics machine.

The system identifier should be identical to the system identifier displayed in the Oracle Integrated Lights Out Manager (ILOM) in Step (a) above.

**2.2.2.1.4 Upgrading or Patching Application Software Components** Depending on your deployment, upgrade or patch the newly certified application software components for this release.

---

**Note:** This section is for existing Exalytics customers that are already running application software components. New Exalytics customers, proceed to [Chapter 4, "Installing Software on an Exalytics Machine."](#)

---

Before you upgrade or patch the application software components, ensure you are installing the latest Exalytics certified application software versions. See *Oracle Exalytics Certification Matrix* for the latest certifications. The *Oracle Exalytics Certification Matrix* is located at:

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

This section includes the following topics:

- ["Download and Install Oracle BI EE 11.1.1.7.x"](#)
- ["Download and Install Oracle Timesten 11.2.2.6 for Exalytics"](#)
- ["Download and Install Oracle BI Applications 11.1.1.7.1"](#)
- ["Download and Install Oracle Endeca 3.1"](#)

#### **Download and Install Oracle BI EE 11.1.1.7.x**

To apply the latest Oracle BI EE 11.1.1.7.x Patchset to Oracle BI EE 11.1.1.7.0 installation, see the instructions in the ReadMe file for patch 17886497 (the top-level patch of the Oracle BI EE 11.1.1.7.140114 Patchset).

---

**Note:** If you are installing Oracle Exalytics for the first time, you must install Oracle BI EE 11.1.1.7.0. For information, see [Chapter 4, "Installing Software on an Exalytics Machine."](#) See also, *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*.

---

If you are running an Oracle BI EE 11.1.1.6.x installation, you must upgrade to an Oracle BI EE 11.1.1.7.0, see *Oracle Fusion Middleware Upgrade Guide for Oracle Business Intelligence*.

---

**Note:** You cannot use the Exalytics Domain Management Utility to install or manage an Oracle BI EE 11.1.1.6.x installation. You must first upgrade the Oracle BI EE 11.1.1.6.x installation to Oracle BI EE 11.1.1.7.0 and then register the installation as an existing primary domain using the Exalytics Domain Management Utility.

---

#### **Download and Install Oracle Timesten 11.2.2.6 for Exalytics**

To download and install Oracle TimesTen:

1. Navigate to the Oracle Software Delivery Cloud web site at the following link:  
<http://edelivery.oracle.com>
2. For Product Pack, select **Oracle Business Intelligence**.
3. For Platform, select **Linux x86-64**.
4. Click **Go**.
5. Select and click **Oracle Exalytics Software Media Pack for Linux x86-64 (Release 1.0.0.4)**.
6. Download **Oracle TimesTen In-Memory Database for Exalytics 11g Release 2 (11.2.2.6.0) for Linux X86-64 bit**.

---

**Note:** If you are installing Oracle Exalytics for the first time, you can install Oracle TimesTen 11.2.2.6 instead of applying patches to previous Oracle TimesTen versions.

---

During the installation of Oracle TimesTen, answer "Yes" to the question: Would you like to upgrade this instance?

Also, ensure that you do not delete existing files. For example, during the installation, answer "No" to the following questions:

- Would you also like to remove all files in <installation\_directory>/TimesTen/tt1122/network/admin/samples?
- Would you like to replace the existing cluster.oracle.ini file?
- Would you like to replace the existing <installation\_directory>/TimesTen/tt1122/info/sys.odbc.ini file?
- Would you also like to remove all files in <installation\_directory>/TimesTen/tt1122/info?

For more information, see "Performing an in-place database upgrade" and "Performing an offline upgrade" in *Oracle TimesTen In-Memory Database Installation Guide*.

### Download and Install Oracle BI Applications 11.1.1.7.1

If deploying Oracle BI Applications 11.1.1.7.1, install Oracle BI Applications 11.1.1.7.1. For information, see [Section 4.5, "Installing and Configuring Oracle BI Applications 11.1.1.7.1 on an Exalytics Machine."](#)

### Download and Install Oracle Endeca 3.1

To install Oracle Endeca 3.1, see "Oracle Endeca Information Discovery" documentation, the link to which is available from the Oracle Exalytics Documentation Library.

## 2.2.2.2 Applying Oracle Exalytics Release 1 Patchset 4 (1.0.0.4) on an Exalytics Machine Configured for Virtualization

You apply the Oracle Exalytics Release 1 Patchset 4 (1.0.0.4) on an Exalytics Machine configured for virtualization. The Oracle Exalytics Release 1 Patchset 4 (1.0.0.4) consists of Flash drivers, Flash utilities, and the Exalytics Domain Management Utility.

This section contains the following topics:

- [Section 2.2.2.2.1, "Who Should Install the Oracle Exalytics Release 1 Patchset 4 on an Exalytics Machine Configured for Virtualization?"](#)

- [Section 2.2.2.2.2, "Prerequisites for Applying Oracle Exalytics Release 1 Patchset 4 on an Exalytics Machine Configured for Virtualization"](#)
- [Section 2.2.2.2.3, "Upgrading Oracle Exalytics for Oracle VM 3.0.3 or Higher Version to Oracle VM 3.2.7"](#)
- [Section 2.2.2.2.4, "Applying the Release 1 Patchset 4 on a Virtualized Environment"](#)
- [Section 2.2.2.2.5, "Configuring Flash on an Exalytics Machine Configured for Virtualization"](#)
- [Section 2.2.2.2.6, "Upgrading and Patching Application Software Components on an Exalytics Machine Configured for Virtualization"](#)

**2.2.2.2.1 Who Should Install the Oracle Exalytics Release 1 Patchset 4 on an Exalytics Machine Configured for Virtualization?** This Patchset is available to all Exalytics virtualization customers who are running Oracle VM server 3.0.3 or higher version and Oracle VM Manager 3.0.3 or higher version.

---

**Note:** Oracle recommends that all current customers running Exalytics virtualization upgrade to Oracle Exalytics Release 1 Patchset 4 (1.0.0.4).

---

**2.2.2.2.2 Prerequisites for Applying Oracle Exalytics Release 1 Patchset 4 on an Exalytics Machine Configured for Virtualization** The following prerequisites must be met before you can apply Oracle Exalytics Release 1 Patchset 4 on an Exalytics virtualization:

- You have one or more Exalytics Machines configured for virtualization.
- You have upgraded to Oracle VM Manager 3.2.7 and Oracle VM Server 3.2.7.
- You have added Oracle VM Server to your Oracle VM Manager environment. To add Oracle VM Servers to your Oracle VM Manager, see [Section 3.1.2.2.2, "Discovering Oracle VM Servers."](#)

**2.2.2.2.3 Upgrading Oracle Exalytics for Oracle VM 3.0.3 or Higher Version to Oracle VM 3.2.7**

---

**Note:** If you have already upgraded to Oracle VM 3.2.7, you can ignore this section.

---

This section consists of the following topics:

- ["Upgrading Oracle VM Manager 3.0.3 or Higher Version to Oracle VM Manager 3.2.7"](#)
- ["Upgrading Oracle VM Server 3.0.3 \(Base Image 2.0.1.1\) or Higher Version to Oracle VM Server 3.2.7"](#)

**Upgrading Oracle VM Manager 3.0.3 or Higher Version to Oracle VM Manager 3.2.7**

Oracle VM Manager provides a graphical user interface to manage Oracle VM Servers, virtual machines, and resources.

**To upgrade Oracle VM Manager 3.0.3 or higher version to 3.2.7:**

1. If Oracle VM Manager is connected to an Oracle VM Server, stop Oracle VM Server and all virtual machines. For instructions, see Step 1 in ["Upgrading Oracle VM Server 3.0.3 \(Base Image 2.0.1.1\) or Higher Version to Oracle VM Server 3.2.7"](#).
2. Navigate to My Oracle Support and download patch number 16410417.

3. Follow the readme instructions for upgrading Oracle VM Manager.

---

**Note:** If you are installing Oracle VM Manager for the first time, you can install Oracle VM Manager 3.2.7 directly. For information, see [Section 3.1.2.2, "Installing and Configuring Oracle VM Manager."](#)

---

### Upgrading Oracle VM Server 3.0.3 (Base Image 2.0.1.1) or Higher Version to Oracle VM Server 3.2.7

---

**Note:** If you are configuring Exalytics Machine for virtualization for the first time, you must first install Oracle VM Server 3.0.3 and then upgrade to Oracle VM Server 3.2.7. For information on installing Oracle VM Server 3.0.3, see [Section 3.1.2.1.1, "Installing Oracle VM Server 3.0.3 \(Base Image 2.0.1.1\)."](#)

---

Before you upgrade Oracle VM Server, ensure you upgraded Oracle VM Manager.

Oracle recommends that you use the same release version of Oracle VM Manager and Oracle VM Server.

#### To upgrade Oracle VM Server 3.0.3 or a higher version to 3.2.7:

1. Stop Oracle VM Server, by performing the following actions:
  - a. Stop all applicable processes running on the Exalytics Machine.
  - b. Stop all virtual machines running on the server.
  - c. Connect to Oracle VM Manager.
  - d. Select the **Servers and VMs** tab.
  - e. In the left pane, expand **Server Pools**, and then **exalytics\_server\_pool**.
  - f. Right-click the Exalytics Machine, and select **Stop Server**.

For more information, see "Section 6.10.7 Stopping Oracle VM Servers" in *Oracle VM User's Guide for Release 3.2.1*.

2. Navigate to My Oracle Support and download patch number 18076644 to a local directory.

The patch number contains the p18076644\_30\_Linux-x86-64.zip file.

---

**Note:** The zip file contains two files. In ILOM, link to the OVS-3.2.7-732.iso file and not the OVS-3.2.7-732 source.iso file.

---

3. On the Exalytics Machine, connect and log on to Oracle Integrated Lights Out Manager (ILOM).
4. In ILOM, select **Remote Control**, then **Redirection**, then **Storage Redirection**, and then **Launch Service**.

The ILOM remote console is displayed.

5. From the menu bar, select **Devices** and then **CD-ROM Image** to link the Oracle VM Server 3.2.7 image (OVS-3.2.7-732.iso) as a remote virtual CD-ROM in ILOM.
6. Restart the machine, by performing the following action:

- In ILOM, select **ILOM**, then **Host Management**, and then **Power Cycle**.
- 7. Display the setting for the Next Boot Device, by performing the following action:
  - In ILOM, select **Host Management**, then **Host Control**, and then **Next Boot Device**.The setting for the Next Boot Device is displayed.
- 8. Restart the machine, by performing the following action:
  - In ILOM, select **ILOM**, then **Host Management**, and then **Power Cycle**.The Exalytics Machine restarts and the CD Found screen is displayed.
- 9. Press **OK** to start the media test.  
The Media Check screen is displayed.
- 10. Press **Test** to test the CD in the drive.  
At the conclusion of the test, the Media Check Result screen is displayed.
- 11. Press **OK**.  
The Media Check screen is displayed.
- 12. Press **Continue**.  
The Keyboard Selection screen is displayed.
- 13. Select the model keyboard attached to the Exalytics Machine, and click **OK**.  
The OVS EULA screen is displayed.
- 14. Press **Accept**.  
The System to Upgrade screen is displayed.
- 15. Select **Oracle VM Server 3.0.3**, and press **OK**.

---

**Note:** Take note of the drive on which Oracle VM Server 3.0.3 is installed. You need the drive particulars when you move the drive to the top of the BOOT menu. See Step 17 (e).

---

- The Upgrade Boot Loader Configuration screen is displayed.
- 16. Select **Create new boot loader configuration**, and press **OK**.  
The Boot Loader Configuration screen is displayed.
  - 17. On the Boot Loader Configuration screen, perform the following actions:
    - a. Select **Use GRUB Boot Loader**, and press **OK**.
    - b. Press **OK** to not add additional kernel parameters.
    - c. If required, enter a password, and press **OK**.
    - d. Press **Change drive order** to specify where you want to install the boot loader.
    - e. Select the drive on which the Oracle VM Server is installed and continue pressing **Move up** to move the drive to the top of the BOOT menu.
    - f. Select your drive from top of the BOOT menu, and select **Allow boot from multipath device**.
    - g. Press **OK**.

The Upgrade to begin screen is displayed.

18. Press **OK**.
19. Confirm the upgrade completes successfully, and then press **Reboot**.  
The Exalytics Machine restarts.
20. Perform the following actions to rediscover the upgraded Oracle VM Server:
  - a. Connect to Oracle VM Manager.
  - b. Select the **Servers and VMs** tab.
  - c. In the left pane, expand **Server Pools**, and then **exalytics\_server\_pool**.
  - d. Right-click the Exalytics Machine and select **Rediscover Server**.
  - e. Enter the following information for the server:
    - Oracle VM Agent Port. The default port number is 8899.
    - Oracle VM Agent Password. The default password is "oracle".
    - IP Address.
  - f. Click **OK**.

For more information, see "Section 5.3. Upgrading Oracle VM Server for x86" in *Oracle VM Installation and Upgrade Guide for Release 3.2.1*.

**2.2.2.2.4 Applying the Release 1 Patchset 4 on a Virtualized Environment** This section consists of the following topics:

- ["Upgrading Exalytics Base Image for Oracle VM to 2.0.1.3"](#)
- ["Upgrading Oracle VM Guest to 2.0.1.3"](#)

#### **Upgrading Exalytics Base Image for Oracle VM to 2.0.1.3**

You upgrade the Exalytics Base Image for Oracle VM 2.0.1.3 by applying the patch on Oracle VM Server. The patch upgrades the Base Image to 2.0.1.3, installs Flash drivers and utilities.

##### **To upgrade Exalytics Base Image for Oracle VM to 2.0.1.3:**

1. Navigate to My Oracle Support and download patch number 17876912: Oracle Exalytics Base Image 2.0.1.3 Upgrade Utility for Oracle VM for Linux x86-64 that contains the OVS - exalytics\_ovs\_server\_base\_image\_upgrade\_to\_2.0.1.3.0.zip file.

The zipped file contains Flash drivers and Flash configuration scripts.

2. Log on to the Exalytics Machine as the root user.
3. Unzip the file into a temporary (/tmp) directory.

The following directory is created:

exalytics\_ovs\_server\_base\_image\_upgrade\_to\_2.0.1.3.0

4. Extract the contents of the file into an appropriate directory on the Exalytics Machine.

The zipped file contains the following files:

exalytics-flash-1.0.0.6-3.x86\_64.rpm

kernel-ib-1.5.5.151-2.6.39\_300.32.6.el5uek.x86\_64.rpm

ovsvf-config-1.0-6.noarch.rpm

```
exalytics_ovs_server_base_image_upgrade_to_2.0.1.3.0.sh
kernel-ib-devel-1.5.5.151-2.6.39_300.32.6.el5uek.x86_64.rpm
readme.txt
```

5. To upgrade the Base Image to 2.0.1.3 and to install Flash, enter the following command:

```
# ./exalytics_ovs_server_base_image_upgrade_to_2.0.1.3.0.sh
```

The output looks similar to the following:

```
exalytics_ovs_server_base_image_upgrade_to_2.0.1.3.0]# ./exalytics_ovs_server_
base_image_upgrade_to_2.0.1.3.0.sh
Update to 2.0.1.3.0 starting at Thu Jan 2 01:22:43 EST 2014
Updating RPM exalytics-flash-1.0.0.6-3.x86_64.rpm
Applying rpm exalytics-flash-1.0.0.6-3.x86_64.rpm
Preparing... ##### [100%]
1:exalytics-flash ##### [100%]
postInstall (exalytics-flash) 1 ...
[EXALYTICS_INFO:GENERAL] Updating exalytics-flash-config file to set FLASH_
INSTALL_TYPE=OVS ...
postInstall (exalytics-flash) 1; done
Updating RPM kernel-ib-1.5.5.151-2.6.39_300.32.5.el5uek.x86_64.rpm
Applying rpm kernel-ib-1.5.5.151-2.6.39_300.32.5.el5uek.x86_64.rpm
warning: ./kernel-ib-1.5.5.151-2.6.39_300.32.5.el5uek.x86_64.rpm: Header V3 DSA
signature: NOKEY, key ID 1e5e0159
Preparing... ##### [100%]
1:kernel-ib ##### [100%]
Updating RPM kernel-ib-devel-1.5.5.151-2.6.39_300.32.5.el5uek.x86_64.rpm
Applying rpm kernel-ib-devel-1.5.5.151-2.6.39_300.32.5.el5uek.x86_64.rpm
warning: ./kernel-ib-devel-1.5.5.151-2.6.39_300.32.5.el5uek.x86_64.rpm: Header
V3 DSA signature: NOKEY, key ID 1e5e0159
Preparing... ##### [100%]
1:kernel-ib-devel ##### [100%]
Uninstalling the IB Virtual Functions Library...
Installing the new IB Virtual Functions Library...
Updating RPM ovsvf-config-1.0-6.noarch.rpm
Applying rpm ovsvf-config-1.0-6.noarch.rpm
warning: ./ovsvf-config-1.0-6.noarch.rpm: Header V3 DSA signature: NOKEY, key
ID 1e5e0159
Preparing... ##### [100%]
1:ovsvf-config ##### [100%]
Rebuilding dependencies...
Done
Updating base image version to 2.0.1.3.0
Updating base image name from Exalogic to Exalytics
finished; Thu Jan 2 01:22:49 EST 2014
finished; Thu Jan 2 01:22:49 EST 2014
[exalytics_ovs_server_base_image_upgrade_to_2.0.1.3.0]#
```

6. To verify that the upgrade was successful, enter the following command:

```
# imageinfo
```

The output looks similar to the following:

```
Exalytics 2.0.1.3.0 (build:r)

Image version : 2.0.1.3.0
Image build version :
Creation timestamp : 2012-08-09 11:47:59 -0400
```

```
Kernel version : 2.6.32.21-45.6xen
Image activated : 2014-01-02 04:02:58 -0500
Image status : SUCCESS
```

7. To verify that Flash is installed and the number of Flash cards installed, enter the following command:

```
# ddcli
```

Six Flash cards are displayed. The output looks similar to the following:

```
*****
LSI Corporation WarpDrive Management Utility
Version 107.00.00.04 (2012.06.05)
Copyright (c) 2011 LSI Corporation. All Rights Reserved.
*****
```

ID	WarpDrive	Package Version	PCI Address
--	-----	-----	-----
1	ELP-4x100-4d-n	06.05.09.00	00:11:00:00
2	ELP-4x100-4d-n	06.05.09.00	00:21:00:00
3	ELP-4x100-4d-n	06.05.07.00	00:31:00:00
4	ELP-4x100-4d-n	06.05.07.00	00:a1:00:00
5	ELP-4x100-4d-n	06.05.01.00	00:c1:00:00
6	ELP-4x100-4d-n	06.05.01.00	00:d1:00:00

### Upgrading Oracle VM Guest to 2.0.1.3

You upgrade Oracle VM Guest to 2.0.1.3 by applying the patch on each Oracle VM Guest in your system. The patch upgrades Oracle VM Guest to 2.0.1.3 and installs the Exalytics Domain Management Utility.

---

**Note:** You must apply the patch mentioned in this section on each Oracle VM Guest and not on Oracle VM Server.

---

#### To upgrade Oracle VM Guest to 2.0.1.3:

1. Navigate to My Oracle Support and download patch number 17876920: Oracle Exalytics VM Guest 2.0.1.3 Upgrade Utility for Oracle VM for Linux x86-64 that contains the OVS - exalytics\_ovs\_server\_base\_image\_upgrade\_to\_2.0.1.3.0.zip file.

The zipped file contains scripts to upgrade Oracle VM Guest and install the Exalytics Domain Management Utility.

2. Log on to Oracle VM Guest as the root user.
3. Using FTP, extract the contents of the file into a temporary (/tmp) directory on the Exalytics Oracle VM Guest.

The zipped file contains the following rpm files:

```
exalytics-vm-hardware-checks-1.0.0.6-103.noarch.rpm
exalytics-domain-configure-1.0.0.6-120.noarch.rpm
```

4. To navigate to the directory where you downloaded the zipped files, enter the following command:

```
# cd /tmp/exalytics_ovm_guest_base_image_upgrade_to_2.0.1.3.0
```

5. To install the rpms, enter the following commands:

```
# rpm -Uvh --replacefiles exalytics-domain-configure-1.0.0.6-120.rpm
# rpm -Uvh --replacefiles exalytics-vm-hardware-checks-1.0.0.6-103.rpm
```

The rpm files upgrades Oracle VM Guest and installs the Exalytics Domain Management Utility.

The output looks similar to the following:

```
exalytics_ovm_guest_base_image_upgrade_to_2.0.1.3.0]# rpm -Uvh --replacefiles
exalytics-domain-configure-1.0.0.6-120.noarch.rpm
Preparing... ##### [100%]
1:exalytics-domain-configure #####
[100%]
[root@host exalytics_ovm_guest_base_image_upgrade_to_2.0.1.3.0]# rpm -Uvh
--replacefiles exalytics-vm-hardware-checks-1.0.0.6-103.noarch.rpm
Preparing... ##### [100%]
1:exalytics-vm-hardware-checks
##### [100%]
```

**2.2.2.2.5 Configuring Flash on an Exalytics Machine Configured for Virtualization** This section is applicable only for the following customers who have Flash storage:

- Customers running Exalytics X3-4 machines
- Customers running Exalytics X2-4 machines with Upgrade kits (Flash Upgrade Kit or Memory and Flash Upgrade Kit)

---

**Note:** The following customers can ignore this section:

- Oracle Exalytics X2-4 customers who do not have Upgrade kits (Flash Upgrade Kit or Memory and Flash Upgrade Kit).
- Oracle Exalytics X3-4 or X2-4 customers with Upgrade kits who have already configured Flash.

To verify that you have already configured Flash, navigate to Oracle VM Manager and confirm that the names of the Flash drives in Oracle VM Manager are the same as the names specified in the FlashDriveMappings file.

---

This section consists of the following topics:

- ["Configuring Flash on Oracle VM Server"](#)
- ["Configuring RAID1 for Flash in Oracle Virtual Machine"](#)

### Configuring Flash on Oracle VM Server

Each Flash card on the Exalytics Machine contains four 100 GB drives, for a total of 24 individual drives. You next configure Flash to enable names of the Flash drives on Oracle VM Server to be read by Oracle VM Manager.

---

**Note:** Before Oracle Exalytics X2-4 customers with Flash Upgrade kits can configure Flash, they must have Oracle Field Services engineers install six Flash cards on the Exalytics Machine being used for virtualization.

