

Oracle® Exalytics

In-Memory Machine Owner's Guide

Exalytics X2-4 Release 1 (1.0)

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This guide describes how to set up and commission the Oracle Exalytics In-Memory Machine in your data center.

Oracle Exalytics In-Memory Machine Owner's Guide Exalytics X2-4 Release 1 (1.0)

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Preface

This guide describes how to set up and commission the Oracle Exalytics In-Memory Machine in your data center. It includes information about hardware operations and site planning, as well as physical, electrical, and environmental specifications.

Note: All hardware-related specifications in this guide are based on information for a typical deployment provided by Oracle at the time this guide was written. Oracle is not responsible for hardware problems that may result from following the average specifications in this document. For detailed information about preparing your site for Oracle Exalytics In-Memory Machine deployment, consult your hardware specification.

This guide applies to:

- Oracle Exalytics X2-4 Release 1 Patchset 2 (1.0.0.2)
- Oracle Exalytics X2-4 Release 1 Patchset 1 (1.0.0.1)
- Oracle Exalytics X2-4 Release 1 (1.0.0.0), also known as Release 11.1.1.6.0

This preface contains the following sections:

- [Audience](#)
- [Documentation Accessibility](#)
- [Related Documents](#)
- [Conventions](#)

Audience

This guide is intended for Oracle Exalytics In-Memory Machine customers and those responsible for data center site planning.

It is assumed that the readers of this manual have knowledge of the following:

- System administration concepts
- Hardware and networking concepts

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Related Documents

For more information, see the following documents:

- *Oracle Fusion Middleware 11g Release 1 (11.1.1.6.0) Documentation Library*
- *Oracle Business Intelligence 11g Release 1 (11.1.1.6.0) Documentation*
- *Oracle Fusion Middleware Installation and Administration Guide for Oracle Exalytics In-Memory Machine*

Conventions

The following text conventions are used in this document:

Convention	Meaning
boldface	Boldface type indicates graphical user interface elements associated with an action, or terms defined in text or the glossary.
<i>italic</i>	Italic type indicates book titles, emphasis, or placeholder variables for which you supply particular values.
<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.

Introduction

This chapter describes the features and hardware components of an Oracle Exalytics In-Memory Machine.

It contains the following topics:

- [Section 1.1, "About Oracle Exalytics In-Memory Machine"](#)
- [Section 1.2, "Hardware Configuration"](#)
- [Section 1.3, "Assigning PCIe Slots"](#)
- [Section 1.4, "Key Features"](#)
- [Section 1.5, "Environmental Specifications"](#)
- [Section 1.6, "Safety and Compliance Information"](#)

1.1 About Oracle Exalytics In-Memory Machine

Oracle Exalytics In-Memory Machine is an engineered solution that includes a memory-centric hardware platform, proven in-memory technology from Oracle TimesTen, and the breadth of Oracle Business Intelligence Foundation Suite functionality. Oracle Exalytics In-Memory 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 setting up and maintaining an enterprise-level, high-performance Business Intelligence implementation. It eliminates the risk associated with procuring the system infrastructure from multiple vendors. Oracle's technology is designed to scale seamlessly from small departmental installations to large scale enterprise Business Intelligence deployments.

1.2 Hardware Configuration

[Table 1-1](#) describes the configuration for each of the hardware components of the Oracle Exalytics In-Memory Machine.

Table 1-1 Oracle Exalytics In-Memory Machine Hardware

Component	Description
Core Components	
Compute Server	One Sun Fire X4470 M2 server
Power Supply	Two power supply units: 1U A239A 2000-watt AC power supply

Table 1–1 (Cont.) Oracle Exalytics In-Memory Machine Hardware

Component	Description
System Processor	Four CPUs: E7-4870, 10C, 2.4 GHz, 130W, 30MB Cache, 6.4 GT/s QPI, Intel Turbo Boost Technology, Intel HT Technology Processor with Heatsink. X-Option. RoHS
System Memory	Sixty four dual in-line memory modules: LV DIMM, 16 GB, DDR3-1066, 1.35V Total system memory: 1 TB per server
SAS Host Bus Adapter (HBA)	One SAS-2 8-port internal (2x4), 6 Gb, RAID PCIe Gen 2 host bus adapter
InfiniBand Host Channel Adapter (HCA)	One 2-port QDR InfiniBand host channel adapter
Ethernet Network Interface Card (NIC)	One Dual-Port 10 Gigabit-Ethernet PCIe 2.0 Copper/Fiber SFP+ card
Fiberchannel Card	One 8Gb Dual-Port Fiber Channel PCI-Express card
Hard Disk Drives (HDD)	Six 2.5inch 600 GB 10K RPM SAS2 hard disk drives Total HDD memory: 3.6 TB per server
Cooling Fans	Six hot-swappable, redundant fans at chassis front (top-loading); redundant fans in each power supply
Accessories	
Rack Mount Slide Rail Kit	One tool-less rack-mount slide-rail kit
Cable Management Arm (CMA)	One cable management arm
Ports and I/O Slots on the Server	
USB 2.0 Ports	Two front, two rear, and one internal
VGA Ports	One front and one rear high-density DB-15 video port The rear VGA port supports VESA Device Data Channel for monitor identification.
PCI Express 2.0 I/O Slots	Ten PCI Express 2.0 slots that accommodate low-profile PCIe cards. <ul style="list-style-type: none"> Slots 0 and 9: x4 electrical interface Slots 1, 2, 4, 6, 7, and 8: x8 electrical interface Slots 3 and 5: x8 or x16 electrical interface (x16 connector)
Ethernet Ports	Four 10/100/1000 RJ-45 GbE ports on rear panel Each Network Interface Controller (NIC) supports Intel QuickData Technology, Intel I/OAT, VMDq, PCI-SIG SR-IOV, IPSec offload, and LinkSec.