---

#### To configure Flash on Oracle VM Server:

1. Log on to the Exalytics Machine as the root user.
2. To create a FlashDriveMappings file, enter the following command:

```
# /opt/exalytics/bin/exalytics_flashovsrepos -script >
~/flashDriveMappings
```

The FlashDriveMappings file extracts the names of the Flash drives on Oracle VM Server into a text file.

3. Navigate to the /root directory to view the text file.
4. On Oracle VM Server, tar the /opt/exalytics/bin/exalytics\_ovm\_scripts/ folder and the FlashDriveMappings file by entering the following commands:

```
# cd /opt/exalytics/bin/
# tar -cvf exalytics_ovm_scripts.tar exalytics_ovm_scripts/
```

5. Copy the tar file to the machine where Oracle VM Manager is installed.
6. Connect to machine where Oracle VM Manager is installed.
7. Navigate to the directory where you copied the scripts and the FlashDriveMappings file.

8. To untar the file, enter the following command:

```
# tar -xvf exalytics_ovm_scripts.tar
```

9. To confirm that the "expect" package is available, enter the following command:

```
# rpm -qa | grep expect
```

If the "expect" package is not available, install it before proceeding to Step 10.

10. To rename the Flash drives in Oracle VM Manager, navigate to the exalytics\_ovm\_scripts folder and enter the following command:

```
# ./exalytics_ovm_rename_flash.sh <path_to_flashmappingfile> <Oracle
VM Manager Username> < Oracle VM Manager Password>
```

The names of the Flash drives in Oracle VM Manager now appears the same as the names specified in the FlashDriveMappings file.

11. Attach the Flash drives to Oracle VM Manager by performing the following tasks:

- a. In Oracle VM Manager, select the **Server and VMs** tab.
- b. In the left pane, select the server pool on which the virtual machine resides.
- c. From the Perspective list, select **Virtual Machines**.
- d. In the Management pane, select a virtual machine.
- e. In the toolbar, click **Edit**.

The Edit Virtual Machine dialog is displayed.

- f. Click the **Disks** tab.
- g. Under Disk Type, select **Physical Disk**.
- h. Under Actions, select **Select a Virtual Machine Disk**.

Select a Physical Disk page is displayed.

- i. Select the Flash card you want to attach to Oracle VM Guest Machine, and click **OK**.
- j. Repeat the previous step to attach other Flash cards to Oracle VM Guest Machine.

12. In Oracle VM Manager, select the **Servers and VMs** tab.

13. In the left pane, expand **Server Pools**, and then select **exalytics\_server\_pool**.
14. From the Perspective list, select **Virtual Machines**.
15. In the Management pane, select a virtual machine.
16. Click the expand arrow to the left of the selected virtual machine.
17. Click the **Disks** tab.
18. Confirm that the Flash drives attached to Oracle VM Guest Machine are displayed.

### Configuring RAID1 for Flash in Oracle Virtual Machine

Finally, you configure RAID Level 1 for Flash.

RAID Level 1 is usually referred to as mirroring. RAID Level 1 duplicates data from one drive on a second drive so that if either drive fails, no data is lost. This is useful when reliability is more important than data storage capacity.

---

---

**Note:** When configuring RAID1, ensure that the Flash drives on RAID1 are from different Flash cards. This ensures that no data is lost if one Flash card fails.

---

---

The following procedure assumes you have attached the Flash drives to Oracle VM Manager.

---

---

**Note:** In this example, RAID1 is configured for two (xvdb and xvdc) Flash drives that are on two different Flash cards. Depending on your configuration, you can configure RAID1 for a different number of Flash drives.

---

---

### To configure RAID1 for Flash in Oracle Virtual Machine:

---

---

**Note:** To enable you to assign more than 2 Flash disks to each Oracle VM Guest you can create a hardware virtualized, with paravirtualized drivers (PVHVM) mode. For information, see [Section 3.6.4, "Configuring a Virtual Machine for HVM with PV Drivers."](#)

---

---

1. Connect as a root user to the Oracle VM Manager to which you attached the Flash drives.
2. To configure RAID1 for the two Flash drives (xvdb and xvdc), enter the following command:

```
# /sbin/mdadm --create /dev/md2 --level=1 --raid-devices=2 /dev/xvdb /dev/xvdc
```
3. To add the RAID1 configuration to the RAID configuration file, enter the following command:

```
# mdadm --detail --scan --verbose >> /etc/mdadm.conf
```

This enables the RAID configuration to be recognized when Oracle VM Manager restarts.
4. To create a file system on the new RAID1 device, enter the following command:

```
# mkfs -t ext3 /dev/md2
```

5. To create a new directory (/u02) on the virtual disk, enter the following command:

```
# mkdir -p /u02
```

6. To mount the RAID1 on this directory, enter the following command:

```
# mount /dev/md2 /u02
```

/u02 is created as the new Flash drive.

7. To update the file system, enter the following command:

```
# echo "/dev/md2 /u02 ext3 defaults 0 0" >> /etc/fstab
```

#### 2.2.2.2.6 Upgrading and Patching Application Software Components on an Exalytics Machine Configured for Virtualization

---

**Note:** This section is for existing Exalytics virtualization customers that are already running application software components. New Exalytics virtualization customers, proceed to [Chapter 4, "Installing Software on an Exalytics Machine."](#)

---

Depending on your deployment, upgrade and patch newly certified application software components for this release.

Before you upgrade and patch the application software components, ensure you are installing the latest Exalytics certified software application versions. See *Oracle Exalytics Certification Matrix* for the latest certifications. The *Oracle Exalytics Certification Matrix* is located at:

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

The process of upgrading and patching application software components on virtual machines is similar to upgrading and patching them on the non-virtualized Exalytics Machine. For more information, see the following:

- ["Download and Install Oracle BI EE 11.1.1.7.x"](#)
- ["Download and Install Oracle Timesten 11.2.2.6 for Exalytics"](#)
- ["Download and Install Oracle BI Applications 11.1.1.7.1"](#)
- ["Download and Install Oracle Endeca 3.1"](#)

### 2.2.3 Postinstallation Instructions for Upgrading or Patching Oracle Business Intelligence Software

---

**Note:** This section is for existing customers that are upgrading or patching Oracle Business Intelligence software. New customers, proceed to [Chapter 4, "Installing Software on an Exalytics Machine."](#)

---

To ensure that Oracle Business Intelligence Enterprise Edition and Oracle TimesTen data type mapping and other optimizations are consistent and can be leveraged, you must complete postinstallation steps for the following Oracle Exalytics components:

- [Section 2.2.3.1, "Oracle TimesTen In-Memory Database"](#)
- [Section 2.2.3.2, "Oracle Business Intelligence Enterprise Edition"](#)

### 2.2.3.1 Oracle TimesTen In-Memory Database

This section contains the following topics:

- [Section 2.2.3.1.1, "Configure Oracle TimesTen Checkpoint Frequency"](#)
- [Section 2.2.3.1.2, "Other Postinstallation Steps"](#)

#### 2.2.3.1.1 Configure Oracle TimesTen Checkpoint Frequency

To ensure Oracle Business Intelligence Enterprise Edition sets the Oracle TimesTen checkpoint frequency, perform the following configuration steps after upgrading Oracle TimesTen In-Memory Database. Failure to perform this configuration may adversely affect Oracle TimesTen performance.

**To configure Oracle TimesTen checkpoint frequency:**

1. Open the timesten-install-dir/info/sys.odbc.ini file.
2. Find the DSN entry for the schema used for Aggregate Persistence.
3. Do one of the following:
  - If you are loading data in Oracle TimesTen database using aggregate persistence, edit the three parameters as follows:
    - CkptFrequency=-1
    - CkptLogVolume=0
    - CkptRate=0
  - If you are loading data in Oracle TimesTen database without using aggregate persistence, use a different server DSN and edit the three parameters as follows:
    - CkptFrequency=30
    - CkptLogVolume=0
    - CkptRate=0

#### 2.2.3.1.2 Other Postinstallation Steps To complete other postinstallation steps in Oracle TimesTen:

1. Re-create existing datastores for Oracle TimesTen.
2. If you are installing Oracle Exalytics Release 1 Patchset 4 on Oracle Exalytics Release 1 Patchset 3, then rebuild aggregates using the nqcmd utility. For more information, see "Creating and Persisting Aggregates for Oracle BI Server Queries" in *Oracle Fusion Middleware Metadata Repository Builder's Guide for Oracle Business Intelligence Enterprise Edition*.

### 2.2.3.2 Oracle Business Intelligence Enterprise Edition

This section contains the following topics:

- [Section 2.2.3.2.1, "Edit the opmn.xml File"](#)
- [Section 2.2.3.2.2, "Reinstall Oracle Business Intelligence Client Installer"](#)

**2.2.3.2.1 Edit the opmn.xml File** For faster aggregation and better performance, Oracle recommends that you edit the opmn.xml file to include the appropriate elements. Ensure that you edit the opmn.xml file on each Exalytics Machine that is configured in a highly available clustered environment.

**To edit the opmn.xml file to improve aggregation and performance:**

1. Open the opmn.xml file (which is located in MW\_HOME/instances/instance1/config/OPMN/opmn).
2. Insert the following child elements under <ias-component id="coreapplication\_obis1" inherit-environment="true"><environment>:
  - a. `<variable id="ORACLE_BI_TT_DISABLE_REDO_LOGGING" value="1"/>`  
Creates faster aggregation.
  - b. `<variable id="ORACLE_BI_TT_PARALLEL_INDEX_CREATION" value="1"/>`  
Creates indexes in parallel, thereby creating faster aggregation.
  - c. `<variable id="ORACLE_BI_TT_BACKGROUND_CHECKPOINT_INTERVAL" value="5"/>`  
  
This BI Server controlled parameter determines the frequency of Oracle TimesTen datastores that are stored to disk (datastore persistence). The default value is every 10 seconds. The smaller the number of the "value", the more often Oracle TimesTen stores datastores to disk.
3. Stop and start the Notification Server.
  - a. Go to the following directory that contains the OPMN command-line tool:  
MW\_HOME/instances/instance1/bin
  - b. Enter the following command:  
`./opmnctl stopall`  
Stops OPMN and all Oracle Business Intelligence system components.
  - c. Enter the following command:  
`./opmnctl startall`  
Starts OPMN and all Oracle Business Intelligence system components.

**2.2.3.2.2 Reinstall Oracle Business Intelligence Client Installer** For information about installing Oracle Business Intelligence Client Tools, see "Installing and Uninstalling Oracle Business Intelligence Client Tools" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence*.

## 2.2.4 Deinstallation Instructions for the Oracle Exalytics Release 1 Patchset 4

If you experience any problems after installing the patch, then Oracle recommends that you roll back all Oracle Exalytics component patches. Do not rollback one or two individual component patches. Instructions for rollback are included in the component-specific ReadMe files.

If you encounter any issues while applying any patch updates, then contact Oracle Support.

## 2.3 Configuring Flash and Replacing a Defective Flash Card on a Non-Virtual Exalytics Machine

This section contains the following topics:

- [Section 2.3.1, "License to Receive Open Source Code"](#)

- [Section 2.3.2, "Prerequisites for Configuring Flash"](#)
- [Section 2.3.3, "Configuring Flash"](#)
- [Section 2.3.4, "Replacing a Defective Flash Card"](#)

## 2.3.1 License to Receive Open Source Code

The license for each component is located in the documentation, which may be delivered with the Oracle Linux programs or accessed online at <http://oss.oracle.com/linux/legal/oracle-list.html> and/or in the component's source code.

For technology in binary form that is licensed under an open source license that gives you the right to receive the source code for that binary, you may be able to obtain a copy of the applicable source code at these site(s):

<https://edelivery.oracle.com/linux>

If the source code for such technology was not provided to you with the binary, you can also receive a copy of the source code on physical media by submitting a written request to:

Oracle America, Inc.

Attn: Oracle Linux Source Code Requests

Development and Engineering Legal

500 Oracle Parkway, 10th Floor

Redwood Shores, CA 94065

Your request should include:

- The name of the component or binary file(s) for which you are requesting the source code
- The name and version number of the Oracle Software
- The date you received the Oracle Software
- Your name
- Your company name (if applicable)
- Your return mailing address and email
- A telephone number in the event we need to reach you.

We may charge you a fee to cover the cost of physical media and processing. Your request must be sent (i) within three (3) years of the date you received technology that included the component or binary file(s) that are the subject of your request, or (ii) in the case of code licensed under the GPL v3, for as long as Oracle offers spare parts or customer support for that Software model.

## 2.3.2 Prerequisites for Configuring Flash

The following prerequisites must be met before configuring Flash on the Exalytics Machine:

- You are running Exalytics Base Image 1.0.0.5 or higher version.
- Oracle Field Services engineers have installed six Flash cards on the Exalytics Machine.

### 2.3.3 Configuring Flash

When you upgrade to Oracle Exalytics Release 1 Patchset 4, Flash drivers are included in the Exalytics Base Image 1.0.0.6. To improve the performance and storage capacity of the Exalytics Machine you must configure Flash.

---

**Note:** The installed Flash drivers use software RAID.

---

#### To configure Flash:

1. Restart the Exalytics Machine using ILOM.
  - a. Log on to the ILOM web-based interface.
  - b. In ILOM, select **ILOM**, then **Host Management**, and then **Power Cycle**.

The Exalytics Machine restarts.

2. Enter the following command as a root user:

```
# /opt/exalytics/bin/configure_flash.sh --RAID01
```

The following warning, applicable only for software RAID, is displayed: "This flash configuration script will remove any existing RAID arrays, as well as remove any partitions on any flash drives and will create a new RAID array across all these flash drives. This will result in ALL DATA BEING LOST from these drives. Do you still want to proceed with this flash configuration script? (yes/no)"

3. Enter Yes at the prompt to continue running the script.

The output should look similar to the following:

```
[EXALYTICS_INFO:FLASH_CONFIG] Warning response was : yes
[EXALYTICS_INFO:FLASH_CONFIG] The machine has flash drivers installed.
[EXALYTICS_INFO:FLASH_CONFIG] This machine has 6 flash cards
[EXALYTICS_INFO:FLASH_CONFIG] Flash cards appear to be healthy
[EXALYTICS_INFO:FLASH_CONFIG] Fetching some info on installed flash drives ....
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdf
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sde
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdd
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdc
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdj
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdi
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdh
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdg
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdm
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdn
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdl
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdk
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdr
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdq
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdp
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdo
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdv
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdu
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdt
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sds
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdz
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdy
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdx
[EXALYTICS_INFO:FLASH_CONFIG] Removing partitions for /dev/sdw
mdadm: Unrecognised md component device - /dev/sdr
```

```

mdadm: Unrecognised md component device - /dev/sdq
mdadm: Unrecognised md component device - /dev/sdp
mdadm: Unrecognised md component device - /dev/sdo
mdadm: Unrecognised md component device - /dev/sdv
mdadm: Unrecognised md component device - /dev/sdu
mdadm: Unrecognised md component device - /dev/sdt
mdadm: Unrecognised md component device - /dev/sds
mdadm: Unrecognised md component device - /dev/sdz
mdadm: Unrecognised md component device - /dev/sdy
mdadm: Unrecognised md component device - /dev/sdx
mdadm: Unrecognised md component device - /dev/sdw
mdadm: Unrecognised md component device - /dev/sdf
mdadm: Unrecognised md component device - /dev/sde
mdadm: Unrecognised md component device - /dev/sdd
mdadm: Unrecognised md component device - /dev/sdc
mdadm: Unrecognised md component device - /dev/sdj
mdadm: Unrecognised md component device - /dev/sdi
mdadm: Unrecognised md component device - /dev/sdh
mdadm: Unrecognised md component device - /dev/sdg
mdadm: Unrecognised md component device - /dev/sdm
mdadm: Unrecognised md component device - /dev/sdn
mdadm: Unrecognised md component device - /dev/sdl
mdadm: Unrecognised md component device - /dev/sdk
umount: /dev/md1: not found
mdadm: cannot open /dev/md1: No such file or directory
[EXALYTICS_INFO:FLASH_CONFIG] Creating RAID array: /dev/md1, using devices :
/dev/sdr /dev/sdq /dev/sdp /dev/sdo /dev/sdv /dev/sdu /dev/sdt /dev/sds
/dev/sdz /dev/sdy /dev/sdx /dev/sdw
mdadm: array /dev/md1 started.
[EXALYTICS_INFO:FLASH_CONFIG] RAID device created : /dev/md1.
umount: /dev/md2: not found
mdadm: cannot open /dev/md2: No such file or directory
[EXALYTICS_INFO:FLASH_CONFIG] Creating RAID array: /dev/md2, using devices :
/dev/sdf /dev/sde /dev/sdd /dev/sdc /dev/sdj /dev/sdi /dev/sdh /dev/sdg
/dev/sdm /dev/sdn /dev/sdl /dev/sdk
mdadm: array /dev/md2 started.
[EXALYTICS_INFO:FLASH_CONFIG] RAID device created : /dev/md2.
[EXALYTICS_INFO:FLASH_CONFIG] Creating RAID1 array: /dev/md3
umount: /dev/md3: not found
mdadm: cannot open /dev/md3: No such file or directory
[EXALYTICS_INFO:FLASH_CONFIG] Creating RAID array: /dev/md3, using devices
:/dev/md1 /dev/md2
mdadm: array /dev/md3 started.
[EXALYTICS_INFO:FLASH_CONFIG] RAID device created : /dev/md3.
mke2fs 1.39 (29-May-2006)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
146489344 inodes, 292968368 blocks
14648418 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=4294967296
8941 block groups
32768 blocks per group, 32768 fragments per group
16384 inodes per group
Superblock backups stored on blocks:
32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632, 2654208,
4096000, 7962624, 11239424, 20480000, 23887872, 71663616, 78675968,
102400000, 214990848

```

```

Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done

This filesystem will be automatically checked every 21 mounts or
180 days, whichever comes first. Use tune2fs -c or -i to override.
[EXALYTICS_INFO:FLASH_CONFIG] Flash mounted at /u02
[EXALYTICS_INFO:FLASH_CONFIG] RAID config complete and /etc/mdadm.conf updated.
See /var/log/exalytics/exalytics.log for more details
#
    
```

4. To verify that Flash has been configured correctly, enter the following command:

```
# df -h
```

The output should look similar to the following:

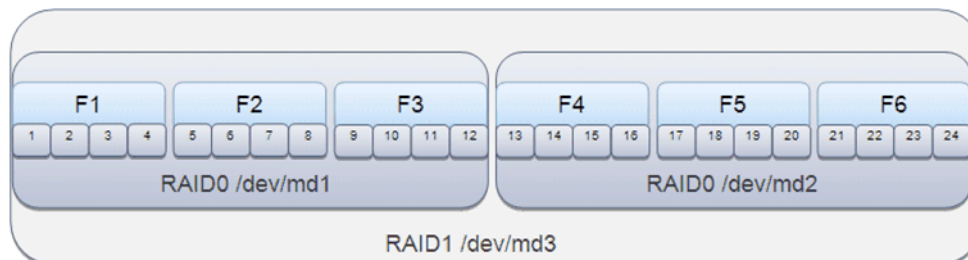
```

Filesystem                Size  Used Avail Use% Mounted on
/dev/mapper/VolGroup00-LogVol00
                          718G  4.4G  677G   1% /
/dev/sda1                  99M   15M   79M  16% /boot
tmpfs                     1010G      0 1010G   0% /dev/shm
/dev/md3                   1.1T   199M  1.1T   1% /u02
    
```

Flash is configured as shown in [Figure 2-1](#).

- Each Flash card (F1, F2, F3, and so on) has four 100 GB drives. Each drive maps to a device, such as /dev/sdg, /dev/sdh, /dev/sdi, /dev/sdj, and so on.
- Three Flash drives are configured on RAID0 /dev/md1 and three Flash drives are configured on RAID0 /dev/md2.
- The two RAID0s are configured on the parent RAID1 /dev/md3.

**Figure 2-1 Flash Configuration on RAID0 and RAID1**



5. To verify the status of Flash cards, enter the following command:

```
# /opt/exalytics/bin/exalytics_CheckFlash.sh
```

The output for all the six Flash cards should look similar to the following:

```

Checking Exalytics Flash Drive Status

Fetching some info on installed flash drives ....
Driver version : 01.250.41.04 (2012.06.04)

Supported number of flash drives detected (6)

Flash card 1 :
Overall health status : GOOD
    
```

```
Size (in MB) : 381468
Capacity (in bytes) : 400000000000
Firmware Version : 108.05.00.00
Devices: /dev/sdf /dev/sde /dev/sdd /dev/sdc

Flash card 2 :
Overall health status : GOOD
Size (in MB) : 381468
Capacity (in bytes) : 400000000000
Firmware Version : 108.05.00.00
Devices: /dev/sdj /dev/sdi /dev/sdh /dev/sdg

Flash card 3 :
Overall health status : GOOD
Size (in MB) : 381468
Capacity (in bytes) : 400000000000
Firmware Version : 108.05.00.00
Devices: /dev/sdn /dev/sdm /dev/sdl /dev/sdk

Flash card 4 :
Overall health status : GOOD
Size (in MB) : 381468
Capacity (in bytes) : 400000000000
Firmware Version : 108.05.00.00
Devices: /dev/sdq /dev/sdp /dev/sdr /dev/sdo

Flash card 5 :
Overall health status : GOOD
Size (in MB) : 381468
Capacity (in bytes) : 400000000000
Firmware Version : 108.05.00.00
Devices: /dev/sdv /dev/sdt /dev/sds /dev/sdu

Flash card 6 :
Overall health status : GOOD
Size (in MB) : 381468
Capacity (in bytes) : 400000000000
Firmware Version : 108.05.00.00
Devices: /dev/sdz /dev/sdy /dev/sdx /dev/sdw

Raid Array Info (/dev/md3):
/dev/md3: 1117.59GiB raid1 2 devices, 0 spares. Use mdadm --detail for more
detail.
/dev/md3: No md super block found, not an md component.

Summary:
Healthy flash drives : 6
Broken flash drives : 0
Pass : Flash card health check passed
```

### 2.3.4 Replacing a Defective Flash Card

If required, you can replace a failed or defective Flash card. The following procedure assumes you have a defective Flash card in *RAID0* */dev/md2*, which is installed on the parent *RAID1* */dev/md3*. See [Figure 2-1](#).

#### To replace a failed or defective Flash card:

1. To verify the status of Flash cards, enter the following command:

```
# /opt/exalytics/bin/exalytics_CheckFlash.sh
```

If a defective Flash card is detected, the output displays an "Overall Health: ERROR" message, and the summary indicates the defective card.