1.3 Assigning PCIe Slots

Table 1–2 describes the assignment of PCIe cards in the slots on the Oracle Exalytics In-Memory Machine.

Table 1–2 Oracle Exalytics In-Memory Machine PCIe Card Slots

PCIe Card	Slot Number
8Gb Dual-Port Fiber Channel PCI-Express Card	Slot 0

Table 1–2 (Cont.) Oracle Exalytics In-Memory Machine PCIe Card Slots

PCIe Card	Slot Number
Dual-Port 10 Gigabit-Ethernet PCIe 2.0 Copper/Fiber SFP+	Slot 2
SAS-2 8-port internal (2x4), 6Gb, RAID PCIe Gen 2 HBA	Slot 4
2-port QDR InfiniBand HCA	Slot 6

1.4 Key Features

Oracle Exalytics In-Memory Machine includes the following features:

- Complete, pre-assembled, and certified system for maximum performance
- Best platform for end-to-end consolidation of large-scale application deployments
- Ready to deploy
- Linearly scalable
- Enterprise-ready
- Enterprise-level software and hardware support

1.5 Environmental Specifications

[Table 1–3](#) describes the environmental specifications for the Oracle Exalytics In-Memory Machine.

Table 1–3 Environmental Specifications for Oracle Exalytics In-Memory Machine

Component	Description
Environment	<ul style="list-style-type: none"> ■ Operating temperature: 5°C to 35°C (41°F to 95°F) at sea level; 5°C to 31°C (41°F to 88°F) at altitude ■ Non-operating temperature: -40°C to 68°C (-40°F to 154°F) ■ Operating relative humidity: 10% - 90% relative humidity, non-condensing ■ Acoustic noise: LwAd: 8.9 B (idle and operating, room temperature), 8.9 B (maximum ambient); LpAm: 75 dBA (bystander position, maximum ambient)
Power	<ul style="list-style-type: none"> ■ AC power: 200 - 240 VAC (2 or 4 CPUs) ■ Power consumption measurements with CPUs at maximum utilization: 1317W ■ Active Idle (operating systems booted and stabilized, yet running at minimal utilization): 663W
Regulations	<ul style="list-style-type: none"> ■ Safety: IEC 60950, UL/CSA 60950. CB Scheme with all country differences ■ RFI/EMI: FCC CFR 47 Part 15 Class A, EN 55022 Class A, EN 61000-3-2, EN 61000-3-3, EN 300 386 ■ Immunity: EN 55024, EN 300 386

Table 1–3 (Cont.) Environmental Specifications for Oracle Exalytics In-Memory Machine

Component	Description
Certifications	<ul style="list-style-type: none">■ Safety: UL/cUL, UL DEMKO, CE, BSMI, CCC, GOST-R, S-Mark■ EMC: CE, FCC, VCCI, ICES, C-Tick, MIC, CCC, GOST-R, BSMI Class A■ Other: Complies with WEEE Directive (2002/96/EC) and RoHS Directive (2002/95/EC)
Physical Specifications	<ul style="list-style-type: none">■ Weight: 38.5 kg (85 lb.) maximum■ Height: 129.85 mm (5.1 in.)■ Width: 436.5 mm (17.2 in.)■ Depth: 732 mm (28.8 in.)
Mounting Option	<ul style="list-style-type: none">■ Tool-less rack-mounting slide-rail kit■ Cable management arm

1.6 Safety and Compliance Information

For safety and compliance information about your Oracle Exalytics In-Memory Machine, see the following documents:

- *Important Safety Information for Sun Hardware Systems* – Printed document included in the ship kit.
- *Sun Fire X4470 M2 Server Safety and Compliance Guide* – Online at Oracle's Sun documentation site.

Getting Started

This chapter describes how to get started with your Oracle Exalytics In-Memory Machine.