2. To locate the RAID that contains the defective Flash card, enter the following command:

```
# mdadm -D /dev/md3
```

The output should look similar to the following:

```
UUID : d97f9d32:906da3fd:bfa0390d:8ae3c2a3
```

```
Events : 0.39
```

Number	Major	Minor	RaidDevice	State	
0	9	1	0	active sync	/dev/md1
1	0	0	1	removed	
2	9	2	-	faulty spare	/dev/md2

---

**Note:** Notice the defective card in *RAID0 /dev/md2*. Also, make a note of the UUID number at the top of the display. You need the number later when you re-assemble RAID1.

---

3. To view all RAID configurations and their devices, enter the following command:

```
# mdadm --detail --scan --verbose
```

The output displays all RAID configurations and the devices used in each RAID. The output should look similar to the following:

```
ARRAY /dev/md1 level=raid0 num-devices=12 metadata=0.90
UUID=376793cb:2f25b327:66540b80:9a9099f7
devices=/dev/sds,/dev/sdr,/dev/sdq,/dev/sdp,/dev/sdu,/dev/sdw,/dev/sdv,/dev/sdt
,/dev/sdaa,/dev/sdz,/dev/sdy,/dev/sdx
ARRAY /dev/md2 level=raid0 num-devices=12 metadata=0.90
UUID=d79a8086:ec3d74a5:afe93883:9398ea21
devices=/dev/sdg,/dev/sdf,/dev/sde,/dev/sdk,/dev/sdh,/dev/sdj,/dev/sdi,/dev/sdo
,/dev/sdn,/dev/sdm,/dev/sdl
ARRAY /dev/md3 level=raid1 num-devices=2 metadata=0.90
UUID=d45effbc:ca983d64:468f8a99:fa267141
devices=/dev/md1,/dev/md2
```

---

**Note:** The following steps assume that a defective Flash card mapped to device */dev/sdd* in *RAID0 /dev/md2* was detected. In this example, the device */dev/sdd* is replaced by device */dev/sdab*.

---

4. To display the defective Flash card in *RAID0 /dev/md2*, enter the following command:

```
# mdadm -D /dev/md2
```

The output should look similar to the following:

Number	Major	Minor	RaidDevice	State	
0	8	96	0	active sync	/dev/sdg
1	8	80	1	active sync	/dev/sdf
2	8	64	2	active sync	/dev/sde
3	8	48	3	active sync	
4	8	160	4	active sync	/dev/sdk

5	8	112	5	active sync	/dev/sdh
6	8	144	6	active sync	/dev/sdj
7	8	128	7	active sync	/dev/sdi
8	8	224	8	active sync	/dev/sdo
9	8	208	9	active sync	/dev/sdn
10	8	192	10	active sync	/dev/sdm
11	8	176	11	active sync	/dev/sdl

---

**Note:** Notice the missing device (*/dev/sdd*) at number 3. In this example, this is replaced by */dev/sdab*. Also, take note of the other devices (*/dev/sdg*, */dev/sdf*, */dev/sde*, */dev/sdk*, and so on). You need these devices to rebuild RAID0 after installing the new Flash card.

---

5. Shut down and unplug the Exalytics Machine.
6. Replace the defective Flash card.
7. Restart the Exalytics Machine.

---

**Note:** You can also start the Exalytics Machine using Integrated Lights Out Manager (ILOM).

---

8. To learn which devices are mapped to the new Flash card, enter the following command:

```
# /opt/exalytics/bin/exalytics_CheckFlash.sh
```

Devices mapped to the new Flash card are displayed. In this example, the old device (*/dev/sdd*) mapped to the defective Flash card is replaced with a new device (*/dev/sdab*).

9. To unmount and stop RAID1, enter the following commands:

```
# umount /dev/md3
# mdadm --stop /dev/md3
```

10. To stop the failed RAID0, enter the following command:

```
# mdadm --stop /dev/md2
```

11. To re-assemble the failed RAID0, enter the following command:

```
# mdadm /dev/md2 --create /dev/sdg /dev/sdf /dev/sde /dev/sdk /dev/sdh
/dev/sdj /dev/sdi /dev/sdo /dev/sdn /dev/sdm /dev/sdl /dev/sdab
```

---

**Note:** As previously noted, the old device (*/dev/sdd*) is replaced with the new device (*/dev/sdab*).

---

The RAID0 restarts.

12. To check the health of the repaired RAID0, enter the following command:

```
# mdadm -D /dev/md2
```

13. Confirm that twelve active devices are listed.

If all twelve devices are not listed, run the `/opt/exalytics/bin/exalytics_CheckFlash.sh` script again, locate and fix the error and then check the health of the repaired RAID0. Repeat this until all twelve devices are listed.

14. To re-assemble the parent RAID1, enter the following command:

```
# mdadm /dev/md3 --assemble -u <UUID number>
```

15. To check the health of the repaired RAID1, enter the following command:

```
# mdadm -D /dev/md3
```

The output from the command shows RAID1 as running, but it shows *RAID0 /dev/md2* as missing, which you need to re-add.

16. To re-add the rebuilt *RAID0 /dev/md2* into *RAID1 /dev/md3*, enter the following command:

```
# mdadm /dev/md3 --re-add /dev/md2
```

17. To re-check the health of RAID1, enter the following command:

```
# mdadm -D /dev/md3
```

RAID1 starts rebuilding. Monitor the output and confirm that the process completes. The output should look similar to the following:

```
Rebuild Status : 2% complete
  Number   Major   Minor   RaidDevice State
    0         9       1         0   active sync   /dev/md1
    2         9       2         1   spare rebuilding /dev/md2
```

18. To recreate the `mdadm.conf` configuration file, which ensures that RAID details are maintained when you restart the Exalytics Machine, enter the following command:

```
# mdadm --detail --scan --verbose > /etc/mdadm.conf
```

---

---

**Note:** If you have other customizations in the `mdadm.conf` configuration file (such as updating the list of devices that are mapped to each RAID), you must manually edit the file.

---

---

19. To remount `/dev/md3`, enter the following command:

```
# mount /dev/md3 /u02
```



---

## Configuring Exalytics Machine for Virtualization

This chapter describes the tasks to perform when configuring X2-4 and X3-4 Exalytics Machines for virtualization. The tasks include deploying Oracle Virtual Machine Server (Oracle VM Server) on the Exalytics Machine, configuring Oracle VM Server with Oracle Virtual Machine Manager (Oracle VM Manager), and deploying VM templates.

This chapter includes the following sections:

- [Section 3.1, "Configuring New Installations for Virtualization"](#)
- [Section 3.2, "Configuring Existing Installations for Virtualization"](#)
- [Section 3.3, "Upgrading Oracle VM Manager and Oracle VM Server to 3.2.7"](#)
- [Section 3.4, "Applying Oracle Exalytics Release 1 Patchset 4 on a Virtualized Environment"](#)
- [Section 3.5, "Installing and Configuring Application Software on Virtual Machines"](#)
- [Section 3.6, "Maintaining Virtual Machines"](#)

### 3.1 Configuring New Installations for Virtualization

This section includes the following topics:

- [Section 3.1.1, "Before You Virtualize an Exalytics Machine"](#)
- [Section 3.1.2, "Configuring an Exalytics Machine for Virtualization"](#)

#### 3.1.1 Before You Virtualize an Exalytics Machine

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

- [Section 3.1.1.1, "Documents to Review"](#)
- [Section 3.1.1.2, "Prerequisites for Configuring Exalytics Machines for Virtualization"](#)
- [Section 3.1.1.3, "Removing Existing Partitions"](#)
- [Section 3.1.1.4, "Reconfiguring Existing RAID Configurations on the Exalytics Machine"](#)

### 3.1.1.1 Documents to Review

As you prepare to virtualize an Exalytics Machine, do the following:

- Review the *Oracle VM Release Notes*, to ensure that you understand the differences between Oracle Virtual Machine and its documented functionality, and any other issues that apply to the current release.
- Review *Oracle VM Installation and Upgrade Guide for Release 3.2.1* and *Oracle VM User's Guide for Release 3.2.1* to ensure that you understand how to install and configure Oracle Virtual Machine Server, set up networking, and create virtual machines.
- Review *Oracle Exalytics In-Memory Machine Owner's Guide* to ensure that you have properly configured and commissioned the Exalytics Machine in your data center.

### 3.1.1.2 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 (ILOM) 3.1.2.24 or later, 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.
- A Linux environment is available to install Oracle VM Manager.
- A database server is available to install Oracle VM Manager schemas.

For information about hardware and software specifications, see *Oracle VM Installation and Upgrade Guide for Release 3.2.1*.

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

### 3.1.1.3 Removing Existing Partitions

If required, remove the existing partition on `/dev/sdb` which is mounted to `/u01` from the Exalytics Machine. You cannot create a repository on a Oracle Virtual Machine disk which contains a partition.

---

---

**Note:** Before removing the existing partition, remember to back up all data on `sdb1`. If you are removing the existing partition on a new machine, you do not need to back up your data.

---

---

#### To remove existing partitions:

1. Log in as the root user, and enter the following command to run the disk partition utility:

```
# parted /dev/sdb
```

The output should look similar to the following:

```
GNU Parted 1.8.1
Using /dev/sdb
```

Welcome to GNU Parted! Type 'help' to view a list of commands.

2. To display the existing partition, enter the following command:

```
# print
```

3. To remove the existing partition, enter the following command:

```
# rm 1
```

4. To confirm that the existing partition has been removed, enter the following command:

```
# print
```

The existing partition is removed.

### 3.1.1.4 Reconfiguring Existing RAID Configurations on the Exalytics Machine

This section consists of the following topics.

- [Section 3.1.1.4.1, "Reconfiguring Existing RAID Configurations on the X2-4 Exalytics Machine"](#)
- [Section 3.1.1.4.2, "Reconfiguring Existing RAID Configurations on the X3-4 Exalytics Machine"](#)
- [Section 3.1.1.4.3, "Resetting RAID Configuration \(Optional\)"](#)

**3.1.1.4.1 Reconfiguring Existing RAID Configurations on the X2-4 Exalytics Machine** The X2-4 Exalytics Machine comprises six hard disks, each having a capacity of 600 GB. Two disks are configured as RAID1 and four disks are configured as RAID5. To optimize the use of the disk space, you must reconfigure the RAID1 and RAID5 configurations on the Exalytics Machine. Reconfigure RAID1 so that it consists of two virtual drives of 100 GB and 457 GB, and RAID5 consists of the remaining drives.

**To reconfigure existing RAID configurations on the X2-4 Exalytics Machine:**

1. Restart the Exalytics Machine using Integrated Lights Out Manager (ILOM).
2. Press **Ctrl+Y** and enter RAID CLI (Command Line Interface) as the Exalytics Machine is restarting.

---

**Note:** The "Copyright LSI Logic Corporation" displays during the restart sequence when it is possible to enter the RAID CLI. Observe the screen carefully as the message displays for a very short time. This avoids restarting the machine again.

---

3. Enter the following MegaRAID command to delete the existing RAID configuration:

```
# -CfgLdDel -LALL -a0
```

4. Enter the following command to create a RAID1 partition with two virtual disks of size 100 GB and 457 GB:

```
# -CfgLdAdd -r1[252:0, 252:1] WB Direct NoCachedBadBBU -sz102400  
-sz467968 -a0
```

5. Enter the following command to create a RAID5 partition with the remaining disks:

```
# -CfgLdAdd -r5[252:2, 252:3, 252:4, 252:5] WB Direct NoCachedBadBBU  
-a0
```

6. In ILOM, select **ILOM**, then **Host Management**, and then **Power Cycle**.

The Exalytics Machine restarts.

**3.1.1.4.2 Reconfiguring Existing RAID Configurations on the X3-4 Exalytics Machine** The X3-4 Exalytics Machine comprises 6 hard disks, each having a capacity of 900 GB. Two disks are configured as RAID1 and four disks are configured as RAID5. To optimize the use of the disk space, you must reconfigure the RAID1 and RAID5 configurations on the Exalytics Machine. Reconfigure RAID1 so that it consists of two virtual drives of 100 GB and 657 GB, and RAID5 consists of the remaining drives.

**To reconfigure existing RAID configurations on the X3-4 Exalytics Machine:**

1. Restart the Exalytics Machine using Integrated Lights Out Manager (ILOM).
2. Press **Ctrl+Y** and enter RAID CLI (Command Line Interface) as the Exalytics Machine is restarting.

---

**Note:** The "Copyright LSI Logic Corporation" displays during the restart sequence when it is possible to enter the RAID CLI. Observe the screen carefully as the message displays for a very short time. This avoids restarting the machine again.

---

3. Enter the following MegaRAID command to delete the existing RAID configuration:

```
# -CfgLdDel -LALL -a0
```

4. Enter the following command to create a RAID1 partition with two virtual disks of size 100 GB and 657 GB:

```
# -CfgLdAdd -r1[252:0, 252:1] WB Direct NoCachedBadBBU -sz102400  
-sz672768 -a0
```

5. Enter the following command to create a RAID5 partition with the remaining disks:

```
# -CfgLdAdd -r5[252:2, 252:3, 252:4, 252:5] WB Direct NoCachedBadBBU  
-a0
```

6. In ILOM, select **ILOM**, then **Host Management**, and then **Power Cycle**.

The Exalytics Machine restarts.

**3.1.1.4.3 Resetting RAID Configuration (Optional)** If you are on a virtual Exalytics virtualization and want to revert back to a nonvirtual Exalytics deployment, you must reset the RAID configuration by performing the following steps:

**To reset RAID configuration:**

1. Restart the Exalytics Machine using Integrated Lights Out Manager (ILOM).
2. Press **Ctrl+Y** and enter RAID CLI (Command Line Interface) as the Exalytics Machine is restarting.

---

**Note:** The "Copyright LSI Logic Corporation" displays during the restart sequence when it is possible to enter the RAID CLI. Observe the screen carefully as the message displays for a very short time. This avoids restarting the machine again.

---

3. Enter the following MegaRAID command to delete the existing RAID configuration:

```
# -CfgLdDel -LALL -a0
```

4. Enter the following command to restore the RAID1 partition to an Exalytics deployment:

```
# -CfgLdAdd -r1[252:0, 252:1] WB Direct NoCachedBadBBU -a0
```

5. Enter the following command to create a RAID5 partition with the remaining disks:

```
# -CfgLdAdd -r5[252:2, 252:3, 252:4, 252:5] WB Direct NoCachedBadBBU -a0
```

6. In ILOM, select **ILOM**, then **Host Management**, and then **Power Cycle**.

The Exalytics Machine restarts.

## 3.1.2 Configuring an Exalytics Machine for Virtualization

This section includes the following topics:

- [Section 3.1.2.1, "Installing and Configuring Oracle VM Server"](#)
- [Section 3.1.2.2, "Installing and Configuring Oracle VM Manager"](#)
- [Section 3.1.2.3, "Creating Virtual Machines"](#)

### 3.1.2.1 Installing and Configuring Oracle VM Server

Oracle VM Server is a managed virtualization environment providing a secure, server-based platform for running virtual machines. Before you can create a virtual machine you must first install Oracle VM Server on the Exalytics Machine.

If you are a new customer, you must install and configure Oracle VM Server 3.0.3 before you can upgrade to Oracle VM Server 3.2.7.

This section includes the following topics:

- [Section 3.1.2.1.1, "Installing Oracle VM Server 3.0.3 \(Base Image 2.0.1.1\)"](#)
- [Section 3.1.2.1.2, "Configuring the Network on Oracle VM Server"](#)
- [Section 3.1.2.1.3, "Upgrading Oracle VM Server 3.0.3 \(Base Image 2.0.1.1\) to Oracle VM Server 3.2.7"](#)

#### 3.1.2.1.1 Installing Oracle VM Server 3.0.3 (Base Image 2.0.1.1) To install Oracle VM Server 3.0.3:

1. Download and save the Oracle Exalytics Base Image 2.0.1.1.0 for Exalytics Oracle VM x86-64 (Part Number V34491-01), by performing the following steps:
  - a. Navigate to the Oracle Software Delivery Cloud web site at the following link:  
<http://edelivery.oracle.com>
  - b. In the Select a Product Pack list, select **Oracle Business Intelligence**.

- c. In the Platform list, select **Linux X86-64**.
  - d. Click **Go**.
  - e. Select **Oracle Exalytics Software Media Pack for Linux x86-64 Release: 1.0.0.4.0**.
  - f. Click **Continue**.
  - g. Download Oracle Exalytics Base Image 2.0.1.1.0 for Exalytics Oracle VM x86-64 Part Number: V34491-01.  
The base image contains the Oracle VM Server 3.0.3.
  - h. Save it to a local directory.
2. On the Exalytics Machine, connect and log on to Oracle Integrated Lights Out Manager (ILOM).
  3. In ILOM, select **Remote Control**, then **Redirection**, then **Storage Redirection**, and then **Launch Service**.  
The ILOM remote console is displayed.
  4. From the menu bar, select **Devices** and then **CD-ROM Image** to link the Oracle VM Server image as a remote virtual CD-ROM in ILOM.
  5. Perform the following action to restart the machine:
    - In ILOM, select **ILOM**, then **Host Management**, and then **Power Cycle**.
  6. In ILOM, select **Host Management**, then **Host Control**, and then **Next Boot Device**.  
The setting for the Next Boot Device is displayed.
  7. Perform the following steps to move CD-ROM to the top of the BOOT menu:
    - a. In the Next Boot Device list, select **CD-ROM**.
    - b. Click **Save**.
  8. In ILOM, select **ILOM**, then **Host Management**, and then **Power Cycle**.  
The Exalytics Machine restarts and displays the Oracle VM Server screen.
  9. Press **Enter** to install Oracle VM Server.  
The Oracle VM Server is installed on the Exalytics Machine. After Oracle VM Server is installed, the Exalytics Machine restarts automatically.
  10. From the menu bar, select **Devices**, and then deselect **CD-ROM Image**.
  11. From the menu bar, select **Devices**, and then **Save as host defaults**.
  12. In ILOM, select **ILOM**, then **Host Management**, and then **Power Cycle**.  
The Exalytics Machine is ready for configuration.
  13. Log on to Oracle VM Server, and enter the following command to inspect the RAID configuration:

```
/opt/MegaRAID/MegaCli/MegaCli64 -LDinfo -LALL -aALL
```

**3.1.2.1.2 Configuring the Network on Oracle VM Server** Before configuring the network, ensure that the Exalytics network configuration is complete.

**To configure the network on Oracle VM Server:**

After the Exalytics Machine restarts, perform the following actions:

1. Enter "I" to access the interactive mode.
2. At the prompt, enter the following information:
  - a. Enter 3 for Full Rack and confirm your entry.
  - b. Enter 1 for Node Index.
  - c. Enter a network configuration that does not conflict with existing networks. For example, enter 192.168.21.112.
  - d. Enter a network configuration that does not conflict with existing networks. For example, enter 255.255.255.0.
  - e. Enter the system IP address for the ethernet bond0.
  - f. Enter the bond0 netmask and gateway addresses.
  - g. Enter the host name.
  - h. Enter the domain.

The Exalytics Machine restarts automatically.

**3.1.2.1.3 Upgrading Oracle VM Server 3.0.3 (Base Image 2.0.1.1) to Oracle VM Server 3.2.7** To upgrade Oracle VM Server 3.0.3 to Oracle VM Server 3.2.7, see ["Upgrading Oracle VM Server 3.0.3 \(Base Image 2.0.1.1\) or Higher Version to Oracle VM Server 3.2.7"](#).

### 3.1.2.2 Installing and Configuring Oracle VM Manager

Oracle VM Manager provides a graphical user interface to manage Oracle VM Servers, virtual machines, and resources. You use Oracle VM Manager to create virtual machines and server pools, import VM templates, and manage networks and storage.

If you are a new customer, you can install Oracle VM Manager 3.2.7 directly.

This section includes the following topics:

- [Section 3.1.2.2.1, "Installing Oracle VM Manager 3.2.7"](#)
- [Section 3.1.2.2.2, "Discovering Oracle VM Servers"](#)
- [Section 3.1.2.2.3, "Creating Virtual Network Interface Controllers"](#)
- [Section 3.1.2.2.4, "Creating Server Pools and Adding a Server"](#)
- [Section 3.1.2.2.5, "Creating an Exalytics Repository"](#)

**3.1.2.2.1 Installing Oracle VM Manager 3.2.7** Oracle recommends that you install Oracle VM Manager on a separate machine than the Exalytics Machine, preferably colocated geographically within Oracle VM Server.

#### To install Oracle VM Manager 3.2.7:

1. Download Oracle VM Manager 3.2.7 (Part Number V42727-01) from the Oracle Software Delivery Cloud web site at the following link:  
<http://edelivery.oracle.com/oraclevm>
2. Install Oracle VM Manager 3.2.7. For instructions, see Chapter 4, "Installing Oracle VM Manager" in *Oracle VM Installation and Upgrade Guide for Release 3.2.1*.

**3.1.2.2.2 Discovering Oracle VM Servers** Adding Oracle VM Servers to your Oracle VM Manager environment is known as discovering Oracle VM Servers. Discovering servers is the first step to configuring the virtualization environment.

#### To discover Oracle VM Servers:

1. Connect to Oracle VM Manager.
2. Select the **Servers and VMs** tab.
3. In the left pane, right-click **Server Pools**, and then select **Discover Servers**.  
The Discover Dialog box is displayed.
4. Enter the following information for the server:
  - a. Oracle VM Agent Port. The default port number is 8899.
  - b. Oracle VM Agent Password. The default password is "oracle".
  - c. IP Address.
5. Click **OK**.  
Oracle VM Server and its details, including number of processors, IP address, processor speed, RAM, networking ports and configuration are discovered and added to the Unassigned Servers folder.

For more information, see "Chapter 6, Managing Server Pools and Oracle VM Servers" in *Oracle VM User's Guide for Release 3.2.1*.

**3.1.2.2.3 Creating Virtual Network Interface Controllers** A Virtual Network Interface Controller (VNIC) is used by virtual machines as network cards. You create virtual network interfaces by defining a range of MAC addresses to use for each VNIC. Each MAC address corresponds with a single virtual Network Interface Controller (NIC), which is used by a virtual machine.

**To create Virtual Network Interface Controllers:**

1. Log on to Oracle VM Manager.
2. Select the **Servers and VMs** tab.
3. In the left pane, right-click **Server Pools**, and then select **Create VNICs**.  
The MAC selector panel is displayed.
4. Click **Next** to retrieve the next available MAC addresses.
5. Select the number of addresses that you want to create, and click **Create**.

---

**Note:** Select the number of addresses that corresponds to the number of virtual machines you are deploying.

---

The VNICs are created and listed in the Virtual NIC table.