It discusses the following topics:

- [Section 2.1, "Tools and Equipment Needed"](#)
- [Section 2.2, "Installation Tasks"](#)
- [Section 2.3, "Opening the Box"](#)
- [Section 2.4, "ESD Precautions"](#)
- [Section 2.5, "Oracle Exalytics In-Memory Machine Description"](#)
- [Section 2.6, "Connecting the Cables"](#)
- [Section 2.7, "Connecting the Power Cords"](#)
- [Section 2.8, "Powering On the Machine"](#)
- [Section 2.9, "Connecting a Laptop to Oracle Exalytics In-Memory Machine"](#)
- [Section 2.10, "Connecting to ILOM"](#)
- [Section 2.11, "Powering Off the Machine"](#)

2.1 Tools and Equipment Needed

To install the system, you need the following tools:

- No. 2 Phillips screwdriver
- ESD mat and grounding strap
- Pencil, stylus, or other pointed device, for pushing front panel buttons

You also need a system console device, such as one of the following:

- A laptop or Sun workstation
- ASCII terminal
- Terminal server

2.2 Installation Tasks

This section summarizes a list of tasks that you must perform to install the Oracle Exalytics In-Memory Machine.

Table 2–1 Server Installation Tasks

Step	Description	For More Information
1	Unpack the machine and any optional components ordered for the Oracle Exalytics In-Memory Machine from the shipping containers.	See Opening the Box
2	Review electrostatic damage (ESD) precautions before installing the Oracle Exalytics In-Memory Machine.	See ESD Precautions
2	Install the Oracle Exalytics In-Memory Machine into a rack using slide-rails.	See Installing Oracle Exalytics In-Memory Machine Into a Rack
3	Connect cables to the server.	See Connecting the Cables
4	Connect power cords.	See Connecting the Power Cords
5	Apply power to the Oracle Exalytics In-Memory Machine.	See Powering On the Machine
6	Connect a laptop, workstation, or terminal to the Oracle Exalytics In-Memory Machine.	See Connecting a Laptop to Oracle Exalytics In-Memory Machine
7	Connect to Oracle Integrated Lights Out Manager (ILOM).	See Connecting to ILOM
8	Power off the Oracle Business Integration Machine.	See Powering Off the Machine

2.3 Opening the Box

Carefully open the shipping box. Unpack all server components from the packing cartons.

After opening the box, verify the server box contents and any optional components.

2.3.1 Server Box Contents

The server box should contain the following items:

- Sun Fire X4470 M2 Server
- Power cord, packaged separately with country kit
- Rackmount kit containing rack rails and installation instructions
- (Optional) Sun Fire X4470 M2 Server Documentation and Media Kit, including the following:
 - License and safety documentation
 - Tools and Drivers DVD (includes drivers and additional software), Oracle Hardware Installation Assistant CD, and SunVTS CD

2.4 ESD Precautions

Electronic equipment is susceptible to damage by static electricity. Use a grounded antistatic wrist strap, foot strap, or equivalent safety equipment to prevent electrostatic damage (ESD) when you install or service the Oracle Exalytics In-Memory Machine.

Caution: To protect electronic components from electrostatic damage, which can permanently disable the system or require repair by authorized service technicians, place components on an antistatic surface, such as an antistatic discharge mat, an antistatic bag, or a disposable antistatic mat. Wear an antistatic grounding strap connected to a metal surface on the chassis when you work on system components.

2.5 Oracle Exalytics In-Memory Machine Description

This section shows the connectors and buttons on the front and back panels of the Oracle Exalytics In-Memory Machine.

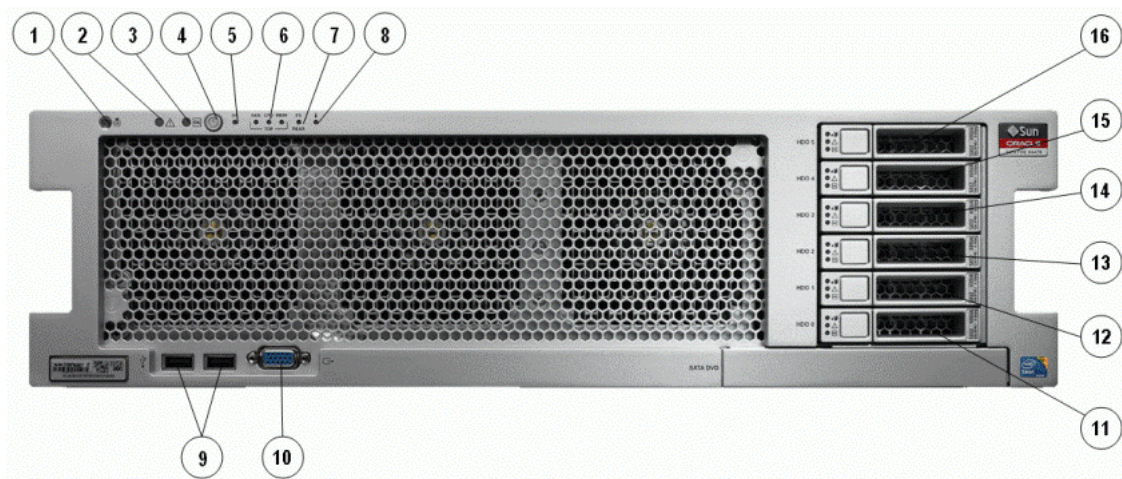
It contains the following topics:

- [Front Panel Features](#)
- [Back Panel Features](#)

2.5.1 Front Panel Features

[Figure 2-1](#) shows the front panel of the Oracle Exalytics In-Memory Machine.

Figure 2-1 Oracle Exalytics In-Memory Machine Front Panel



[Table 2-2](#) describes the front panel buttons and LED indicators.

Table 2-2 Figure Legend

Number	Description
1	Locator LED/Locator button: white
2	Service Action Required LED: amber
3	Main Power/OK LED: green
4	Power button
5	SP OK/Fault LED: green/amber
6	Service Action Required LEDs (3) for Fan Module (FAN), Processor (CPU) and Memory: amber

Table 2–2 (Cont.) Figure Legend

Number	Description
7	Power Supply (PS) Fault (Service Action Required) LED: amber
8	Over Temperature Warning LED: amber
9	USB 2.0 connectors (2)
10	DB-15 video connector
11	Hard disk drive 0
12	Hard disk drive 1
13	Hard disk drive 2
14	Hard disk drive 3
15	Hard disk drive 4
16	Hard disk drive 5

2.5.2 Back Panel Features

Figure 2–2 shows the back panel of the Oracle Exalytics In-Memory Machine.

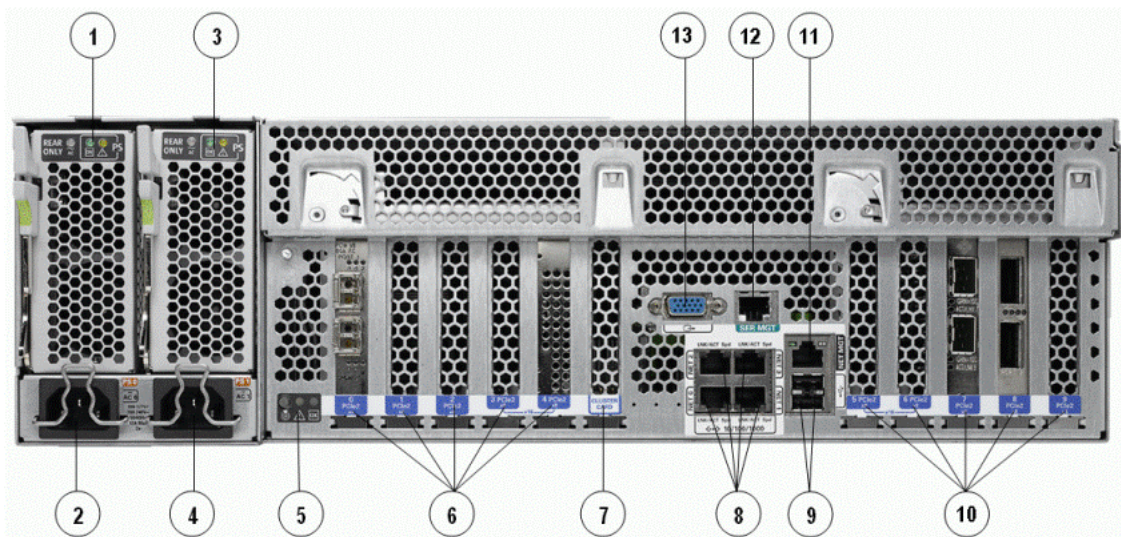
Figure 2–2 Oracle Exalytics In-Memory Machine Back Panel

Table 2–3 describes the back panel buttons and LED indicators.

Table 2–3 Figure Legend

Number	Description
1	Power supply unit 0 status indicator LEDs: Service Action Required: amber DC OK: green AC OK: green or amber
2	Power supply unit 0 AC inlet

Table 2–3 (Cont.) Figure Legend

Number	Description
3	Power supply unit 1 status indicator LEDs: Service Action Required: amber DC OK: green AC OK: green or amber
4	Power supply unit 1 AC inlet
5	System status LEDs: Power/OK: green Attention: amber Locate: white
6	PCIe card slots 0–4
7	Cluster card slot
8	Network (NET) 10/100/1000 ports: NET0–NET3
9	USB 2.0 connectors (2)
10	PCIe card slots 5–9
11	Service processor (SP) network management (NET MGT) port
12	Serial management (SER MGT)/RJ-45 serial port
13	DB-15 video connector

2.6 Connecting the Cables

Connect cables to the Oracle Exalytics In-Memory Machine as follows:

1. Connect an Ethernet cable to the Gigabit Ethernet (NET0) connectors as needed for operating system support. See the part 8 in [Figure 2–2](#).
2. (Optional) If you want to interact with the system console directly, connect any external devices, such as a mouse and keyboard, to the server's USB connectors, or a monitor to the DB-15 video connector. See parts 9 and 13 in [Figure 2–2](#).
3. If you plan to configure network IP address for Oracle Integrated Lights Out Manager (ILOM), connect an Ethernet cable to the Ethernet port labeled SER MGT. See the part 12 in [Figure 2–2](#).
4. If you plan to access the ILOM command-line interface (CLI) using the serial management port, connect a serial null modem cable to the RJ-45 serial port labeled SER MGT. See the part 12 in [Figure 2–2](#).

2.7 Connecting the Power Cords

Connect the power cords to the Oracle Exalytics In-Memory Machine as follows:

1. Connect two grounded server power cords to grounded electrical outlets.
2. Connect the two server power cords to the AC connectors on the back panel of the server.