6. Click **Close**.

For more information, see "Chapter 7, Managing Virtual Machines" in *Oracle VM User's Guide for Release 3.2.1*.

**3.1.2.2.4 Creating Server Pools and Adding a Server** A server pool consists of at least one Oracle VM Server. If you find a server pool does not have sufficient resources, such as CPU or memory, to run the virtual machines, you can expand the server pool by adding more Oracle VM Servers.

Before creating a server pool, you must have:

- An IP address for the server pool
- An IP address for each virtual machine

- The password to access the Oracle VM Agent installed on Oracle VM Server

For information on creating server pools and adding servers, see "Chapter 6, Managing Server Pools and Oracle VM Servers" in *Oracle VM User's Guide for Release 3.2.1*.

---

**Note:** When creating a server pool, you must deselect the Activate Cluster option.

---

**3.1.2.2.5 Creating an Exalytics Repository** A repository stores Oracle VM resources, such as virtual machines, templates for creating virtual machines, virtual machine assemblies, and so on.

---

**Note:** Oracle recommends that you create a repository on each physical disk available. Use the smaller repository to store Oracle VM templates and cloned virtual machines and the larger repository to store virtual disks that are assigned to the virtual machines.

---

You use Oracle VM Manager to create and configure Exalytics repositories, and to present the repositories to Oracle VM Servers.

**To create an Exalytics repository:**

1. Log on to Oracle VM Manager.
2. Select the **Repositories** tab.
3. In the toolbar, click **Create New Repository** to display the Create a Data Repository dialog.
4. Perform the following actions:
  - a. In the Repository Name field, enter the name for the repository.
  - b. For Repository Location, select **Physical Disk** and click **Search**.
  - c. From the drop-down list, select a local storage array and select the smaller of the two storage disks.
  - d. Click **OK**.
  - e. Select the server pool for the repository.
  - f. Click **Next**.

The new repository is available to be presented to Oracle VM Server. To enable your Oracle VM Server to use the repository, you must present the repository to Oracle VM Server.

5. Select and move Oracle VM Server from the *Servers* field to the *Present to Server(s)* field and click **Finish**.

The repository is listed in the Repository tab.

For more information, see "Chapter 4, Managing Storage" in *Oracle VM User's Guide for Release 3.2.1*.

### 3.1.2.3 Creating Virtual Machines

You use virtual templates to create virtual machines. The process of creating a virtual machine from a template is known as cloning. Before you create virtual machines, ensure that you have the following resources available:

- A server pool
- An Oracle VM Server
- VM templates

The process of creating virtual machines from templates consists of the following steps:

- [Section 3.1.2.3.1, "Downloading VM Templates"](#)
- [Section 3.1.2.3.2, "Importing VM Templates into Oracle VM Manager"](#)
- [Section 3.1.2.3.3, "Creating Virtual Machines from VM Templates"](#)

#### 3.1.2.3.1 Downloading VM Templates To download VM templates:

1. Download and save the Exalytics Oracle VM Template 2.0.1.1.0 for Exalytics Oracle VM x86-64, by performing the following steps:
  - a. Navigate to the Oracle Software Delivery Cloud web site at the following link:  
<http://edelivery.oracle.com>
  - b. In the Select a Product Pack list, select **Oracle Business Intelligence**.
  - c. In the Platform list, select **Linux X86-64**.
  - d. Click **Go**.
  - e. Select **Oracle Exalytics Software Media Pack for Linux x86-64 Release: 1.0.0.4.0**.
  - f. Click **Continue**.
  - g. Download the Oracle Exalytics Oracle VM Template 2.0.1.1.0 for Exalytics Oracle VM x86-64, Part Number: V34468-01.
  - h. Save it on a web server.

**3.1.2.3.2 Importing VM Templates into Oracle VM Manager** After downloading the templates, you import them into Oracle VM Manager.

#### To import VM templates into Oracle VM Manager:

1. Log on to Oracle VM Manager.
2. Select the **Repositories** tab.
3. In the left pane, select the Repository in which you want to store the template.
4. Select **VM Templates**.
5. In the toolbar, click **Import VM Template** to display the Import VM Template dialog.
6. Select the Oracle VM Server and enter the URL or FTP server to the VM template that you downloaded on the web server.
7. Click **OK** to import the VM template.

**3.1.2.3.3 Creating Virtual Machines from VM Templates** After importing the template in Oracle VM Manager, you use the template to create a virtual machine.

---

**Note:** Oracle recommends that you use Oracle VM Manager to create virtual disks of the sizes required for your system on the larger repository. Associate these virtual disks with the virtual machines deployed on your system. These virtual disks provide enough storage for installing the Exalytics software and the various files associated with the Exalytics Machine.

---

**To create virtual machines from a VM template:**

1. Log on to Oracle VM Manager.
2. Select the **Servers and VMs** tab.
3. In the left pane toolbar, click **Create Virtual Machine**.  
The Create Virtual Machine dialog is displayed.
4. Select **Clone from an existing VM Template**.
5. Perform the following actions:
  - a. In the Clone Count list, select the number of machines you want to clone.
  - b. In the Repository list, select a repository for the machine.
  - c. In the VM Template list, select the VM template from which you want to create the virtual machine.
  - d. Enter a name for the virtual machine.
  - e. In the Server Pool list, select a server pool.
  - f. Enter a description for the virtual machine.
6. Click **Finish**.

The virtual machine is created and is ready to be configured.

For more information, see "Chapter 7, Managing Virtual Machines" in *Oracle VM User's Guide for Release 3.2.1*.

## 3.2 Configuring Existing Installations for Virtualization

If you are an existing customer running Oracle VM 3.0.3 or a higher version, you must perform the following tasks:

- Upgrade to Oracle VM Server 3.2.7 and Oracle VM Manager 3.2.7. See [Section 3.3, "Upgrading Oracle VM Manager and Oracle VM Server to 3.2.7."](#)
- Apply Oracle Exalytics Release 1 Patchset 4 on the virtualized environment. See [Section 3.4, "Applying Oracle Exalytics Release 1 Patchset 4 on a Virtualized Environment."](#)

## 3.3 Upgrading Oracle VM Manager and Oracle VM Server to 3.2.7

This section includes the following topics:

- [Section 3.3.1, "Upgrading Oracle VM Server 3.0.3 \(Base Image 2.0.1.1\) or Higher Version to Oracle VM Server 3.2.7"](#)

- [Section 3.3.2, "Upgrading Oracle VM Manager 3.0.3 or Higher Version to Oracle VM Manager 3.2.7"](#)

---

**Note:** Oracle recommends that you use the same release version of Oracle VM Manager and Oracle VM Server.

---

### 3.3.1 Upgrading Oracle VM Server 3.0.3 (Base Image 2.0.1.1) or Higher Version to Oracle VM Server 3.2.7

If you are a new or existing customer running Oracle VM Server 3.0.3 or higher version, you must upgrade to Oracle VM Server 3.2.7. For instructions, see ["Upgrading Oracle VM Server 3.0.3 \(Base Image 2.0.1.1\) or Higher Version to Oracle VM Server 3.2.7"](#).

### 3.3.2 Upgrading Oracle VM Manager 3.0.3 or Higher Version to Oracle VM Manager 3.2.7

---

**Note:** If you have already installed Oracle VM Server 3.2.7, you can ignore this section.

---

If you are an existing customer running Oracle VM Manager 3.0.3 or higher version, you must upgrade to Oracle VM Manager 3.2.7. For instructions, see ["Upgrading Oracle VM Manager 3.0.3 or Higher Version to Oracle VM Manager 3.2.7"](#).

## 3.4 Applying Oracle Exalytics Release 1 Patchset 4 on a Virtualized Environment

Both new and existing customers must apply Release 1 Patchset 4 (1.0.0.4) on the virtualized environment. For instructions, see [Section 2.2.2.2, "Applying Oracle Exalytics Release 1 Patchset 4 \(1.0.0.4\) on an Exalytics Machine Configured for Virtualization."](#)

## 3.5 Installing and Configuring Application Software on Virtual Machines

---

**Note:** If you are an existing customer and have already installed and configured software on the virtual Exalytics Machine, you can ignore this section.

---

The process of installing Exalytics software on virtual machines is identical to installing the software on the non-virtual 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 or creating huge pages.

This section consists of the following topics:

- [Section 3.5.1, "Prerequisites to Installing and Configuring Exalytics Software on Virtual Machines"](#)
- [Section 3.5.2, "Installing and Configuring Exalytics Software on Virtual Machines"](#)

### 3.5.1 Prerequisites to Installing and Configuring Exalytics Software on Virtual Machines

The following prerequisites must be met before installing the Exalytics software on the virtual machines:

- You have created a virtual machine.
- You have created a virtual disk and associated it with the virtual machines.

### 3.5.2 Installing and Configuring Exalytics Software on Virtual Machines

This section consists of the following topics:

- [Section 3.5.2.1, "Creating and Mounting a /u01 Partition"](#)
- [Section 3.5.2.2, "Modifying the Oracle User and Granting Permissions"](#)
- [Section 3.5.2.3, "Installing Application Software Components"](#)

#### 3.5.2.1 Creating and Mounting a /u01 Partition

Before you can install the Exalytics software, you create and mount a /u01 partition on the virtual disk.

---

**Note:** The following procedure assumes the /u01 partition size of 1.6TB. Depending on your specific needs and configuration, you can use a different size for the /u01 partition.

---

#### To create and mount a /u01 partition:

After logging in as the root user, configure the /u01 directory on the virtual disk using commands such as the following ones:

1. To create a partition, enter the following commands:

```
parted /dev/xvdb
GNU Parted 1.8.1
Using /dev/xvdb
Welcome to GNU Parted! Type 'help' to view a list of commands.
(parted) mklabel msdos
(parted) mkpart primary 0 1600GB
(parted) print
```

```
Model: Xen Virtual Block Device (xvd)
Disk /dev/xvdb: 1600GB
Sector size (logical/physical): 512B/512B
Partition Table: msdos
```

Number	Start	End	Size	Type	File system	Flags
1	32.3kB	1600GB	1600GB	primary		

```
(parted) quit
```

2. To create logical volume, enter the following commands:

```
lvm pvcreate /dev/xvdb1
```

```
Physical volume "/dev/xvdb1" successfully created
```

```
lvm vgcreate VolGroup01 /dev/xvdb1
```

```
Volume group "VolGroup01" successfully created
```

3. To view free extents on VolGroup01, enter the following commands:

```
vgs -o +vg_free_count,vg_extent_count
```

VG	#PV	#LV	#SN	Attr	VSize	VFree	Free	Ext
VolGroup01	1	0	0	wz--n-	1.46T	1.46T	381469	381469

```
lvm lvcreate --extents 381469 --name LogVol100 VolGroup01
```

```
Logical volume "LogVol100" created
```

4. To create a file system, enter the following command:

```
mkfs.ext3 /dev/VolGroup01/LogVol100
```

5. Add the following line to the /etc/fstab file:

```
/dev/VolGroup01/LogVol100 /u01 ext3 defaults
0 0
```

6. To mount the directory, enter the following commands:

```
mkdir /u01
```

```
mount /u01
```

7. Verify that the partition has been created by entering the following command:

```
df -lh
```

### 3.5.2.2 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.

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

---

---

**Note:** To add a different user and group, enter the following commands as a root user:

```
groupadd <name of the group>
```

```
useradd -g <name of the group> <name of the user>
```

---

---

**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.

### 3.5.2.3 Installing Application Software Components

The process of installing application software components on a virtual Exalytics Machine is similar to installing them on the non-virtualized Exalytics Machine. See [Chapter 4, "Installing Software on an Exalytics Machine."](#)

## 3.6 Maintaining Virtual Machines

This section includes the following topics:

- [Section 3.6.1, "Viewing Virtual Machine Information and Events"](#)
- [Section 3.6.2, "Configuring and Starting a Virtual Machine"](#)
- [Section 3.6.3, "Configuring a Network on a Virtual Machine"](#)
- [Section 3.6.4, "Configuring a Virtual Machine for HVM with PV Drivers"](#)
- [Section 3.6.5, "Configuring SWAP on a Virtual Machine"](#)

### 3.6.1 Viewing Virtual Machine Information and Events

You can view virtual machine details and jobs associated with the virtual machine.

**To view virtual machine information details:**

1. Log on to Oracle VM Manager.
2. Select the **Servers and VMs** tab.
3. In the left pane, select the server pool on which the virtual machine resides.
4. From the Perspective list, select **Virtual Machines**.
5. In the Management pane, select a virtual machine.
6. Click the expand arrow to the left of the selected virtual machine.

The following tabs are displayed:

- **Configuration:** Displays general information about the virtual machine, such as the minimum and maximum memory and processors, operating system, domain type, high availability status, and so on.
- **Networks:** Displays networks and VNICs used in the virtual machine.
- **Disks:** Displays virtual and physical disks attached to the virtual machine.

**To view virtual machine events:**

1. Log on to Oracle VM Manager.
2. Select the **Servers and VMs** tab.
3. In the left pane, select the server pool on which the virtual machine resides.
4. From the Perspective list, select **Virtual Machines**.
5. In the Management pane, select a virtual machine.
6. In the toolbar, click **Display Selected VM Events**.  
The Events dialog is displayed.
7. Review the jobs associated with the virtual machine.

For more information, see "Chapter 7, Managing Virtual Machines" in *Oracle VM User's Guide for Release 3.2.1*.

### 3.6.2 Configuring and Starting a Virtual Machine

You start a virtual machine from Oracle VM Manager.

**To configure and start a virtual machine:**

1. Log on to Oracle VM Manager.
2. Select the **Servers and VMs** tab.
3. In the left pane, select the server pool on which the virtual machine resides.
4. From the Perspective list, select **Virtual Machines**.
5. In the Management pane, select a virtual machine, and from the toolbar click the **Edit**.  
The Edit Virtual Machine dialog is displayed.
6. Select the **Configuration** tab.
7. Select the necessary configuration for the virtual machine, and click **OK**.
8. Select the **Networks** tab.
9. Select and assign a VNIC to the virtual machine, and click **OK**.
10. Select the **Disks** tab.
11. Select and allocate the virtual disk to the virtual machine.
12. Click **OK**.
13. From the toolbar, click **Start**.

The virtual machine starts.

For more information, see "Chapter 7, Managing Virtual Machines" in *Oracle VM User's Guide for Release 3.2.1*.

### 3.6.3 Configuring a Network on a Virtual Machine

After starting a virtual machine, you then configure the network on the virtual machine to enable it to access the network.

**To configure a network on the virtual machine:**

1. Log on to Oracle VM Server.
2. Enter the following command:

```
xm list
```

The Domain-0 and UUID number for the virtual machine are displayed.

3. Execute the following command:

```
xm console <UUID_NUMBER_FOR_VIRTUAL_MACHINE>
```

The console of the virtual machine is displayed.

4. Log in as root user with default password "ovsroot".
5. Enter the following command:
 

```
system-config-network
```
6. Edit the eth0 device by entering the following information:
  - IP addresses
  - Netmask
  - Gateway
  - DNS settings
7. Click **Save and Quit**.
8. Run the following command to reload the network configuration:
 

```
service network reload
```
9. Edit the /etc/hosts file to add the machine name and IP address.

### 3.6.4 Configuring a Virtual Machine for HVM with PV Drivers

An Oracle Virtual Machine is run in one of the following two modes:

- Paravirtualized mode (PVM)
- Hardware Virtualized mode (HVM)

For better performance and to enable you to assign more than 2 Flash disks to each Oracle VM Guest you can create a hardware virtualized, with paravirtualized drivers (PVHVM) mode. This mode is identical to hardware virtualized, but with additional paravirtualized drivers installed in the guest's operating system.

**To configure a Virtual Machine for HVM With PV Drivers:**

1. Log on to the Oracle VM Manager.
2. In Oracle VM Manager, select the **Repositories** tab.
3. In the left pane of Oracle VM Manager, expand **Repositories**, and select the repository.

The GUID of the repository is displayed on the Management pane.

---

**Note:** Make a note of the GUID number of the repository. You need the GUID number when editing the vm.cfg file.

---

4. Select the **Servers and VMs** tab.
5. In the left pane, select the server pool on which the virtual machine resides.
6. From the Perspective list, select **Virtual Machines**.

7. In the Management pane, select a virtual machine.
8. In the toolbar, click **Stop** to stop the server.
9. In the toolbar, click **Edit**.

The Edit Virtual Machine window is displayed.

10. Select the **Configuration** tab.

---

**Note:** Make a note of the GUID number of the virtual machine. You need the GUID numbers when editing the vm.cfg file.

---

11. In the Domain type list, select **Xen HVM, PV Drivers**.
12. Click **OK**.
13. Navigate to the Oracle VM Server command line as the root user, and open the virtual machine configuration (vm.cfg) file in a text editor.

---

**Note:** The vm.cfg file is usually located on Oracle VM Server at the */OVS/Repositories/<Repository GUID>/VirtualMachine/<Virtual Machine GUID>/vm.cfg* location.

---

14. Edit the vm.cfg file by replacing each disk entry that contains a hardware device such as hda, hdb, or hdc with an xvd mapping, such as xvda, xvdb, xvdc and so on.

For example:

Replace hda with xvda

Replace hdb with xvdb

Replace hdc with xvdc

15. If required, log in to Oracle VM Manager.
16. In the toolbar, click **Start** to start the server.

For more information, navigate to My Oracle Support and review document titled "Oracle VM: Comparison of Guest Virtualization Modes; HVM, PVM and HVM with PV Drivers" (Doc ID 757719.1).

### 3.6.5 Configuring SWAP on a Virtual Machine

When the virtual machine first restarts, it may not have the swap correctly configured. If needed, configure the swap correctly.

**To configure SWAP on the virtual machine:**

1. Ensure that the last line of the file `/etc/fstab` reads as follows:  
`LABEL=SWAP-VM swap swap defaults 0 0`
2. If the first entry in the file `/etc/fstab` reads as `LABEL=SWAP-hda3`, edit the file to read as:  
`LABEL=SWAP-VM`
3. To make the swap device available, run the following command:

`swapon-a`

4. To confirm that swap is configured, run the following command:

```
swapon -s
```



---

## Installing Software on an Exalytics Machine

This chapter describes how to use the Exalytics Domain Management Utility to install, configure, and manage life cycle functions of an Exalytics domain on an Exalytics Machine (both virtual and non-virtual deployments). The chapter also describes how to use the Exalytics Domain Management Utility to register and manage existing deployments. Finally, the chapter describes how to install and configure Oracle BI Applications on an Exalytics Machine.

Exalytics customers install or upgrade software components based on their specific needs. Typically, customers deploy one of the following applications (single instance or multi-instance) on an Exalytics machine:

- Custom built Oracle Business Intelligence application (Oracle BI EE) and Oracle TimesTen for Exalytics
- Prebuilt Oracle BI Applications
- Oracle Enterprise Performance Management applications
- Oracle Endeca

This chapter includes the following sections:

- [Section 4.1, "About the Exalytics Domain Management Utility"](#)
- [Section 4.2, "Documents to Review"](#)
- [Section 4.3, "Installing Business Intelligence Software on New Deployments"](#)
- [Section 4.4, "Existing Business Intelligence Installations: Registering a Primary Business Intelligence Software Installation on an Exalytics Domain"](#)
- [Section 4.5, "Installing and Configuring Oracle BI Applications 11.1.1.7.1 on an Exalytics Machine"](#)
- [Section 4.6, "Installing Oracle Enterprise Performance Management Applications"](#)
- [Section 4.7, "Installing Oracle Endeca"](#)

### 4.1 About the Exalytics Domain Management Utility

The Exalytics Domain Management Utility creates an Exalytics domain on the Exalytics Machine. Each Exalytics domain is defined as the combination of an Oracle Business Intelligence domain and Oracle TimesTen. For each domain, the Exalytics Domain Management Utility automates the installation and configuration of Oracle Business Intelligence, Oracle WebLogic Server, Oracle Essbase, and optionally Oracle TimesTen for Exalytics. Each Exalytics domain has its own middleware home deployed within a specific directory structure and tracked in a central configuration file.

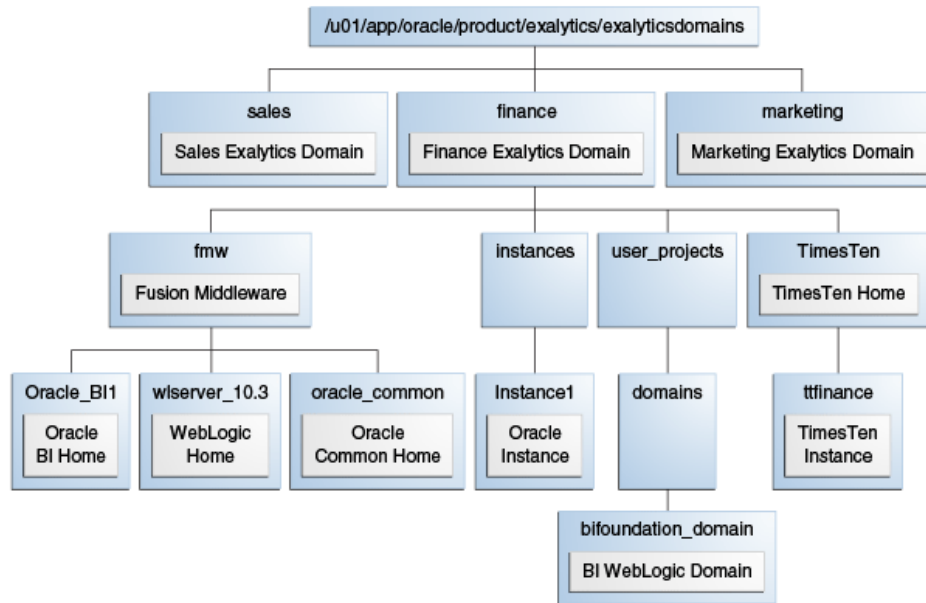
---

**Note:** The Exalytics Domain Management Utility installs full versions of the software (for example, Oracle Business Intelligence 11.1.1.7.0). The Exalytics Domain Management Utility does not install patches. To apply the latest software patches, refer to the respective product Readmes.

---

Figure 4–1 illustrates a directory structure of an Exalytics domain.

**Figure 4–1 Directory Structure of an Exalytics Domain**



Therefore, by creating multiple domains on a single Exalytics Machine you can manage multiple installations of Oracle Business Intelligence, Oracle WebLogic Server, Oracle Essbase, and Oracle TimesTen for Exalytics.

---

**Note:** Multiple Exalytics domains on a single Exalytics Machine must be created by the same operating system user.

---

In the above example (Figure 4–1), three Exalytics domains (Sales, Finance, and Marketing) are created on an Exalytics Machine. Each domain has its own subdirectories (fmw, instances, user\_projects, and TimesTen). Also, as shown for the Finance domain, various components of the domain are located under different subdirectories.