When power is connected, the server boots into standby power mode. In standby power mode, the SP OK/Fault LED flashes, but the main Power/OK LED remains off. After a few minutes, the main Power/OK LED slowly flashes the standby pattern,

indicating the service processor (SP) is working. Note that the server is not initialized or powered on yet.

Figure 2–3 Front Panel Controls

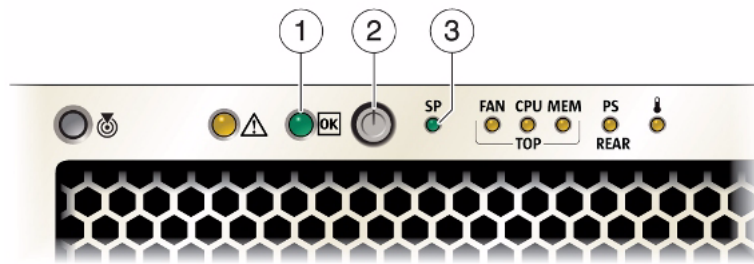


Figure Legend

- 1 - Power/OK LED
- 2 - Power button
- 3 - SP OK/Fault LED

2.8 Powering On the Machine

Caution: Do not operate the server without all fans, component heatsinks, air baffles, and the cover installed. Severe damage to server components can occur if the server is operated without adequate cooling mechanisms.

1. Verify that the power cords have been connected ([Figure 2–1](#)) and that standby power is on.
2. Press and release the recessed Power button on the front panel.

When main power is applied to the server, the main Power/OK LED flashes once per second to indicate the system is booting. The main Power/OK LED turns steady green when system is loading an operating system.

Note: When the server powers on, the power-on self-test (POST) can take several minutes to complete.

2.9 Connecting a Laptop to Oracle Exalytics In-Memory Machine

You can connect a laptop to the Oracle Exalytics In-Memory Machine as follows:

1. Ensure that you have a laptop with functional USB and network ports.
2. Ensure that you have a Category 5E patch cable of maximum length 25 feet and a serial cable of maximum length 15 feet.
3. Connect the network port of your laptop into the SER MGT port on the back panel of the Oracle Exalytics In-Memory Machine.
4. If you have not booted the operating system on your laptop, start the operating system now.

If you are using the Windows operating system on your laptop, do the following:

- a. Go to **Control Panel > Network Connections**. Select your wired network adapter in the list of network connections, right-click and select **Properties**. The network properties screen is displayed.
- b. Click the **General** tab, and select **Internet Protocol (TCP/IP)**. Click **Properties**. The Internet Protocol (TCP/IP) Properties screen is displayed.
- c. Select the **Use the following IP address:** option, and enter a static IP address for your laptop. Although a default gateway is not necessary, enter the same IP address in the **Default Gateway** field. Click **OK** to exit the network connections screen.

If you are using the Linux operating system on your laptop, do the following:

- a. Log in as a `root` user.
- b. At the command prompt, enter the following command to display the network devices, such as `ETH0`, attached to the Oracle Exalytics In-Memory Machine:

```
# ifconfig -a
```

The list of network devices or adapters attached to the Oracle Exalytics In-Memory Machine is displayed.

- c. To set up the desired network interface, run the `ifconfig` command at the command prompt, as in the following example:

```
# ifconfig eth0 192.0.2.10 netmask 255.255.255.0 up
```

In this example, the `ifconfig` command assigns the IPv4 address `192.0.2.10`, with a network mask of `255.255.255.0`, to the `eth0` interface.

5. For laptop connectivity, open any telnet or ssh client program, such as PuTTY. Connect to the service processor IP address of the Oracle Exalytics In-Memory Machine, which is up and running.

2.10 Connecting to ILOM

You can use the Oracle Integrated Lights Out Manager (ILOM) to start, boot, and manage the Oracle Exalytics In-Memory Machine. You can connect to ILOM either by using a serial connection or by using an Ethernet connection.

2.10.1 Connecting to ILOM Using a Serial Connection

To connect to ILOM using a serial connection using the `SER MGT` port, complete the following steps:

1. Connect a terminal device to the Oracle Exalytics In-Memory Machine. Set the terminal device to communicate using 9600 baud, 8 bit, no parity, 1 stop bit. A null modem connection is required.
2. Press **Enter** on the terminal device to create a connection between the terminal device and the ILOM SP. The ILOM login prompt is displayed.
3. Log in to the ILOM SP command-line interface using the `root` username and the `welcome1` password. The ILOM command-line prompt is displayed.

You can now start, configure, and manage the Oracle Exalytics In-Memory Machine using ILOM.

2.10.2 Connecting to ILOM Using an Ethernet Connection

To connect to ILOM via an Ethernet connection using the `NET MGT` port, you must know the IP address of the server's service processor (SP). The default ILOM IP address of Oracle Exalytics In-Memory Machine is `192.168.1.200`.

2.11 Powering Off the Machine

You can power off the Oracle Exalytics In-Memory Machine in any of the following ways:

- Issue a shutdown command from the host operating system.
- Issue a shutdown command from the ILOM (forced or graceful shutdown). For graceful shutdown, use the **stop /SYS** command. For forced shutdown, use the **stop [-f | force] /SYS** command.
- Hold the power button in until the machine powers off. This option is not recommended.

Installing Oracle Exalytics In-Memory Machine Into a Rack

This chapter describes how to optionally place your Oracle Exalytics In-Memory Machine into a rack using the rail assembly in the rackmount kit. The rail assembly is included in your Oracle Exalytics In-Memory Machine package.

Note: A rack is not shipped with the Oracle Exalytics In-Memory Machine. You should use an existing four-post rack that meets the standards listed in [Table 3–1](#).

This chapter contains the following topics:

- [Section 3.1, "Task Roadmap"](#)
- [Section 3.2, "Reviewing Rack Compatibility"](#)
- [Section 3.3, "Before You Begin"](#)
- [Section 3.4, "Disassembling the Slide-Rails"](#)
- [Section 3.5, "Installing the Mounting Brackets Onto Oracle Exalytics In-Memory Machine"](#)
- [Section 3.6, "Attaching the Slide-Rail Assemblies to the Rack"](#)
- [Section 3.7, "Installing Oracle Exalytics In-Memory Machine into the Slide-Rail Assemblies"](#)
- [Section 3.8, "Installing the Cable Management Arm"](#)
- [Section 3.9, "Verifying the Operation of the Slide Rails and CMA"](#)

3.1 Task Roadmap

Installing your Oracle Exalytics In-Memory Machine into a four-post rack using the slide-rail and cable management arm options involves the following steps:

1. [Reviewing Rack Compatibility](#)
2. [Disassembling the Slide-Rails](#)
3. [Installing the Mounting Brackets Onto Oracle Exalytics In-Memory Machine](#)
4. [Attaching the Slide-Rail Assemblies to the Rack](#)
5. [Installing Oracle Exalytics In-Memory Machine into the Slide-Rail Assemblies](#)
6. [Installing the Cable Management Arm](#)

7. Verifying the Operation of the Slide Rails and CMA

3.2 Reviewing Rack Compatibility

Verify that your rack is compatible with the slide-rail and cable management arm (CMA) options. The optional slide-rails are compatible with a wide range of equipment racks that meet the standards listed in.

Table 3–1 Rack Compatibility for Oracle Exalytics In-Memory Machine

Item	Requirement
Structure	Four-post rack (mounting at both front and rear). Two-post racks are not compatible.
Rack horizontal opening and unit vertical pitch	Conforms to ANSI/EIA 310-D-1992 or IEC 60927 standards. Only M6 tapped or 9.5 mm square are supported.
Distance between front and rear mounting planes	Minimum 610 mm and maximum 915 mm (24 inches to 36 inches).
Clearance depth in front of front mounting plane	Distance to front cabinet door is at least 25.4 mm (1 inch).
Clearance depth behind front mounting plane	Distance to rear cabinet door is at least 900 mm (35.5 inches) with the cable management arm, or 770 mm (30.4 inches) without the cable management arm.
Clearance width between front and rear mounting planes	Distance between structural supports and cable troughs is at least 456 mm (18 inches).
Machine dimensions	Depth: (not including PSU handle): 732 mm (28.82 inches) Width: (not including ears): 436.5 mm (17.19 inches) Height: 129.85 mm (5.11 inches)

3.3 Before You Begin

Before installing Oracle Exalytics In-Memory Machine into a rack, read the following cautions and important notes:

- Always load equipment into a rack from the bottom up, so that the rack will not become top-heavy and tip over. Deploy your rack's anti-tip bar to prevent the rack from tipping during equipment installation.
- If the Oracle Exalytics In-Memory Machine is installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment might be greater than room ambient temperature. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified for the Oracle Exalytics In-Memory Machine.
- Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on over-current protection and supply wiring. Appropriate consideration of equipment nameplate power ratings should be used when addressing this concern.

- Reliable earthing of rackmounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (for example, use of power strips).
- Slide-rail mounted equipment must not be used as a shelf or a work space.

3.4 Disassembling the Slide-Rails

To disassemble the slide-rails before the installation, complete the following steps:

1. Unpack the slide-rails.
2. Locate the slide-rail lock at the front of the slide-rail assembly, as shown in [Figure 3-1](#).
3. Press and hold the slide-rail lock toward the direction of the arrow, while you pull the mounting bracket out of the slide-rail assembly until it reaches the stop, as shown in [Figure 3-1](#).
4. Push the mounting bracket release button toward the front of the mounting bracket ([Figure 3-1](#)), and simultaneously withdraw the mounting bracket from the slide-rail assembly.