---

**Note:** The ports for each Exalytics domain are allocated in blocks of 100, starting with 12000. For example, the first domain has ports starting from 12000. The second domain has ports starting from 12100, and the third domain has ports starting from 12200, and so on.

---

The Exalytics Domain Management Utility also enables you to start and stop the domain, list the domains, and scaleout the Exalytics Domain software components. See [Section 4.3.5, "Managing Exalytics Domains."](#)

---

**Note:** Oracle recommends that you use the Exalytics Domain Management Utility as the primary way to install software on the Exalytics Machine. If you need to install the software by using manual procedures, see [Appendix A, "Manual Procedures for Installing and Configuring Software on an Exalytics Machine."](#)

---

## 4.2 Documents to Review

As you prepare to install Oracle Business Intelligence 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 *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 [Chapter 1, "Installation Overview"](#) to ensure that you understand the options and architecture related to installing software on the Exalytics Machine.

## 4.3 Installing Business Intelligence Software on New Deployments

This section consists of the following topics:

- [Section 4.3.1, "Prerequisites for Installing Software on the Exalytics Machine"](#)
- [Section 4.3.2, "Verifying Configuration of the Exalytics Machine"](#)
- [Section 4.3.3, "Installing the Software by Using the Exalytics Domain Management Utility"](#)
- [Section 4.3.4, "Postinstallation Tasks for Business Intelligence Software"](#)
- [Section 4.3.5, "Managing Exalytics Domains"](#)
- [Section 4.3.6, "Troubleshooting the Installation and Configuration Processes"](#)
- [Section 4.3.7, "Deinstalling Business Intelligence Software on the Exalytics Machine"](#)

### 4.3.1 Prerequisites for Installing Software 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.
- Network configuration is complete and the computer is accessible from the network.
- The Oracle Exalytics Release 1 Patchset 4 version of the Oracle Exalytics Base Image (1.0.0.6) is running on the Exalytics Machine.

The Exalytics Machine is configured with the base operating system at the factory.

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

- 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 Exalytics Domain Management Utility 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.

## 4.3.2 Verifying Configuration of the Exalytics Machine

Before you install software on the Exalytics Machine, you must run configuration scripts to verify the software and network configurations of the Exalytics Machine.

This section consists of the following topics:

- [Section 4.3.2.1, "Verifying Exalytics Software and Storage Configurations"](#)
- [Section 4.3.2.2, "Verifying Exalytics Image Information"](#)

### 4.3.2.1 Verifying Exalytics Software and Storage Configurations

You run the `exalytics_CheckSWProfile` script to verify the current Exalytics software and storage configurations.

**To verify Exalytics software and storage configurations:**

1. Log on to the Exalytics Machine.
2. Navigate to the `/opt/exalytics/bin` directory.
3. Enter the following command:  

```
./exalytics_CheckSWProfile
```
4. Verify that the output displayed is similar to the following:

```
[SUCCESS].....Has supported operating system
[SUCCESS].....Has supported processor
[SUCCESS].....Kernel is at the supported version
[SUCCESS].....Has supported kernel architecture
[SUCCESS].....Software is at the supported profile
```

### 4.3.2.2 Verifying Exalytics Image Information

You run the `exalytics_imageinfo` script to verify the current Exalytics image and version details.

**To verify the Exalytics image information:**

1. Log on the Exalytics Machine as a root user.
2. Navigate to the `/opt/exalytics/bin` directory.
3. Enter the following command:  

```
./exalytics_imageinfo
```
4. Verify that the output displayed is similar to the following:

```
Image version      : 1.0.0.6
Creation timestamp : Day Date Month YEAR HOUR:MIN:SEC
```

```
Kernel version      : 2.6.32-400.11.1.el5uek
```

```
RPM versions:
kernel-uek-2.6.32-400.11.1.el5uek
kernel-2.6.18-308.24.1.0.1.el5
exalytics-container-bm-1.0.0.6-64
exalytics-scripts-1.0.0.6-110
exalytics-flash-1.0.0.6-90
exalytics-domain-configure-1.0.0.6-122
exalytics-deps-exact-1.0.0.6-64
exalytics-deps-minimum-1.0.0.6-64
```

### 4.3.3 Installing the Software by Using the Exalytics Domain Management Utility

Installing software on an Exalytics Machine involves running the Exalytics Domain Management Utility. The Exalytics Domain Management Utility provides an automatic way of installing software on the Exalytics Machine by performing the following tasks:

- Creating the RCU BIPLATFORM and MDS database schemas (if needed)
- Installing Oracle WebLogic Server
- Performing a Software Only install of Oracle Business Intelligence
- Installing Oracle Essbase Suite (if needed)
- Creating an Oracle Business Intelligence instance
- Configuring the Oracle Business Intelligence domain

If required, the Exalytics Domain Management Utility also provides an automated way of installing Oracle TimesTen In-Memory Database and configuring communication with a software install of Oracle BI EE.

The steps in the process are:

- [Section 4.3.3.1, "Creating a Password on the Operating System"](#)
- [Section 4.3.3.2, "Optional: Creating the Inventory for Oracle TimesTen"](#)
- [Section 4.3.3.3, "Optional: Setting Resource Limits for Oracle TimesTen"](#)
- [Section 4.3.3.4, "Downloading the Oracle Installation Files into a Staging Directory Structure"](#)
- [Section 4.3.3.5, "Creating an Input Properties File"](#)
- [Section 4.3.3.6, "Verifying User Permissions to the /u01 Directory"](#)
- [Section 4.3.3.7, "Creating an Exalytics Domain"](#)
- [Section 4.3.3.8, "Installing Oracle TimesTen for Exalytics"](#)
- [Section 4.3.3.9, "Verifying the Installation"](#)

#### 4.3.3.1 Creating a Password on the Operating System

If you are installing the software on an Exalytics Machine with the Release 1 Patchset 3 Base Image or later, a user named "oracle" and a group named "oinstall" already exists. You next create a password for the user.

**To create a password:**

1. Log in as the root user.
2. To create a password, enter the following command:

```
passwd oracle
```

3. Enter the password.
4. Confirm the password when prompted.

---

**Note:** You must use the same operating system user to create multiple Exalytics domains on a single Exalytics Machine.

---

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

---

**Note:** To add a different user and group, enter the following commands as root user:

---

```
groupadd <name of the group>
```

```
useradd -g <name of the group> <name of the user>
```

---

#### 4.3.3.2 Optional: Creating the Inventory for Oracle TimesTen

If you are installing Oracle TimesTen, then 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.

#### 4.3.3.3 Optional: Setting Resource Limits for Oracle TimesTen

If you are installing Oracle TimesTen, then set resource limits for Oracle TimesTen by performing the following tasks:

**To set the resource limits for Oracle TimesTen:**

1. Make the following changes to the /etc/security/limits.conf file:

```
*      hard nfile 131072
*      soft nfile 131072
*      hard memlock unlimited
*      soft memlock unlimited
*      hard core unlimited
*      soft core unlimited
```

2. Make the following additions to the /etc/security/limits.conf file:

```
*      hard nproc 131072
*      soft nproc 131072
```

3. Depending on the amount of RAM in the Exalytics Machine, make the following shared memory kernel setting in the /etc/sysctl.conf file:

```
kernel.shmmax = 1099511627776 (For an Exalytics Machine with 1 TB of RAM)
kernel.shmmax = 2199023255552 (For an Exalytics Machine with 2 TB of RAM)
```

4. Add the following shared memory kernel setting in the `/etc/sysctl.conf` file:

```
kernel.shmni = 4096
```

5. Add the following setting for semaphores in the `/etc/sysctl.conf` file:

```
kernel.sem = 2048 64000 256 128
```

6. Reboot the machine or run the following command as the root user:

```
/sbin/sysctl -p
```

#### 4.3.3.4 Downloading the Oracle Installation Files into a Staging Directory Structure

Before installing the software you must download the required files into an organized Installers directory structure. Please note that the directory structures detailed in Step 3 below are not mandatory, but is just an example. You can choose any structure to organize the files.

For information about which version of the software to download, see the *Oracle Exalytics Certification Matrix* at the following location:

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

**To download the installation files into the directory structure:**

1. Log in as the user you created. See, [Section 4.3.3.1, "Creating a Password on the Operating System."](#)
2. Download the following required software installers from the Media Pack and patches for Oracle Exalytics under Oracle Business Intelligence software for Linux X86-64 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

For information about downloading and applying the latest Oracle Exalytics patch, see [Chapter 2, "Applying Oracle Exalytics Release 1 Patchset 4 \(1.0.0.4\)."](#)

3. As the user who owns the installation of the Oracle Exalytics software, create an Installers directory structure such as the following for staging the software installation programs, if the user name is "oracle" and the home directory is `/home/oracle`:

- `/home/oracle/Installers/rcu`

Copy and unzip the Repository Creation Utility (RCU) installation zip file into a directory of your choice.

Enter the following command to copy the contents of the extracted directory into `/home/oracle/Installers/rcu`:

```
cp -rf <EXTRACTED RCU DIRECTORY>/rcuHome/*  
/home/oracle/Installers/rcu
```

- `/home/oracle/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`.

- `/home/oracle/Installers/timesten`

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.

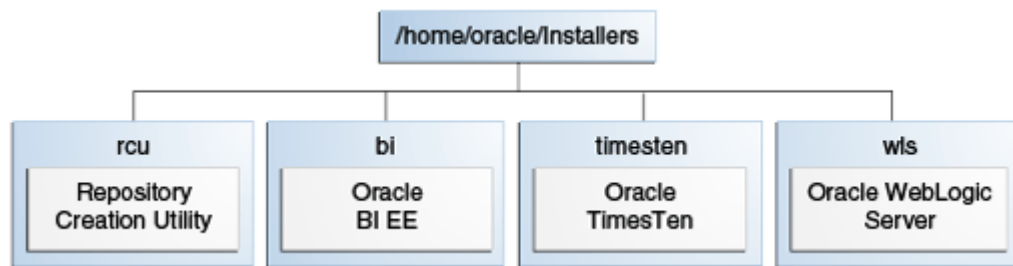
- `/home/oracle/Installers/wls`

Navigate to eDelivery and obtain the zip file for Oracle WebLogic Server Oracle 11gR1 (10.3.6) for Exalogic Linux x86-64 (Part number V29852-01) and extract the file with a name such as `wls1036_linux64.bin` 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_linux64.bin
```

Figure 4–2 illustrates the Installers directory structure.

**Figure 4–2 Installers Directory Structure**



#### 4.3.3.5 Creating an Input Properties File

You next create an input properties file. You reference the input properties file when running the command to create an Exalytics domain. The input properties file contains the following parameters:

- Location of the "Installers" directory. See Step 3 in [Section 4.3.3.4, "Downloading the Oracle Installation Files into a Staging Directory Structure."](#)
- Install group of the user performing the installation. See [Section 4.3.3.1, "Creating a Password on the Operating System."](#)

**To create an input properties file:**

The procedures throughout this section assume the name of the input properties file as "input.properties" and the location of the file at `/home/oracle`.

1. Open a text editor.
2. Add the following lines in the text editor:

```
EXALYTICS_INSTALLERS_DIR=<location of your installers directory>
```

For example: `EXALYTICS_INSTALLERS_DIR=/home/oracle/Installers`

INST\_GROUP=<the install group of the user performing the install>

For example: INST\_GROUP=oinstall

The following is an example of an input properties file:

EXALYTICS\_INSTALLERS\_DIR=/home/oracle/Installers

INST\_GROUP=oinstall

### 3. Save the file in a directory of your choice.

To run the Exalytics Domain Management Utility in silent mode, you must provide additional parameters in the input properties file. An example of the silent mode properties file named noprompts.exalytics.properties is located in the /opt/exalytics/domainconfig/properties directory.

The following is an example of the silent mode input properties file:

---

**Note:** You can optionally exclude passwords from the response file. This prompts users to enter the required passwords when they run the input properties file in silent mode.

---

```
#####
# This example input properties file allows a "silent" install without any prompts
#
# EXALYTICS_INSTALLERS_DIR - the repository containing all the shiphome installers
#
#
# Download and Copy the WebLogic Linux X64 installer from Oracle EDelivery to the
SHIPHOME_INSTALLERS_DIR/wls directory
# Download and Copy the BISHIPHOME zip files from Oracle EDelivery to the
SHIPHOME_INSTALLERS_DIR/bi directory and unzip the zips
# Download and Copy the RCU zip file from Oracle EDelivery to the SHIPHOME_
INSTALLERS_DIR/rcu directory and unzip it
#
#
# INST_GROUP - The group name of the installing user eg. oinstall
#####
EXALYTICS_INSTALLERS_DIR=/home/oracle/EXALYTICS_INSTALLERS
INST_GROUP=oinstall

#####
# Admin Credentials
#####
ADMIN_USER_NAME=weblogic
ADMIN_PASSWORD=welcome1

#####
# Schema details:
# These are only required for "add_domain" action
#####

# Specify whether you want to create new schemas or use existing schemas
# Can be true or false. If you say yes, then the script will create the schemas
using RCU
DATABASE_CREATE_SCHEMAS=false

#Connection string to the database
DATABASE_CONNECTION_STRING=host:1521:orcl
```

```
#Database type
DATABASE_TYPE='Oracle Database'

#-----
# The following properties are only required if DATABASE_CREATE_SCHEMAS=false, ie.
use existing schemas
#-----
DATABASE_SCHEMA_USERNAME_BI=EXAMPLE_BIPLATFORM
DATABASE_SCHEMA_PASSWORD_BI=welcome1
DATABASE_SCHEMA_USERNAME_MDS=EXAMPLE_MDS
DATABASE_SCHEMA_PASSWORD_MDS=welcome1

#-----
# The following properties are only required if DATABASE_CREATE_SCHEMAS=true, ie.
create new schemas using RCU
#-----
DATABASE_SCHEMA_CREATOR_USERNAME=sys
DATABASE_SCHEMA_CREATOR_PASSWORD=welcome1
DATABASE_SCHEMA_CREATOR_ROLE=sysdba
DATABASE_SCHEMA_PREFIX=EXAMPLE
DATABASE_SCHEMA_PASSWORD_BI=welcome1
DATABASE_SCHEMA_PASSWORD_MDS=welcome1

#####

# These are only required for "scaleout_domain" action
#####
#####
DOMAIN_HOSTNAME=myhost.example.com
DOMAIN_PORT=12000

#Other prompts
CONFIGURE_ESSBASE_SUITE=true
INSTALL_EXALYTICS_IN_MEMORY_SOFTWARE=true
```

#### 4.3.3.6 Verifying User Permissions to the /u01 Directory

Before running the configuration script, ensure that the user who is running the script has write permissions to the /u01 directory.

If the user cannot write to the /u01 directory, then, as root user, enter the following commands to change permissions:

```
chown <name of the user>:<name of the group> /u01
chmod 775 /u01
```

For example:

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

#### 4.3.3.7 Creating an Exalytics Domain

You run the Exalytics Domain Management Utility to create an Exalytics domain.

**To create an Exalytics domain:**

1. Log in to the Exalytics Machine as the user "oracle" or the new user you created. See [Section 4.3.3.1, "Creating a Password on the Operating System."](#)

2. To create an Exalytics domain, enter the following command:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=add_domain
--input=<location and name of the input properties file>
--domain=<domain_name>
```

For example:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=add_domain
--input=/home/oracle/Installers/input.properties --domain=menlo
```

3. When prompted by the Exalytics Domain Management Utility, perform the following tasks:

- a. Enter the user name and password you want to use for the Oracle WebLogic Server administrator.

- b. Select a database type from the following list:

Oracle Database

Microsoft SQL Server

IBM DB2

- c. Choose whether you want to create new schemas or use existing schemas.

- d. If you are creating new schemas, enter the following information:

Database connect string (in the *host:port:service* format)

For example: oracle.com:1521:orcl

sys/dba user name and password

sys/dba role

Prefix for the schemas

BIPLATFORM and MDS schema passwords

- e. If you are using existing schemas, enter the following information:

Database connect string (in the *host:port:service* format)

For example: oracle.com:1521:orcl

Real Application Clusters Database (RAC DB) connect string in the *host1:port1:instance1^host2:port2:instance2@service* format.

For example:

custdbhost1:1521:custdb1^custdbhost2:1521:custdb2@orcl

BIPLATFORM schema user name and password

MDS schema user name and password

- f. Choose whether you want to install and configure Oracle Essbase Suite.

If you choose this option, the Exalytics Domain Management Utility automatically installs and configures Oracle Essbase.

---

**Note:** To install Oracle BI Applications on the Exalytics Machine, you must install and configure Oracle Essbase Suite. See [Section 4.5, "Installing and Configuring Oracle BI Applications 11.1.1.7.1 on an Exalytics Machine."](#)

---

- g. Choose whether you want to install Oracle Exalytics In-Memory Software.

If you choose to install Oracle Exalytics In-Memory Software, the HardwareAcceleration MBean attribute is enabled.

The Exalytics Domain Management Utility performs the following tasks:

- Creates schemas (if chosen)
- Installs and configures Oracle BI EE, Oracle WebLogic Server, Oracle Essbase Suite (if needed).

After the installation completes, the status of the domain is displayed as follows:

```
*****
                        Status report for the Exalytics Domain: menlo
*                                                                *
*****

=====
OPMN Managed Processes Status
=====
OPMN status report as of Thu Nov 07 14:12:33 2013

Processes in Instance: menlo
-----+-----+-----+-----
ias-component | process-type | pid | status
-----+-----+-----+-----
essbasestudio1 | EssbaseStudio | 23985 | Alive
essbaseserver1 | Essbase | 15518 | Alive
coreapplication_obiccs1 | OracleBIClusterCo~ | 14823 | Alive
coreapplication_obisch1 | OracleBIScheduler~ | 15418 | Alive
coreapplication_obijh1 | OracleBIJavaHostC~ | 15189 | Alive
coreapplication_obips1 | OracleBIPresentat~ | 14994 | Alive
coreapplication_obis1 | OracleBIServerCom~ | 14866 | Alive

=====
WebLogic Servers Status
=====
WebLogic status report as of Thu Nov 07 14:12:33 2013

Servers in this host for WebLogic domain bifoundation_domain:
-----+-----+-----+-----+-----
Server name | type | pid | port | status
-----+-----+-----+-----+-----
AdminServer | WebLogic AdminServer | 18223 | 12200 | RUNNING
bi_server1 | WebLogic Managed Server | 19585 | 12201 | RUNNING
=====

The script execution took 40 minutes and 13 seconds. For details, see the log file
/u01/app/oracle/product/exalytics/logs/exalytics_domain_menlo_add_domain_
2013-11-07_125423.log
```

### 4.3.3.8 Installing Oracle TimesTen for Exalytics

If required, you can use the Exalytics Domain Management Utility to install Oracle TimesTen on an existing Exalytics domain.

For information on the Installers directory structure and where to download Oracle TimesTen installers, see [Section 4.3.3.4, "Downloading the Oracle Installation Files into a Staging Directory Structure."](#)

#### To install Oracle TimesTen:

1. Log in to the Exalytics Machine as the user "oracle" or the new user you created. See [Section 4.3.3.1, "Creating a Password on the Operating System."](#)
2. Verify the status of the existing domain. The domain should be up and running. See [Section 4.3.5.2, "Viewing Status of an Exalytics Domain."](#)
3. To install Oracle TimesTen, enter the following command:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=add_timesten
--input=<location and name of the input properties file> --domain=<name
of existing domain>
```

For example:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=add_timesten
--input=/home/oracle/Installers/input.properties --domain=menlo
```

The Exalytics Domain Management Utility performs the following actions:

1. Prompts you to enter the user name and password for the Oracle WebLogic Server administrator.
2. Extracts the Oracle TimesTen installer.
3. Installs and configures Oracle TimesTen.

After the installation is complete, the following message is displayed:

```
[LOGMSG] [11-12-13 11:11:10] [INFO] [menlo] [add_timesten] TimesTen Installed
Successfully
```

### 4.3.3.9 Verifying the Installation

To verify that the installation was successful, you run the <list\_domain> command of the Exalytics Domain Management Utility. The command displays all existing domains. If the domain is displayed, then the installation succeeded. For instructions on running the <list\_domain> command, see [Section 4.3.5.3, "Listing Exalytics Domains."](#)

If the installation is successful, the output looks similar to the following:

```
Exalytics Domain: menlo
=====
Node type: Primary node
Provisioning status: Completed
Middleware Home: /u01/app/oracle/product/exalytics/exalyticsdomains/menlo/fmw
BI Instance Home:
/u01/app/oracle/product/exalytics/exalyticsdomains/menlo/instances/instance1

| Application URLs |
-----
Oracle Enterprise Manager: http://<server-name>:12000/em
Oracle WebLogic Admin Console: http://<server-name>:12000/console
```

```
Oracle Business Intelligence: http://<server-name>:12001/analytics
Oracle BI Publisher : http://<server-name>:12001/xmlpserver
```

```
-----
| WebLogic |
-----
```

```
Domain Home: /u01/app/oracle/product/exalytics/exalyticsdomains/menlo/user_
projects/domains/bifoundation_domain
Admin Server Host: <server-name>
Admin Server Port: 12000
BI Managed Server Host: <server-name>
BI Managed Server Port: 12001
```

```
-----
| TimesTen |
-----
```

```
TimesTen enabled: Yes
Timesten Instance Name: ttmenlo
Instance Directory: /u01/app/oracle/product/exalytics/exalyticsdomains/menlo
/TimesTen/ttmenlo
Timesten Daemon Port: 12158
Timesten Server Port: 12159
```

```
-----
| Essbase Suite |
-----
```

```
Essbase Suite enabled: Yes
Workspace: http://<server-name>:12001/workspace
APS: http://<server-name>:12001/aps
EAS Console: http://<server-name>:12001/easconsole
Essbase Port: 12016
```

```
=====
```

```
Found 1 domain(s) in total
```

### 4.3.4 Postinstallation Tasks for Business Intelligence Software

The postinstallation tasks vary depending on whether you are deploying on multiple computers, as described in [Chapter 6, "Deploying Oracle Exalytics for High Availability."](#) The tasks include updating files and configuring an ODBC connection.

For a single-node installation, the Exalytics Domain Management Utility performs 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.

---

---

**Note:** If you are deploying software on a Exalytics Machine configured for virtualization, postinstallation tasks and various parameters may vary.

---

---

The chapter includes the following sections:

- [Section 4.3.4.1, "Installing and Deinstalling Oracle Business Intelligence Client Tools"](#)
- [Section 4.3.4.2, "Creating the boot.properties File"](#)
- [Section 4.3.4.3, "Starting and Stopping Components on an Exalytics Machine"](#)

- [Section 4.3.4.4, "Running the Daemon Configuration Scripts for Oracle TimesTen"](#)
- [Section 4.3.4.5, "Configuring Memory Settings on the Server"](#)
- [Section 4.3.4.6, "Instantiating the Oracle TimesTen In-Memory Database"](#)
- [Section 4.3.4.7, "Configuring the ODBC Connection from Oracle Business Intelligence to Oracle TimesTen"](#)
- [Section 4.3.4.8, "Mapping Instances of Oracle TimesTen into the Physical Layer of the Oracle BI Repository"](#)
- [Section 4.3.4.9, "Installing and Configuring BI Composer for Oracle BI EE"](#)
- [Section 4.3.4.10, "Creating a DSN for IBM DB2 or Microsoft SQL Server"](#)
- [Section 4.3.4.11, "Configuring IBM DB2 to Support Multibyte Data"](#)
- [Section 4.3.4.12, "Configuring Sample Reports for Oracle BI Publisher"](#)
- [Section 4.3.4.13, "Changing the Default Password for SampleAppLite.rpd"](#)
- [Section 4.3.4.14, "Adding the ORACLEHARDWAREACCELERATION TRUE Parameter for Essbase"](#)
- [Section 4.3.4.15, "Enabling Bursting Optimization for BI Publisher"](#)

#### 4.3.4.1 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*.

#### 4.3.4.2 Creating the boot.properties File

Perform the following steps to create a boot.properties file for the Administration Server. This file enables the Administration Server to start without prompting you for the administrator user name and password.

Perform this task on each computer in the cluster.

**To create boot.properties file:**

1. Go to the following directory:  
`ORACLE_BASE/admin/domain_name/aserver/domain  
name/servers/AdminServer/security`
2. In this directory, create a file called boot.properties using a text editor and enter the following lines in the file:  
`username=Admin_Username  
password=Admin_Password`
3. Save the file and close the editor.

#### 4.3.4.3 Starting and Stopping Components on an Exalytics Machine

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

**4.3.4.3.1 Starting and Stopping Components** You run the Exalytics Domain Management Utility to start and stop the Exalytics domain. When you start a primary or scaled-out Exalytics domain, all components on the domain start. If Oracle TimesTen is installed, the Oracle TimesTen Server starts. Similarly, when you stop a primary or scaled-out Exalytics domain, all components on the domain stop. If Oracle TimesTen is installed, the Oracle TimesTen Server stops. See [Section 4.3.5.1, "Starting and Stopping an Exalytics Domain."](#)

#### 4.3.4.4 Running the Daemon Configuration Scripts for Oracle TimesTen

You run the daemon configuration scripts to enable Oracle TimesTen services to start each time you restart the Exalytics Machine.

Perform this task on each computer in the cluster.

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

```
<install_location>/TimesTen/tt1122/bin/setuproot -install
```

#### 4.3.4.5 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:

- If an Oracle TimesTen In-Memory Database larger than 256 GB is required, then you must configure and use large pages.  
See "Large pages" in *Oracle TimesTen In-Memory Database Installation Guide* for additional information on defining the Oracle TimesTen In-Memory Database in the DSN and on editing the limits.conf file for kernel parameters and semaphores.
- The largest recommended size for a Oracle TimesTen In-Memory Database on a single machine is a total of 800 GB for an X2-4 Exalytics Machine, and 1800 GB for an X3-4 Exalytics Machine, 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.

---

**4.3.4.5.1 Configuring Large Pages at the Kernel Level** You can configure and activate the number of large pages by setting the nr\_hugepages parameter in the /etc/sysctl.conf file. For example, for an 800 GB Oracle TimesTen In-Memory Database, you must specify greater than 410122 pages to create an 800 GB store based on the following calculation:

```
(PermSize + TempSize + LogBufMB + 20) / hugepage_size [All in bytes]
(400*1024*1024*1024) + (400*1024*1024*1024) + (1024*1024*1024) + (20*1024*1024) =
860088172544
860088172544 / (2 * 1024 * 1024) = 410122
```

For example, to allow for spare capacity, modify the following setting in the /etc/sysctl.conf file:

```
vm.nr_hugepages = 410200
```

then either restart the machine or run the following command as the root user:

```
/sbin/sysctl -p
```

---

**Note:** The above calculations are an example for a 800 GB Oracle TimesTen database. Depending on the size of your Oracle TimesTen database deployed and the type of deployment (virtual or non-virtual), you can use different calculations.

---

**4.3.4.5.2 Configuring Large Pages for Oracle TimesTen In-Memory Databases** You can configure large pages for the Oracle TimesTen In-Memory Database by editing the following file:

```
<install_location>/TimesTen/tt1122/info/ttendaemon.options
```

and adding the following line:

```
-linuxLargePageAlignment 2
```

**4.3.4.5.3 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. If needed, change the RAM policy from inUse to Manual.
3. 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
```

4. Modify the *timesten-install-dir/info/sys.odbc.ini* file in the Oracle TimesTen In-Memory Database to increase the PermSize.
5. 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
```

6. 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.

#### 4.3.4.6 Instantiating the Oracle TimesTen In-Memory Database

Perform this task on each computer in the cluster. For the first computer, the Exalytics Domain Management Utility updates the sys.odbc.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:

```
<install_location>/TimesTen/tt1122/info
```

The Exalytics Domain Management Utility automatically updates 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=30
CkptLogVolume=0
CkptRate=20
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:

```
<install_location>/exalytics/exalyticsdomains/<domainname>/TimesTen/tt<domainname>/
aggregate_store/
<install_location>/exalytics/exalyticsdomains/<domainname>/TimesTen/tt<domainname>/
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 Exalytics Domain Management Utility 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.

#### 4.3.4.7 Configuring the ODBC Connection from Oracle Business Intelligence to Oracle TimesTen

Perform this task on each computer in the cluster. The Exalytics Domain Management Utility performs 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:

```
<install_location>/TimesTen/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 `<install_location>/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
```

#### 4.3.4.8 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*

**4.3.4.9 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*.

**4.3.4.10 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*.

**4.3.4.11 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*.

**4.3.4.12 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*.

**4.3.4.13 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>

**4.3.4.14 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.

#### 4.3.4.15 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*.

### 4.3.5 Managing Exalytics Domains

You use the Exalytics Domain Management Utility to manage Exalytics domains. You can use the Exalytics Domain Management Utility to start or stop the Exalytics domain, view current status of the domain, list all domains on the Exalytics Machine, and so on.

This section consists of the following topics:

- [Section 4.3.5.1, "Starting and Stopping an Exalytics Domain"](#)
- [Section 4.3.5.2, "Viewing Status of an Exalytics Domain"](#)
- [Section 4.3.5.3, "Listing Exalytics Domains"](#)

- [Section 4.3.5.4, "Scaling Out an Oracle Business Intelligence Domain."](#)
- [Section 4.3.5.5, "Removing an Exalytics Domain."](#)

#### 4.3.5.1 Starting and Stopping an Exalytics Domain

You use the Exalytics Domain Management Utility to start and stop an Exalytics domain. Starting and stopping the Exalytics domain starts and stops all services (WebLogic Administration Server, WebLogic Managed Server, OPMN managed process, and TimesTen) of the installation on the domain.

##### To start an Exalytics domain:

1. Log in to the Exalytics Machine as the user "oracle" or the new user you created. See [Section 4.3.3.1, "Creating a Password on the Operating System."](#)
2. To start an Exalytics domain, enter the following command:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=start_domain
--input=<location and name of the input file> --domain=<domain_name>
```

For example:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=start_domain
--input=/home/oracle/Installers/input.properties --domain=menlo
```

The utility performs the following actions:

- Prompts you to enter the user name and password for the Oracle WebLogic Server administrator.
- Starts WebLogic Administration Server
- Starts WebLogic Managed Server
- Starts OPMN and all managed processes
- Starts TimesTen (if installed)

All services are started. If the Node Manager was stopped, it restarts.

##### To stop an Exalytics domain:

1. Log in to the Exalytics Machine as the user "oracle" or the new user you created. See [Section 4.3.3.1, "Creating a Password on the Operating System."](#)
2. To stop an Exalytics domain, enter the following command:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=stop_domain
--input=<location and name of the input file> --domain=<domain_name>
```

For example:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=stop_domain
--input=/home/oracle/Installers/input.properties --domain=menlo
```

The utility performs the following actions:

- Prompts you to enter the user name and password for the Oracle WebLogic Server administrator.
- Stops TimesTen (if installed)
- Stops OPMN and all managed processes
- Stops WebLogic Managed Server
- Stops WebLogic Administration Server

All services are stopped. The Node Manager is not stopped.

### 4.3.5.2 Viewing Status of an Exalytics Domain

To view status of an Exalytics domain:

1. Log in to the Exalytics Machine as the user "oracle" or the new user you created. See [Section 4.3.3.1, "Creating a Password on the Operating System."](#)
2. To view status of an Exalytics domain, enter the following command:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=status
--input=<location and name of the input file> --domain=<domain_name>
```

For example:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=status
--input=/home/oracle/Installers/input.properties --domain=menlo
```

The utility performs the following actions:

- Prompts you to enter the user name and password for the Oracle WebLogic Server administrator.
- Displays the TimesTen (if present), OPMN Managed processes, and WebLogic Administration and Manager server statuses for the domain.

The output looks similar to the following:

```
*****
Status report for the Exalytics Domain: menlo

*****
=====
TimesTen Status
=====
TimesTen status report as of Wed Nov 6 13:44:26 2013

Daemon pid 11265 port 12158 instance ttmenlo
TimesTen server pid 11274 started on port 12159
-----
Accessible by group oinstall
End of report

=====
OPMN Managed Processes Status
=====
OPMN status report as of Wed Nov 06 13:44:29 2013

Processes in Instance: menlo
-----+-----+-----+-----
ias-component | process-type | pid | status
-----+-----+-----+-----
essbasestudio1 | EssbaseStudio | 14481 | Alive
essbaseserver1 | Essbase | 26528 | Alive
coreapplication_obiccs1 | OracleBIClusterCo~ | 26527 | Alive
coreapplication_obisch1 | OracleBIScheduler~ | 26531 | Alive
coreapplication_obijh1 | OracleBIJavaHostC~ | 26525 | Alive
coreapplication_obips1 | OracleBIPresentat~ | 26524 | Alive
coreapplication_obis1 | OracleBIServerCom~ | 26530 | Alive
=====
WebLogic Servers Status
=====
```

WebLogic status report as of Wed Nov 06 13:44:29 2013

Servers in this host for WebLogic domain bifoundation\_domain:

Server name	type	pid	port	status
AdminServer	WebLogic AdminServer	22224	12000	RUNNING
bi_server1	WebLogic Managed Server	22685	12001	RUNNING

### 4.3.5.3 Listing Exalytics Domains

You use the Exalytics Domain Management Utility to view a listing of all existing Exalytics domains on the Exalytics Machine.

**To list Exalytics domains:**

1. Log in to the Exalytics Machine as the user "oracle" or the new user you created. See [Section 4.3.3.1, "Creating a Password on the Operating System."](#)
2. To list existing Exalytics domains, enter the following command:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=list_domains
--input=<location and name of the input file>
```

For example:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=list_domains
--input=/home/oracle/input.properties
```

The utility performs the following actions:

- Lists all existing domains on the Exalytics Machine and displays the following information for each domain:

Node type

Provisioning status

Location of Middleware Home

Location of BI Instance Home

Application URLs

Host name and port number for WebLogic Administration server

Host name and port number for BI Managed server

Instance name, instance directory, daemon and server port numbers for Oracle TimesTen (if installed)

URLs for Workspace, Analytical Provider Services (APS), Essbase Administration Services (EAS) console, and port number for Oracle Essbase Suite (if installed)

The output looks similar to the following:

```
Exalytics Domain: menlo
=====
Node type: Primary node
Provisioning status: Completed
Middleware Home: /u01/app/oracle/product/exalytics/exalyticsdomains/menlo/fmw
BI Instance Home:
/u01/app/oracle/product/exalytics/exalyticsdomains/menlo/instances/instance1
```

```
| Application URLs |
-----
Oracle Enterprise Manager: http://<server-name>:12000/em
Oracle WebLogic Admin Console: http://<server-name>:12000/console
Oracle Business Intelligence: http://<server-name>:12001/analytics
Oracle BI Publisher : http://<server-name>:12001/xmlpserver

-----
| WebLogic |
-----
Domain Home: /u01/app/oracle/product/exalytics/exalyticsdomains/menlo/user_
projects/domains/bifoundation_domain
Admin Server Host: <server-name>
Admin Server Port: 12000
BI Managed Server Host: <server-name>
BI Managed Server Port: 12001

-----
| TimesTen |
-----
TimesTen enabled: Yes
Timesten Instance Name: ttmenlo
Instance Directory: /u01/app/oracle/product/exalytics/exalyticsdomains/menlo
/TimesTen/ttmenlo
Timesten Daemon Port: 12158
Timesten Server Port: 12159

-----
| Essbase Suite |
-----
Essbase Suite enabled: Yes
Workspace: http://<server-name>:12001/workspace
APS: http://<server-name>:12001/aps
EAS Console: http://<server-name>:12001/easconsole
Essbase Port: 12016

=====
Exalytics Domain: greenwood
=====
Node type: Primary node
Provisioning status: Completed
Middleware Home: /u01/app/oracle/product/exalytics/exalyticsdomains/greenwo
d/fmw
BI Instance Home: /u01/app/oracle/product/exalytics/exalyticsdomains/greenwo
od/instances/instance1

-----
| Application URLs |
-----
Oracle Enterprise Manager: http://<server-name>:12100/em
Oracle WebLogic Admin Console: http://<server-name>:12100/console
Oracle Business Intelligence: http://<server-name>:12101/analytics
Oracle BI Publisher : http://<server-name>:12101/xmlpserver

-----
| WebLogic |
-----
Domain Home: /u01/app/oracle/product/exalytics/exalyticsdomains/greenwood/us
er_projects/domains/bifoundation_domain
```

```

Admin Server Host: <server-name>
Admin Server Port: 12100
BI Managed Server Host: <server-name>
BI Managed Server Port: 12101

-----
| TimesTen |
-----

TimesTen enabled: Yes
Timesten Instance Name: ttgreenwood
Instance Directory: /u01/app/oracle/product/exalytics/exalyticsdomains/green
wood/TimesTen/ttgreenwood
Timesten Daemon Port: 12138
Timesten Server Port: 12139

-----
| Essbase Suite |
-----

Essbase Suite enabled: Yes
Workspace: http://<server-name>:12101/workspace
APS: http://<server-name>:12101/aps
EAS Console: http://<server-name>:12101/easconsole
Essbase Port: 12116

Found 2 domain(s) in total

```

#### 4.3.5.4 Scaling Out an Oracle Business Intelligence Domain

You can scale out an existing Oracle Business Intelligence domain for scalability and performance. For instructions on how to scale out an existing Oracle Business Intelligence domain, see [Chapter 6.3, "Configuring for High Availability."](#)

#### 4.3.5.5 Removing an Exalytics Domain

When you remove the domain on an Exalytics Machine, all components of the domain are automatically removed.

---

**Note:** When removing scaled-out domains, you must first remove all secondary domains before removing the primary node.

---

For instructions on how to remove an Exalytics domain and deinstall software, see [Section 4.3.7, "Deinstalling Business Intelligence Software on the Exalytics Machine."](#)

### 4.3.6 Troubleshooting the Installation and Configuration Processes

This section provides the following information on troubleshooting:

- [Section 4.3.6.1, "Resolving Issues with the Installation"](#)
- [Section 4.3.6.3, "Reinstalling Software on the Exalytics Machine"](#)
- [Section 4.3.6.4, "Configuring Exalytics Operating System to Change Capacity On Demand"](#)
- [Section 4.3.6.5, "For More Information"](#)

#### 4.3.6.1 Resolving Issues with the Installation

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

- Check the networking configuration of the machine including the `/etc/hosts` file.
- If the Exalytics Domain Management Utility fails, then perform the following steps:
  1. Check the log files in the `/u01/app/oracle/product/exalytics/logs` directory. See [Section 4.3.6.2, "Viewing Log Files."](#)
  2. Review and fix the error. Depending on the type of error, rerun the Exalytics Domain Management Utility.

---

**Note:** If the `list_domains` command shows the Provisioning Status of the domain as "Failed", then you must first remove the domain by running the `remove_domain` command.

---

#### 4.3.6.2 Viewing Log Files

After installing the software, you can check log files created by the Exalytics Domain Management Utility. The utility creates a unique log file for each executed action. For example, the Exalytics Domain Management Utility creates a different log file when creating a domain and a different log file when listing domains. The format of the log file for an action is as follows:

`exalytics_domain_<domain_name>_<action>_<timestamp>.log`

In addition to the "action" log files, the Exalytics Domain Management Utility also provides information about the location of the log files of the underlying process (such as Oracle BI EE installer log file). For example, there are different log files when installing and configuring Oracle Business Intelligence, and a different log file when installing Oracle TimesTen. The location of the log file for each process is displayed in the specific action log file and is prefixed by the word [LOGFILE]. The format of the log file for an underlying process is as follows:

`[LOGFILE] [<process>] <location>`

**To view log files for each executed action and Oracle WebLogic Server installation:**

- Navigate to the `/u01/app/oracle/product/exalytics/logs` directory.

The log file for each action is named as follows:

`exalytics_domain_<domain_name>_<action>_<timestamp>.log`

For example:

`exalytics_domain_menlo_list_domain_2013-11-13_005822.log`

The log file for Oracle WebLogic Server is named as follows:

`weblogic_install_2013-11-21_162945.log`

**To view log files for software installation and configuration process:**

1. Navigate to the `/u01/app/oracle/product/exalytics/logs` directory.
2. Open the log file that is created for the `<add_domain>` action.

For example:

`exalytics_domain_menlo_add_domain_2013-10-13_005822.log`

3. Search for the word [LOGFILE].

Location of the BI Installer and BI Configuration Assistant log files are displayed.

For example:

```
[LOGFILE] [BI Installer]
/u01/app/oracle/product/exalytics/oraInventory/logs/install2013-11-21_
11-26-49PM.log
```

```
[LOGFILE] [BI Config Assistant]
/u01/app/oracle/product/exalytics/oraInventory/logs/install2013-11-21_
04-51-20PM.log
```

**To view log files for TimesTen installation:**

1. Navigate to the /u01/app/oracle/product/exalytics/logs directory.
2. Open the log file created for the <add\_timesten> action for a specific domain.

For example:

```
exalytics_domain_menlo_add_timesten_2013-10-14_005822.log
```

3. Search for the word [LOGFILE].

Location of the TimesTen installation log file is displayed.

For example:

```
[LOGFILE] [TimesTen install]
/u01/app/oracle/product/exalytics/exalyticsdomains/menlo/fmw/Oracle_
BI1/bifoundation/exalytics/logs/bim-tt-install.log
```

#### 4.3.6.3 Reinstalling Software on the Exalytics Machine

You might want to reinstall the software. The Exalytics Domain Management Utility 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:**

1. Remove the domain as described in [Section 4.3.7, "Deinstalling Business Intelligence Software on the Exalytics Machine."](#)
2. Create a new Exalytics domain. See [Chapter 4.3.3.7, "Creating an Exalytics Domain."](#)

If you created the BISHIPHOME and MDS schemas, then either drop the schemas or use a new prefix to create schemas.

#### 4.3.6.4 Configuring Exalytics Operating System to Change Capacity On Demand

For Oracle Infrastructure as a Service (Oracle IaaS) deployments, you can configure the operating system to change capacity on demand. This enables you to access and pay for peak CPU capacity only when needed.

Each Oracle Exalytics Machine is configured with 4 CPUs, each CPU containing 10 active core processors. This configuration provides 40 active core processors. Of these, 20% are reserved for on-demand use when additional computing processing is needed. For example, you use 32 cores most of the time and enable the other 8 cores only when needed, such as to run reports and queries at quarter end. You can then continue using 80% of the active core processors until the next quarter end.

---

**Note:** When you change the number of active core processors, you do not have to restart the Exalytics Machine.

---

You use the `exalytics_resourceControl.sh` utility to configure the Oracle Exalytics operating system to change capacity on demand. Table 4–1 shows the parameters for the `capacity_on_demand` command. The command is part of the `exalytics_resourceControl.sh` utility.

**Table 4–1 Parameters for the `capacity_on_demand` Command in the `exalytics_resourceControl.sh` Utility**

Parameter	Description
Display	Displays number of active core processors currently in use.
Disable	Disables core processors that are reserved for additional on-demand processing.
Enable	Enables core processors that are reserved for additional on-demand processing.
Update	Enables any number of core processors. Can only be used in force mode.

If you do not specify any parameters, the utility displays all capacity on demand arguments. For example, if you navigate to the `/opt/exalytics/bin` directory, and enter the following command:

```
./exalytics_resourceControl.sh
```

The following output is displayed:

```
Usage: ./exalytics_resourceControl.sh [-show | -capacity_on_demand args]
  -show: Displays the number of logical cores active
  -capacity_on_demand [display|disable|enable|update -cores <noOfCoresPerSocket>]
  [-force]
display: displays the number of cores in use.
disable: disables the cores reserved for additional on-demand capacity.
enable: enables the cores reserved for additional on-demand capacity.
update -cores <numCoresPerSocket> -force: can be used in force mode, to enable any
number (min 2) of cores on a socket.
```

#### To configure the Exalytics operating system to change capacity on demand:

1. Log on the Exalytics Machine as a root user.
2. Navigate to the folder `/opt/exalytics/bin` directory.
3. View the existing configuration, by entering the following command:

```
./exalytics_resourceControl.sh -capacity_on_demand display
```

The following output is displayed:

```
[CAPSHOW] Number of cores active per socket: All of 10
```

4. Disable core processors, by entering the following command:

```
./exalytics_resourceControl.sh -capacity_on_demand disable
```

2 core processors per CPU are disabled.

The following output is displayed:

```
[CAPSHOW] Number of cores active per socket: 8 of 10
```

5. Enable core processors, by entering the following command:

```
./exalytics_resourceControl.sh -capacity_on_demand enable
```

2 core processors per CPU are enabled.

The following output is displayed:

```
[CAPSHOW] Number of cores active per socket: All of 10
```

---

**Note:** After running the Exalytics Domain Management Utility, you can check the log and the trace files in the `/var/log/oracleexa/systemconfig.log` file and the `/var/log/oracleexa/resctl` directory respectively.