Figure 3-1 Disassembling the Slide-Rails Before Installation

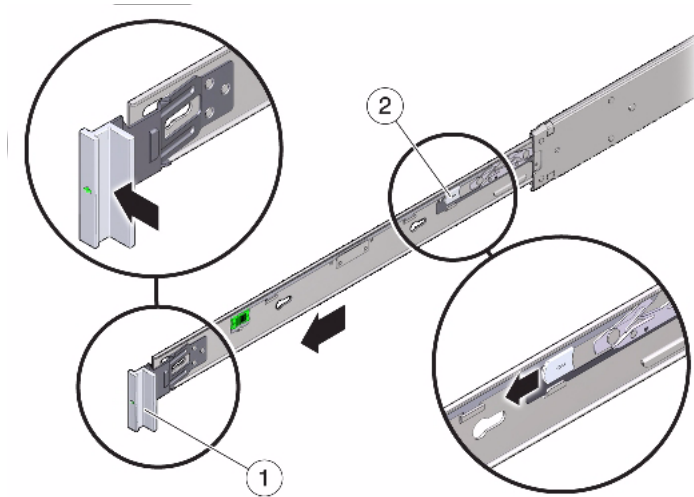


Table 3-2 Figure Legend

Number	Description
1	Slide-rail lock
2	Mounting bracket release button

3.5 Installing the Mounting Brackets Onto Oracle Exalytics In-Memory Machine

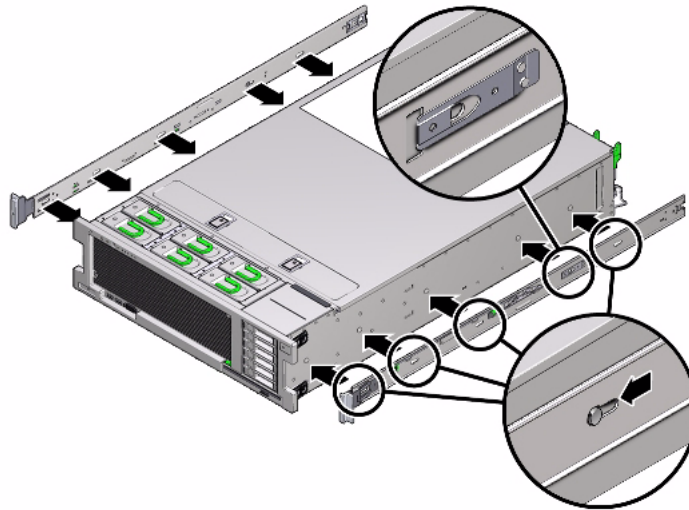
You must install the mounting brackets onto the Oracle Exalytics In-Memory Machine before you can rackmount it.

To install the mounting brackets, complete the following steps:

1. Position a mounting bracket against the chassis so that the slide-rail lock is at the Oracle Exalytics In-Memory Machine front, and the five keyhole openings on the mounting bracket are aligned with the five locating pins on the side of the chassis, as shown in [Figure 3–2](#).

Note: The mounting brackets are identical and can be installed on either side of the chassis.

Figure 3–2 *Installing the Mounting Brackets*



2. With the heads of the five chassis locating pins protruding through the five keyhole openings in the mounting bracket, pull the mounting bracket toward the front of the chassis until the mounting bracket clip locks into place with an audible click, as shown in [Figure 3–2](#).
3. Verify that the rear locating pin has engaged the mounting bracket clip.
4. Repeat to install the remaining mounting bracket on the other side of the Oracle Exalytics In-Memory Machine.

3.6 Attaching the Slide-Rail Assemblies to the Rack

The slide rail assemblies support only racks with 9.5-mm square holes and M6 round holes. All other racks, including those racks with 7.2-mm, M5, or 10-32 mounting holes, are not supported. See your rack documentation for information about the size of its rail holes.

To attach the slide-rail assemblies to the rack, complete the following steps:

1. (Optional) If you need to move the rack with the Oracle Exalytics In-Memory Machine installed, it is recommended that you attach the slide-rail assembly with mounting screws and cage nuts.

Note: Insert the cage nuts prior to performing the next step. See the *Rail Rackmount Kit Overview and Information* card for instructions on inserting these cage nuts. This card is included with the rack kit.

2. Position a slide-rail assembly in your rack, so that the slide-rail assembly front bracket is on the outside of the front rack post and the slide-rail assembly rear bracket is on the inside of the rear rack post, as shown in [Figure 3-3](#).
3. Align the slide-rail assembly mounting pins with the front and rear rack post mounting holes. Then lock the assembly into place by pushing the assembly toward the rear of the rack until the mounting pins engage the rack, as shown in [Figure 3-4](#).

You will hear an audible click when the mounting pins engage the rack.

Note: The slide assembly mounting pins accommodate either 9.5 mm square mounting holes or M6 round mounting holes. No other mounting hole sizes are supported.