---

#### 4.3.6.5 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*

### 4.3.7 Deinstalling Business Intelligence Software on the Exalytics Machine

To deinstall software on the Exalytics Machine, you use the Exalytics Domain Management Utility to remove the Exalytics domain. When you remove the Exalytics domain, all software for the domain is deinstalled.

---

**Note:** To manually deinstall software on the Exalytics Machine, see [Appendix A.4, "Deinstalling Software on the Exalytics Machine."](#)

---

**To remove an Exalytics domain:**

1. Log in to the Exalytics Machine as the user "oracle". See [Section 4.3.3.1, "Creating a Password on the Operating System."](#)
2. To remove an Exalytics domain, enter the following command:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=remove_
domain --input=<location and name of the input file> --domain=<Domain_
name>
```

For example:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=remove_
domain --input=/home/oracle/Installers/input.properties --domain=menlo
```

When prompted by the Exalytics Domain Management Utility, perform the following tasks:

- Confirm whether or not you want to remove the domain by selecting Yes or No.
- Enter the user name and password for the Oracle WebLogic Server administrator.

The Exalytics Domain Management Utility stops all processes, removes the Oracle Business Intelligence domain, removes Oracle TimesTen (if installed), and deinstalls all software.

## 4.4 Existing Business Intelligence Installations: Registering a Primary Business Intelligence Software Installation on an Exalytics Domain

If you are an existing Exalytics customer and have manually installed the software prior to the availability of the Exalytics Domain Management Utility, you can register any existing software installations by using the Exalytics Domain Management Utility. After you register an existing installation you can use the utility to manage the installation. See [Section 4.3.5, "Managing Exalytics Domains."](#)

To register an existing software installation, you must have Release 1 Patchset 4 (Base Image 1.0.0.6) installed on the Exalytics Machine.

---

**Note:** Before you can register an existing installation, ensure that you are running Oracle Business Intelligence 11.1.1.7.x.

---

When you run the Exalytics Domain Management Utility to list the domains on the Exalytics Machine, the registered installation is displayed as "Primary node (Registered Exalytics Domain)".

### To register existing software installations on an Exalytics domain:

1. Log in to the Exalytics Machine as the user "oracle" or as the new user you created. See [Section 4.3.3.1, "Creating a Password on the Operating System."](#)

2. To register an existing installation, enter the following command:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=register_
existing_domain --input=<location and name of the input file>
--domain=<new_domain_name>
```

For example, to register an existing installation as menlo2, enter the following command:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=register_
existing_domain --input=/home/oracle/Installers/input.properties
--domain=menlo2
```

3. When prompted by the utility, perform the following actions:

- a. Enter the location of the following existing directories:

Middleware Home

For example:

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

Oracle BI Home

For example:

```
/u01/app/oracle/product/fmw/Oracle_BI1
```

WebLogic Domain

For example:

```
/u01/app/oracle/product/fmw/user_projects/domains/bifoundation_
domain
```

Oracle BI Instance

For example:

```
/u01/app/oracle/product/fmw/instances/instance1
```

- b.** Is TimesTen installed on the domain? Please enter [1-2].

If you select 1 (Yes), enter the existing TimesTen instance name and the existing TimesTen installation directory location.

- c.** Enter the user name and password for the Oracle WebLogic Server administrator.

- d.** Choose whether you want to restart the domain.

If you choose "Yes" to restart the domain, the utility stops and restarts all the processes on the new domain and registers the installation on the new domain.

- 4.** To verify that the existing installation is listed as a domain, enter the following command:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=list_domains
--input=/home/oracle/input.properties
```

The report displays the existing installation as a registered exalytics domain on the Exalytics Machine. The output looks similar to the following:

```
=====
Exalytics Domain: menlo2
=====
Node type: Primary node (Registered Exalytics Domain)
Provisioning status: Completed
Middleware Home: /u01/app/oracle/product/fmw
BI Instance Home: /u01/app/oracle/product/fmw/instances/instance1
```

```
-----
| Application URLs |
-----
```

```
Oracle Enterprise Manager: http://<server-name>:7001/em
Oracle WebLogic Admin Console: http://<server-name>:7001/console
Oracle Business Intelligence: http://<server-name>:9704/analytics
Oracle BI Publisher : http://<server-name>:9704/xmlpserver
```

```
-----
| WebLogic |
-----
```

```
Domain Home: /u01/app/oracle/product/fmw/user_projects/domains/bifoundation_
domain
Admin Server Host: <server-name>
Admin Server Port: 7001
BI Managed Server Host: <server-name>
BI Managed Server Port: 9704
```

```
-----
| TimesTen |
-----
```

```
TimesTen enabled: Yes
TimesTen Instance Name: tt1122
Instance Directory: /u01/app/oracle/product/TimesTen/tt1122
TimesTen Daemon Port: 53396
TimesTen Server Port: 53397
```

```
Found 1 domain(s) in total
```

## 4.5 Installing and Configuring Oracle BI Applications 11.1.1.7.1 on an Exalytics Machine

After performing a Software Only install of Oracle Business Intelligence, you can install Oracle BI Applications 11.1.1.7.1.

**To install and configure Oracle BI Applications on an Exalytics Machine:**

1. Install Oracle Business Intelligence. See [Section 4.3.3, "Installing the Software by Using the Exalytics Domain Management Utility."](#)

---

**Note:** When creating an Exalytics domain, you must choose to install and configure Oracle Essbase suite. See Step 3 (f) in [Section 4.3.3.7, "Creating an Exalytics Domain."](#)

---

2. Review the hardware requirements for installing Oracle BI Applications. See "Section 3.1 Hardware Requirements" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence Applications*.
3. Install Oracle Data Integrator (ODI). See "Section 3.2 Installing Prerequisites for Oracle BI Applications" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence Applications*.

---

**Note:** You must install ODI into the same inventory directory that you installed Oracle BI EE. To do this, run the ODI installer with the following command:

```
./runInstaller -jreLoc <jdk location> -invPtrLoc  
u01/app/oracle/product/exalytics/provision/execute/<domain  
name>/oraInst.loc
```

---

The other prerequisites, Oracle WebLogic Server 10.3.6, JDK or JRockit, and Oracle BI EE are installed and configured by the Exalytics Domain Management Utility when the utility creates an Exalytics domain.

4. Install and configure BI Applications 11.1.1.7.1. See "Section 3.3 Installing and Configuring Oracle BI Applications" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence Applications*.

---

**Note:** You must install Oracle BI Applications into the same inventory directory that you installed Oracle BI EE. To do this, run the BI Applications installer with the following command:

```
./runInstaller -jreLoc <jdk location> -invPtrLoc  
u01/app/oracle/product/exalytics/provision/execute/<domain  
name>/oraInst.loc
```

---

One of the tasks you perform when installing and configuring BI Applications, is to apply platform patches. Follow the instructions in "Section 3.3.4 Applying Platform Patches" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence Applications*, but after downloading and extracting the zip files into a single directory, for example PATCH\_HOME/patches, perform the following additional steps:

- a. Remove the WebLogic folder and its contents to a location outside the PATCH\_HOME/patches directory.  
The PATCH\_HOME/patches directory should only contain the biappsshiphome, odi, and oracle\_common folders.
- b. Before applying the platform patches as described in "Section 3.3.4 Applying Platform Patches" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence Applications*, stop all services by using the Exalytics Domain Management Utility. See [Section 4.3.5.1, "Starting and Stopping an Exalytics Domain."](#)
- c. After applying the patches, restart all services by using the Exalytics Domain Management Utility. See [Section 4.3.5.1, "Starting and Stopping an Exalytics Domain."](#)

---

**Note:** You do not need to perform step "3.3.5 Configuring Oracle Business Intelligence" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence Applications* because the Oracle Business Intelligence domain is created by the Exalytics Domain Management Utility.

---

5. Perform post-installation tasks for installing Oracle BI Applications. See "Section 3.4 Performing Post-Installation System Set Up Tasks" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence Applications*.

For more information, see "Chapter 3 Installing and Setting Up Oracle BI Applications" in *Oracle Fusion Middleware Installation Guide for Oracle Business Intelligence Applications*.

## 4.6 Installing Oracle Enterprise Performance Management Applications

To install Oracle Enterprise Performance Management applications (Oracle Hyperion Planning) refer to the "Oracle Enterprise Performance Management System" documentation, the link to which is available from the Oracle Exalytics Documentation Library.

## 4.7 Installing Oracle Endeca

To install Oracle Endeca, refer to the "Oracle Endeca Information Discovery" documentation, the link to which is available from the Oracle Exalytics Documentation Library.



# Part II

---

## System Management

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

- [Chapter 5, "System Management \(Configuration, Diagnostics, and Monitoring\)"](#)
- [Chapter 6, "Deploying Oracle Exalytics for High Availability"](#)
- [Chapter 7, "Backup and Recovery"](#)
- [Chapter 8, "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.

For information on monitoring an Exalytics Machine, see "Chapter 4 Monitoring an Exalytics Target" in *Oracle Enterprise Manager Cloud Control Getting Started with Oracle Fusion Middleware Management Plug-in*.

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 System Monitoring Plug-in 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 use the Exalytics Domain Management Utility to horizontally scale out the Exalytics Machine for scalability (high-availability) and performance (load balancing).

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*.

---

**Note:** To use the manual steps to horizontally scale out the Exalytics Machine, see [Appendix A.5, "Deploying Oracle Exalytics for High Availability."](#)

---

The chapter includes the following sections:

- [Section 6.1, "Requirements for High Availability"](#)
- [Section 6.2, "Diagram of High Availability"](#)
- [Section 6.3, "Configuring for High Availability"](#)
- [Section 6.4, "Troubleshooting the Highly Available Deployment"](#)

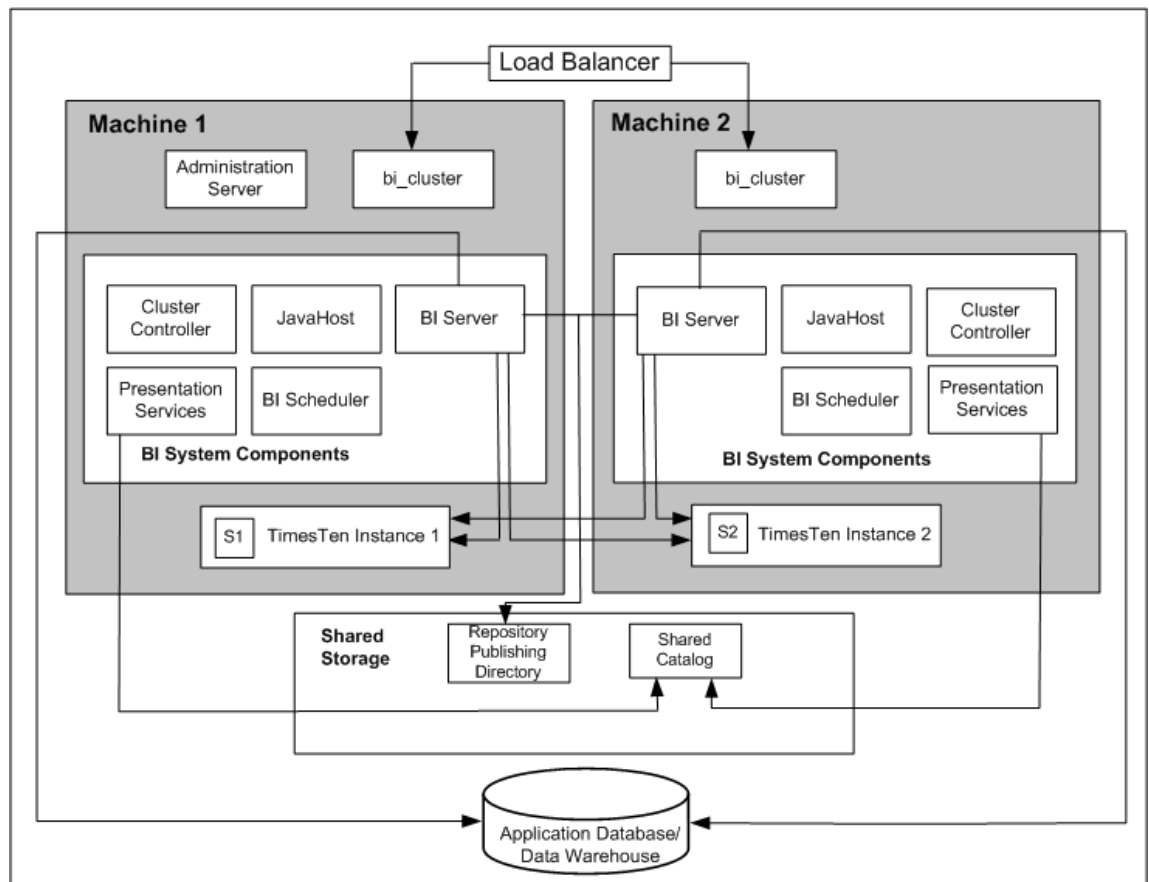
### 6.1 Requirements for High Availability

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.

### 6.2 Diagram of High Availability

[Figure 6–1](#) 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 6–1 High-Availability for the Exalytics Machine**

## 6.3 Configuring for High Availability

You use a combination of the Exalytics Domain Management Utility and manual steps to scale-out an existing Oracle Business Intelligence domain.

This section contains the following topics:

- [Section 6.3.1, "Step 1: Preparing the First Exalytics Machine"](#)
- [Section 6.3.2, "Step 2: Preparing the Second Exalytics Machine"](#)
- [Section 6.3.3, "Step 3: Scaling Out the Existing BI Domain"](#)
- [Section 6.3.4, "Step 4: Installing and Configuring Oracle TimesTen"](#)
- [Section 6.3.5, "Step 5: Configuring Shared Storage for Persistent Stores"](#)
- [Section 6.3.6, "Step 6: Configuring the Front-End Load Balancer"](#)

### 6.3.1 Step 1: Preparing the First Exalytics Machine

Install Oracle Exalytics on the first Exalytics Machine using the instructions that are provided in [Section 4.3, "Installing Business Intelligence Software on New Deployments"](#) of this guide before installing on the second Exalytics Machine.

### 6.3.2 Step 2: Preparing the Second Exalytics Machine

To prepare the second Exalytics Machine:

1. Confirm that Release 1 Patchset 4 is installed on the second Exalytics Machine.
2. Create the user, as described in [Section 4.3.3.1, "Creating a Password on the Operating System."](#)
3. Create the inventory for Oracle TimesTen, as described in [Section 4.3.3.2, "Optional: Creating the Inventory for Oracle TimesTen."](#)
4. Download the files into an installers directory, as described in [Section 4.3.3.4, "Downloading the Oracle Installation Files into a Staging Directory Structure."](#)
5. Create an input properties file, as described in [Section 4.3.3.5, "Creating an Input Properties File."](#)

### 6.3.3 Step 3: Scaling Out the Existing BI Domain

You scale out the existing Oracle Business Intelligence domain by running the Exalytics Domain Management Utility.

---

**Note:** The Exalytics Domain Management Utility only scales out and configures Oracle Business Intelligence. If you want to scale out and configure Oracle TimesTen, then install it manually on the second Exalytics Machine. See [Section 6.3.4, "Step 4: Installing and Configuring Oracle TimesTen."](#)

---

#### To scale out an Oracle Business Intelligence domain:

1. Verify that all processes are running on the existing domain. See [Section 4.3.5.2, "Viewing Status of an Exalytics Domain."](#)

Make a note of the AdminServer port number. You need to enter the port number later when prompted by the Exalytics Domain Management Utility.

2. Log in to the second Exalytics Machine as the user that you created in Step 2 of [Section 6.3.2, "Step 2: Preparing the Second Exalytics Machine."](#)
3. To scale out an Oracle Business Intelligence domain, enter the following command:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=scaleout_
domain --input=<location and name of the input file> --domain=<domain_
name on the first Exalytics Machine>
```

For example, to scale out domain "menlo" from the first Exalytics Machine, enter the following command:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=scaleout_
domain --input=/home/oracle/Installers/input.properties --domain=menlo
```

4. When prompted by the Exalytics Domain Management Utility, perform the following tasks:
  - Enter the user name and password for the Oracle WebLogic Server administrator.
  - Enter the AdminServer host name.
  - Enter the AdminServer port number.

The Exalytics Domain Management Utility performs the following actions on the second Exalytics Machine:

- Installs Oracle WebLogic Server
- Installs Oracle Business Intelligence
- Creates an Oracle Instance
- Scales out the Managed Server
- Scales out the existing BI domain

After the installation completes, a message is displayed that you can successfully connect to the scaled-out domain. The output looks similar to the following:

```
[LOGMSG] [11-13-13 00:54:31] [INFO] [menlo] [scaleout_domain] Success
connecting to <server-name_on_scaled_out_domain> on port: 12003
```

5. To verify that the scaled out domain is listed on the second Exalytics Machine, enter the following command on the second Exalytics Machine:

```
/opt/exalytics/bin/exalytics-domain-management.sh --action=list_domains
--input=/home/oracle/input.properties
```

The report displays the scaled out domain on the second Exalytics Machine. The Node type is displayed as "Scaled out node". The output should look similar to the following:

```
=====
                        Domain: menlo
=====
Node type: Scaled out node
Provisioning status: Completed
Middleware Home: /u01/app/oracle/product/exalytics/exalyticsdomains/menlo/fmw
BI Instance Home:
/u01/app/oracle/product/exalytics/exalyticsdomains/menlo/instances/instance1
-----
| Application URLs |
-----
Oracle Enterprise Manager: http://<server-name>:12000/em
Oracle WebLogic Admin Console: http://<server-name>:12000/console
Oracle Business Intelligence: http://<server-name_on_scaled_out_
domain>:12001/analytics
Oracle BI Publisher : http://<server-name_on_scaled_out_
domain>:12001/xmlpserver
-----
| WebLogic |
-----
Domain Home: /u01/app/oracle/product/exalytics/exalyticsdomains/menlo/user_
projects/domains/bifoundation_domain
Admin Server Host: <server-name>
Admin Server Port: 12000
BI Managed Server Host: <server-name_on_scaled_out_domain>
BI Managed Server Port: 12001
-----
| TimesTen |
-----
TimesTen enabled: No

Found 1 domain(s) in total
```

### 6.3.4 Step 4: 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 4.3.4.4, "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 4.3.4.7, "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_ttl";
```

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.

### 6.3.5 Step 5: 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*.

### 6.3.6 Step 6: 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*.

## 6.4 Troubleshooting the Highly Available Deployment

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

- [Section 6.4.1, "Connection Issues with the Oracle BI Server and Oracle TimesTen"](#)
- [Section 6.4.2, "Client Installer Cannot Locate the Driver for Oracle TimesTen"](#)
- [Section 6.4.3, "Oracle BI Server Does Not Fail Over to the Instance of Oracle TimesTen"](#)
- [Section 6.4.4, "Aggregates Are Not Present in Second Instance"](#)

### 6.4.1 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 4.3.4.7, "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:
- The BI Server must use the ODBC driver for Oracle TimesTen Version 3.5 for connection.

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

During deployment of a repository, ensure that you use the 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.

### 6.4.2 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
```

### 6.4.3 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.

### 6.4.4 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*.



---

# Manual Procedures for Installing and Configuring Software on an Exalytics Machine

This appendix describes how to manually install, deinstall, and configure software on the Exalytics Machine.

This appendix consists of the following sections:

- [Section A.1, "Documents to Review"](#)
- [Section A.2, "Installing Software on Exalytics Machine"](#)
- [Section A.3, "Postinstallation Instructions"](#)
- [Section A.4, "Deinstalling Software on the Exalytics Machine"](#)
- [Section A.5, "Deploying Oracle Exalytics for High Availability"](#)

## A.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 Linux* 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 Owner's Guide* to ensure that you have properly configured and commissioned the Exalytics Machine in your data center.
- Review [Chapter 1, "Installation Overview"](#) to ensure that you understand the options and architecture related to installing software on the Exalytics Machine.

## A.2 Installing Software on Exalytics Machine

This section consists of the following topics:

- [Section A.2.1, "Prerequisites for Installing Software on the Exalytics Machine"](#)
- [Section A.2.2, "Verifying Configuration of the Exalytics Machine"](#)
- [Section A.2.3, "Installing the Software"](#)

- [Section A.2.4, "Troubleshooting the Installation and Configuration Processes"](#)

## A.2.1 Prerequisites for Installing Software on the Exalytics Machine

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

- The Oracle Exalytics Release 1 Patchset 3 version of the Oracle Exalytics Base Image (1.0.0.5) is running 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.

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

- Network configuration is complete and the computer is accessible from the network.
- 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.

## A.2.2 Verifying Configuration of the Exalytics Machine

Before you install software on the Exalytics Machine, you must run configuration scripts to verify the software and network configurations of the Exalytics Machine.

This section consists of the following topics:

- [Section A.2.2.1, "Verifying Exalytics Software and Storage Configurations"](#)
- [Section A.2.2.2, "Verifying Exalytics Image Information"](#)

### A.2.2.1 Verifying Exalytics Software and Storage Configurations

You run the `exalytics_CheckSWProfile` script to verify the current Exalytics software and storage configurations.

**To verify Exalytics software and storage configurations:**

1. Log on to the Exalytics Machine.
2. Navigate to the `/opt/exalytics/bin` directory.
3. Enter the following command:  

```
./exalytics_CheckSWProfile
```
4. Verify that the output displayed is similar to the following:

```
[SUCCESS].....Has supported operating system
[SUCCESS].....Has supported processor
[SUCCESS].....Kernel is at the supported version
[SUCCESS].....Has supported kernel architecture
```

[SUCCESS].....Software is at the supported profile

### A.2.2.2 Verifying Exalytics Image Information

You run the `exalytics_imageinfo` script to verify the current Exalytics image and version details.

**To verify the Exalytics image information:**

1. Log on the Exalytics Machine as a root user.
2. Navigate to the `/opt/exalytics/bin` directory.
3. Enter the following command:  
`./exalytics_imageinfo`
4. Verify that the output displayed is similar to the following:

```
Image version      : 1.0.0.5.0
Creation timestamp : DAY-DD-MM-YYYY HR:MIN:SEC -0800
Kernel version    : 2.6.32-100.23.1.el5

RPM versions:
kernel-2.6.32-100.23.1.el5
exalytics-container-bm-1.0.0.5-xx
exalytics-scripts-1.0.0.5-xx
exalytics-flash-1.0.0.5-xx
```

## A.2.3 Installing the Software

Installing software on the Exalytics Machine involves a combination of manual steps and automated scripts. The manual steps are to install Oracle WebLogic Server 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).

---

**Note:** For information on installing Oracle Business Intelligence 11.1.1.6.x, see *Oracle Exalytics In-Memory Machine Installation and Administration Guide for Linux, Exalytics X2-4 Release 1 (1.0)*.

---

The steps in the process are:

- [Section A.2.3.1, "Creating the User, Group, and Password on the Operating System"](#)
- [Section A.2.3.2, "Creating the Inventory for Oracle TimesTen"](#)
- [Section A.2.3.3, "Setting Resource Limits for Oracle TimesTen"](#)
- [Section A.2.3.4, "Creating and Mounting a /u01 Partition"](#)
- [Section A.2.3.5, "Downloading Oracle Files into the Directory Structure"](#)
- [Section A.2.3.6, "Staging the Middleware Home"](#)
- [Section A.2.3.7, "Creating the Database Schemas"](#)
- [Section A.2.3.8, "Installing Oracle WebLogic Server"](#)
- [Section A.2.3.9, "Performing a Software Only Install"](#)
- [Section A.2.3.10, "Creating a New Oracle BI Enterprise Edition Instance"](#)

- [Section A.2.3.11, "Editing the Properties File"](#)
- [Section A.2.3.12, "Verifying the Checklist"](#)
- [Section A.2.3.13, "Running the Installation Script"](#)
- [Section A.2.3.14, "Verifying the Installation"](#)

### A.2.3.1 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
```

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

### A.2.3.2 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.

### A.2.3.3 Setting Resource Limits for Oracle TimesTen

To set the resource limits for Oracle TimesTen:

1. Make the following changes to the /etc/security/limits.conf file:

```
*      hard nfile 131072
*      soft nfile 131072
*      hard memlock unlimited
*      soft memlock unlimited
*      hard core unlimited
*      soft core unlimited
```

2. Make the following additions to the /etc/security/limits.conf file:

```
*      hard nproc 131072
*      soft nproc 131072
```

3. Make the following shared memory kernel setting in the /etc/sysctl.conf file:

```
kernel.shmmax = 1099511627776
```

---

---

**Note:** Use this kernel setting for an Exalytics Machine with 1TB of RAM. Use a larger setting for an Exalytics Machine that contains more than 1TB of RAM.

---

---

4. Add the following shared memory kernel setting in the `/etc/sysctl.conf` file:

```
kernel.shmni = 4096
```

5. Add the following setting for semaphores in the `/etc/sysctl.conf` file:

```
kernel.sem = 2048 64000 256 64
```

6. Reboot the machine or run the following command as the root user:

```
/sbin/sysctl -p
```

#### A.2.3.4 Creating and Mounting a /u01 Partition

Confirm if a `/u01` partition exists on the hard disk.

- If a `/u01` partition exists, you can ignore this section.
- If a `/u01` partition does not exist on the hard disk, then create and mount a `/u01` partition on the machine by performing the following tasks:

---

**Note:** Create the partition equal to the maximum space available on the disk partition.

---

##### To create and mount a /u01 partition:

After logging in as the root user, configure the `/u01` directory on the hard disk using commands such as the following ones:

1. To create a partition, enter the following commands:

```
# parted /dev/sdb

(parted) mklabel msdos
(parted) mkpart
Primary/extended? Primary
File system type? [ext2]? ext3
Start? 0
End? 1797GB
(parted) quit
```

2. To create a file system, enter the following command:

```
# mkfs.ext3 /dev/sdb1
```

3. Add the following line to the `/etc/fstab` file:

```
/dev/sdb1          /u01    ext3          defaults 1 2
```

4. To create and mount a `/u01` directory, enter the following commands:

```
# mkdir /u01

# mount /dev/sdb1 /u01
```

5. Restart the computer.
6. Verify that the partition has been created by entering the following command:

```
df -lh
```

---

**Note:** Check permissions for the "oracle" user. If you cannot write to the /u01 directory, then enter the following commands to change permissions:

```
chown oracle:oinstall /u01
```

```
chmod 775 /u01
```

---

### A.2.3.5 Downloading Oracle Files into the Directory Structure

Before installing the software, you must download the required files into an organized directory structure. Note that the directory structures detailed in Step 3 below and [Section A.2.3.6, "Staging the Middleware Home"](#) are 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 patches for Oracle Exalytics under Oracle Business Intelligence software for Linux X86-64 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

For information about downloading and applying the latest Oracle Exalytics patch, see [Chapter 2, "Applying Oracle Exalytics Release 1 Patchset 4 \(1.0.0.4\)."](#)

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 /home/oracle:

- /home/oracle/EXALYTICS\_RCU

Copy the rcuHome.zip file for the Repository Creation Utility (RCU) into this directory and unzip it.

- /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.

- /home/oracle/EXALYTICS\_INSTALLERS/timesten

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.

- /home/oracle/EXALYTICS\_INSTALLERS/weblogic

Obtain the zip file for Oracle WebLogic Server on 64-bit Linux and extract the file with a name such as wls1036\_linux64.bin 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_linux64.bin
```

- /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 A.2.4, "Troubleshooting the Installation and Configuration Processes."](#)

- /home/oracle/EXALYTICS\_INSTALL\_TEMP

The installation scripts use this directory for storing temporary files.

### A.2.3.6 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.

### A.2.3.7 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](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*.

### A.2.3.8 Installing Oracle WebLogic Server

If not already installed, install Oracle WebLogic Server.

**To install Oracle WebLogic Server**

1. Navigate to the directory where you downloaded the Oracle WebLogic Server zip file (/home/oracle/EXALYTICS\_INSTALLERS/wls.)
2. If the file is not executable, run the following command:  
`chmod +x wls1036_linux64.bin`
3. On the Welcome screen, click **Next**.  
The Choose Middleware Home Directory is displayed.
4. 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.
5. Specify whether you want to register for security updates, and click **Next**.  
The Choose Install screen is displayed.
6. Select **Typical**, and click **Next**.  
The Choose Product Installation Directories screen is displayed.
7. Specify the directories in which you want to install the products, and click **Next**.  
The Installation Summary screen is displayed.
8. Click **Next**.  
The Status screen is displayed.
9. When the installation is complete, click **Next**.  
The Installation Complete screen is displayed.
10. 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*.

**A.2.3.9 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 /home/oracle/EXALYTICS\_INSTALLERS/bi/bishiphome/Disk1 directory.
2. Start Oracle Business Intelligence 11g Installer by running the following command:  
`./runInstaller`  
The Specify Inventory directory screen is displayed.
3. 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 of the inventory directory specified in the previous step (Step 3, first sub-step) and enter the following command as root user:  
`/createCentralInventory.sh`

Click **OK**.

4. On the Welcome screen, click **Next**.
5. On the Software Updates screen, specify your My Oracle Support information and software update preferences, and click **Next**.
6. On the Select Installation Type screen, select **Software Only Install**, and click **Next**.
7. On the Prerequisite Checks screen, after the prerequisite checks conclude with no errors, click **Next**.
8. 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**.
9. On the Application Server screen, confirm that the application server installed is Oracle WebLogic Server and click **Next**.
10. On the Security Updates screen, enter your My Oracle Support account information, and then click **Next**.
11. On the Summary screen, Click **Install**.
12. On the Installation Progress screen, monitor the progress of your installation. To stop the installation, click **Cancel**.
13. 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*.

#### A.2.3.10 Creating a New Oracle BI Enterprise Edition Instance

After completing the Software Only Install, you must create an Oracle BI EE instance using the Configuration Assistant.

**To create a new Oracle BI EE 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 system
 Click **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 Oracle 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. If you want to install Oracle Essbase, then you must select it now as it's not possible to install Oracle Essbase later.

---

8. On the BIPLATFORM and MDS Schema screens, specify the details of the database schemas you previously created in [Section A.2.3.7, "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*.

### A.2.3.11 Editing the Properties 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
```

### A.2.3.12 Verifying the Checklist

Before running the installation 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.

### A.2.3.13 Running the Installation Script

To run the installation script:

1. Log in to the Exalytics Machine as the user that you created in [Section A.2.3.1, "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 A.2.3.11, "Editing the Properties File"](#) and specify the full path name when you run the installation script.

The installation 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 A.2.4.4, "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.

#### A.2.3.14 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`

## A.2.4 Troubleshooting the Installation and Configuration Processes

This section provides the following information on troubleshooting:

- [Section A.2.4.1, "Resolving Issues with the Installation"](#)
- [Section A.2.4.2, "Viewing Log Files"](#)
- [Section A.2.4.3, "Reinstalling Software on the Exalytics Machine"](#)
- [Section A.2.4.4, "Manually Setting the HardwareAcceleration MBean Attribute"](#)
- [Section A.2.4.4, "Manually Setting the HardwareAcceleration MBean Attribute"](#)
- [Section A.2.4.6, "For More Information"](#)

#### A.2.4.1 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 A.2.3.11, "Editing the Properties File."](#)
  3. Restart the installation process.

#### A.2.4.2 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.

#### A.2.4.3 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 [Appendix A.4, "Deinstalling 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.

#### A.2.4.4 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 `NQSCfg.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.

#### A.2.4.5 Configuring Exalytics Operating System to Change Capacity On Demand

Each Oracle Exalytics Machine is configured with 4 CPUs, each CPU containing 10 active core processors. This configuration provides 40 active core processors. Of these, 20% are reserved for on-demand use when additional computing processing is needed. For example, you use 32 cores most of the time and enable the other 8 cores only when needed, such as to run reports and queries at quarter end. You can then continue using 80% of the active core processors until the next quarter end.

---

**Note:** When you change the number of active core processors, you do not have to restart the Exalytics Machine.

---

You use the `exalytics_resourceControl.sh` utility to configure the Oracle Exalytics operating system to change capacity on demand. [Table A-1](#) shows the parameters for the `capacity_on_demand` command. The command is part of the `exalytics_resourceControl.sh` utility.

**Table A-1** Parameters for the `capacity_on_demand` Command in the `exalytics_resourceControl.sh` Utility

Parameter	Description
Display	Displays number of active core processors currently in use.
Disable	Disables core processors that are reserved for additional on-demand processing.
Enable	Enables core processors that are reserved for additional on-demand processing.
Update	Enables any number of core processors. Can only be used in force mode.

If you do not specify any parameters, the utility displays all capacity on demand arguments. For example, if you navigate to the `/opt/exalytics/bin` directory, and enter the following command:

```
./exalytics_resourceControl.sh
```

The following output is displayed:

```
Usage: ./exalytics_resourceControl.sh [-show | -capacity_on_demand args]
  -show: Displays the number of logical cores active
  -capacity_on_demand [display|disable|enable|update -cores <noOfCoresPerSocket>]
  [-force]
display: displays the number of cores in use.
disable: disables the cores reserved for additional on-demand capacity.
```

enable: enables the cores reserved for additional on-demand capacity.  
 update -cores <numCoresPerSocket> -force: can be used in force mode, to enable any number (min 2) of cores on a socket.

#### To configure the Exalytics operating system to change capacity on demand:

1. Log on the Exalytics Machine as a root user.
2. Navigate to the folder `/opt/exalytics/bin` directory.
3. View the existing configuration, by entering the following command:  
`./exalytics_resourceControl.sh -capacity_on_demand display`  
 The following output is displayed:  

```
[CAPSHOW] Number of cores active per socket: All of 10
```
4. Disable core processors, by entering the following command:  
`./exalytics_resourceControl.sh -capacity_on_demand disable`  
 2 core processors per CPU are disabled.  
 The following output is displayed:  

```
[CAPSHOW] Number of cores active per socket: 8 of 10
```
5. Enable core processors, by entering the following command:  
`./exalytics_resourceControl.sh -capacity_on_demand enable`  
 2 core processors per CPU are enabled.  
 The following output is displayed:  

```
[CAPSHOW] Number of cores active per socket: All of 10
```
6. Enable a given number of core processors (for example, 6), by entering the following command:  
`./exalytics_resourceControl.sh -capacity_on_demand update -cores 6 -force`  
 6 core processors per CPU are enabled.  
 The following output is displayed:  

```
[CAPSHOW] Number of cores active per socket: 6 of 10
```

---

**Note:** After running the utility, you can check the log and the trace files in the `/var/log/oracleexa/systemconfig.log` file and the `/var/log/oracleexa/resctl` directory respectively.

---

#### A.2.4.6 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*

## A.3 Postinstallation Instructions

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.

This section includes the following topics:

- [Section A.3.1, "Installing and Deinstalling Oracle Business Intelligence Client Tools"](#)
- [Section A.3.2, "Creating the boot.properties File"](#)
- [Section A.3.3, "Starting and Stopping Components on an Exalytics Machine"](#)
- [Section A.3.4, "Running the Daemon Configuration Scripts for Oracle TimesTen"](#)
- [Section A.3.5, "Configuring Memory Settings on the Server"](#)
- [Section A.3.6, "Instantiating the Oracle TimesTen In-Memory Database"](#)
- [Section A.3.7, "Configuring the ODBC Connection from Oracle Business Intelligence to Oracle TimesTen"](#)
- [Section A.3.8, "Mapping Instances of Oracle TimesTen into the Physical Layer of the Oracle BI Repository"](#)
- [Section A.3.9, "Installing and Configuring BI Composer for Oracle BI EE"](#)
- [Section A.3.10, "Creating a DSN for IBM DB2 or Microsoft SQL Server"](#)
- [Section A.3.11, "Configuring IBM DB2 to Support Multibyte Data"](#)
- [Section A.3.12, "Configuring Sample Reports for Oracle BI Publisher"](#)
- [Section A.3.13, "Changing the Default Password for SampleAppLite.rpd"](#)
- [Section A.3.14, "Adding the ORACLEHARDWAREACCELERATION TRUE Parameter for Essbase"](#)
- [Section A.3.15, "Enabling Bursting Optimization for BI Publisher"](#)

### A.3.1 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*.

### A.3.2 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*.

### A.3.3 Starting and Stopping Components on an Exalytics Machine

After making configuration changes, you stop and start components on the Exalytics Machine to enable those changes to take effect

You can start and stop components on the Exalytics Machine by performing the following tasks on each computer in the cluster:

**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*.

### A.3.4 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
```

### A.3.5 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:

- If an Oracle TimesTen In-Memory Database larger than 256GB is required, then you must configure and use large pages.  
See "Large pages" in *Oracle TimesTen In-Memory Database Installation Guide* for additional information on defining the Oracle TimesTen In-Memory Database in the DSN and on editing the `limits.conf` file for kernel parameters and semaphores.
- The largest recommended size for a Oracle TimesTen In-Memory Database on a single machine is a total of 800 GB3 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.

---

### A.3.5.1 Configuring Large Pages at the Kernel Level

You can configure and activate the number of large pages by setting the `nr_hugepages` parameter in the `/etc/sysctl.conf` file. For an 800GB Oracle TimesTen In-Memory Database, you must specify greater than 410122 pages to create an 800GB store based on the following calculation:

$$\begin{aligned} & (\text{PermSize} + \text{TempSize} + \text{LogBufMB} + 20) / \text{hugepage\_size} \quad [\text{All in bytes}] \\ & (400 * 1024 * 1024 * 1024) + (400 * 1024 * 1024 * 1024) + (1024 * 1024 * 1024) + (20 * 1024 * 1024) = \\ & 860088172544 \\ & 860088172544 / (2 * 1024 * 1024) = 410122 \end{aligned}$$

For example, to allow for spare capacity, modify the following setting in the `/etc/sysctl.conf` file:

```
vm.nr_hugepages = 410200
```

then either restart the machine or run the following command as the root user:

```
/sbin/sysctl -p
```

### A.3.5.2 Configuring Large Pages for Oracle TimesTen In-Memory Databases

You can configure large pages for the Oracle TimesTen In-Memory Database by editing the following file:

```
/u01/app/oracle/product/TimesTen/tt1122/info/ttndaemon.options
```

and adding the following line:

```
-linuxLargePageAlignment 2
```

### A.3.5.3 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. If needed, change the RAM policy from `inUse` to `Manual`.
3. 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
```

4. Modify the `timesten-install-dir/info/sys.odbc.ini` file in the Oracle TimesTen In-Memory Database to increase the PermSize.
5. 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
```

6. 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.

### A.3.6 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=30
CkptLogVolume=0
CkptRate=20
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.

### A.3.7 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
```

### A.3.8 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*

### A.3.9 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*.

### A.3.10 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*.

### A.3.11 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*.

### A.3.12 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*.

### A.3.13 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>

### A.3.14 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.

### A.3.15 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*.

## A.4 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*.

## A.5 Deploying Oracle Exalytics for High Availability

This section describes how to horizontally scale out the Exalytics Machine for scalability (high-availability) and performance (load balancing).

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 A.5.1, "Requirements for High Availability"](#)
- [Section A.5.2, "Diagram of High Availability"](#)
- [Section A.5.3, "Configuring for High Availability"](#)
- [Section A.5.4, "Troubleshooting the Highly Available Deployment"](#)

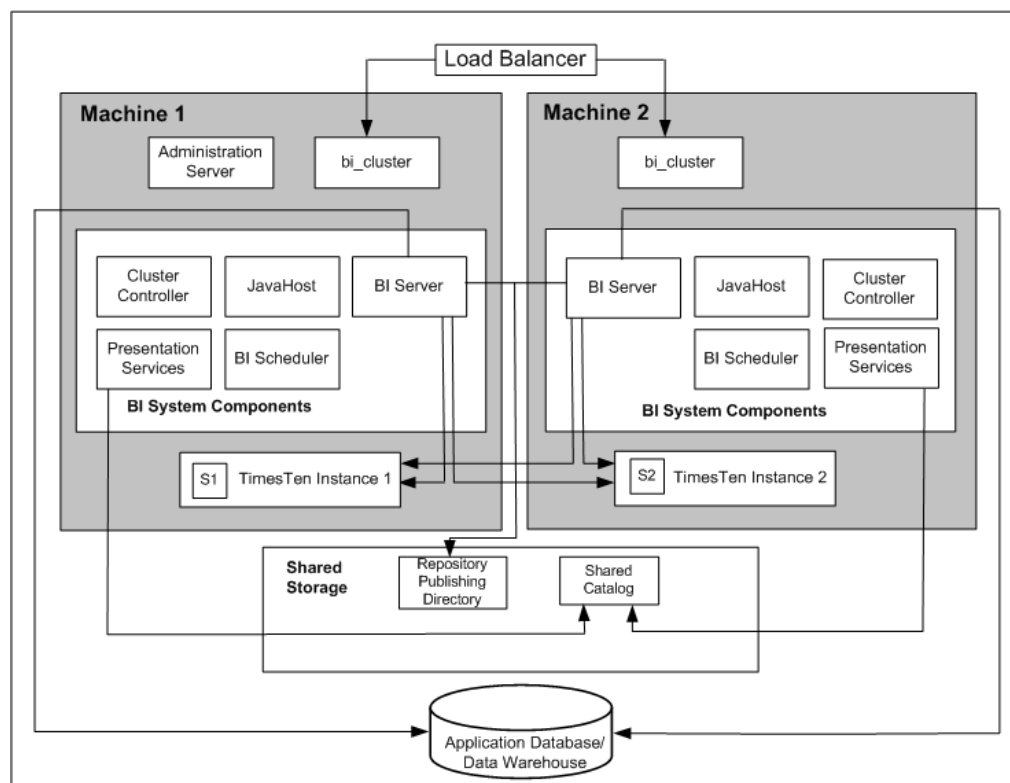
### A.5.1 Requirements for High Availability

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.

### A.5.2 Diagram of High Availability

[Figure A-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.



### A.5.3 Configuring for High Availability

[Appendix A.2, "Installing Software on Exalytics Machine"](#) 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 section, see [Appendix A.4, "Deinstalling Software on the Exalytics Machine."](#)

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

- [Section A.5.3.1, "Step 1: Preparing the First Exalytics Machine"](#)
- [Section A.5.3.2, "Step 2: Preparing the Second Exalytics Machine"](#)
- [Section A.5.3.3, "Step 3: Installing Oracle WebLogic Server"](#)
- [Section A.5.3.4, "Step 4: Installing Oracle Business Intelligence"](#)
- [Section A.5.3.5, "Step 5: Scaling Out the Existing BI Domain"](#)
- [Section A.5.3.6, "Step 6: Scaling Out System Components to the Second Exalytics Machine"](#)
- [Section A.5.3.7, "Step 7: Installing and Configuring Oracle TimesTen"](#)
- [Section A.5.3.8, "Step 8: Configuring Shared Storage for Persistent Stores"](#)
- [Section A.5.3.9, "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.

### A.5.3.1 Step 1: Preparing the First Exalytics Machine

Install Oracle Exalytics on the first Exalytics Machine using the instructions that are provided in [Appendix A.2, "Installing Software on Exalytics Machine"](#) of this appendix before installing on the second Exalytics Machine.

### A.5.3.2 Step 2: Preparing the Second Exalytics Machine

To prepare the second Exalytics Machine:

1. Create the user, as described in [Appendix A.2.3.1, "Creating the User, Group, and Password on the Operating System."](#)
2. Create the inventory for Oracle TimesTen, as described in [Appendix A.2.3.2, "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 [Appendix A.2.3.5, "Downloading Oracle Files into the Directory Structure."](#) You do not have to download the files for the Repository Creation Utility.

### A.5.3.3 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. Run the following command:  

```
>./ wls1036_linux64.bin
```
2. Select the custom option in the wizard and deselect **Coherence**, because the component does not need to be installed.  
  
The wizard automatically selects JRockit as the JVM to use, so keep this option selected.
3. When the installation has completed, clear the option to run "quickstart" because this option is not required.

### A.5.3.4 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.

### A.5.3.5 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.

### A.5.3.6 Step 6: 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.

### A.5.3.7 Step 7: 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 [Appendix A.3.4, "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 [Appendix A.3.7, "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_ttl";
```

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.

### A.5.3.8 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*.

#### A.5.3.9 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*.

### A.5.4 Troubleshooting the Highly Available Deployment

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

- [Section A.5.4.1, "Connection Issues with the Oracle BI Server and Oracle TimesTen"](#)
- [Section A.5.4.2, "Client Installer Cannot Locate the Driver for Oracle TimesTen"](#)
- [Section A.5.4.3, "Oracle BI Server Does Not Fail Over to the Instance of Oracle TimesTen"](#)
- [Section A.5.4.4, "Aggregates Are Not Present in Second Instance"](#)

#### A.5.4.1 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 A.3.7, "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:
- The BI Server must use the ODBC driver for Oracle TimesTen Version 3.5 for connection.

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

During deployment of a repository, ensure that you use the 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.

#### A.5.4.2 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
```

#### **A.5.4.3 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.

#### **A.5.4.4 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*.