Figure 3-3 *Installing Slide-Rail Assemblies Onto the Rack*

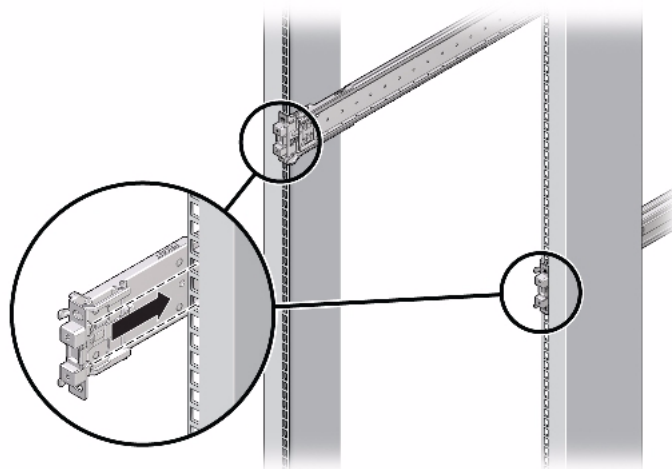
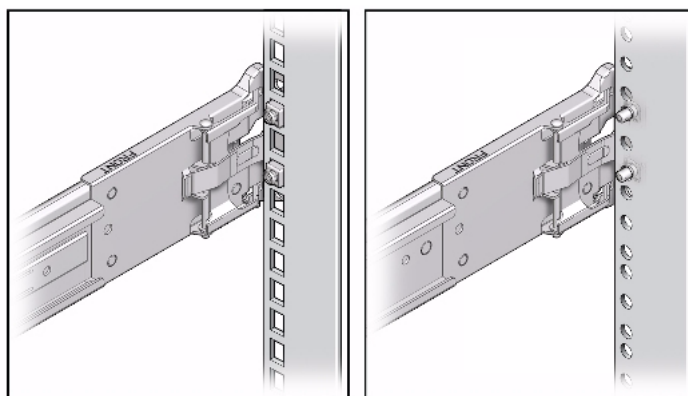
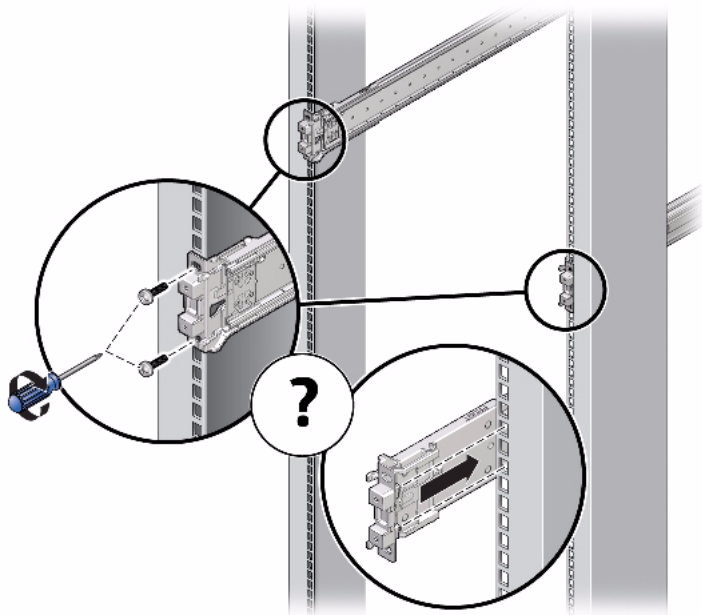


Figure 3-4 *Slide-Rail Mounting Pins*



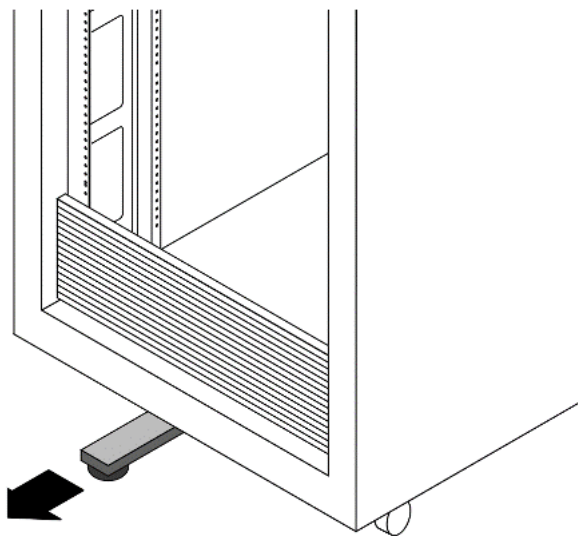
4. (Optional) If you choose to attach the slide-rail assembly with mounting screws and cage nuts, insert the M6 mounting screws through both front and rear slide-rail brackets and rack posts, then secure them with the caged nuts. See [Figure 3-5](#).

Figure 3–5 *Attach Slide-Rail Assembly to a Rack*



5. Repeat Step 2 through Step 4 for the remaining slide-rail assembly.
6. If available, extend the anti-tip bar at the bottom of the rack, as shown in [Figure 3–6](#). Refer to your rack documentation for instructions.

Figure 3–6 *Extending the Anti-tip Bar*



Caution: If your rack does not have an anti-tip bar, the rack could tip over.

3.7 Installing Oracle Exalytics In-Memory Machine into the Slide-Rail Assemblies

Use this procedure to install the Oracle Exalytics In-Memory Machine chassis, with mounting brackets, into the slide-rail assemblies that are mounted to the rack.

Caution: This procedure requires a minimum of two persons because of the weight of the Oracle Exalytics In-Memory Machine. Attempting this procedure alone could result in equipment damage or personal injury.

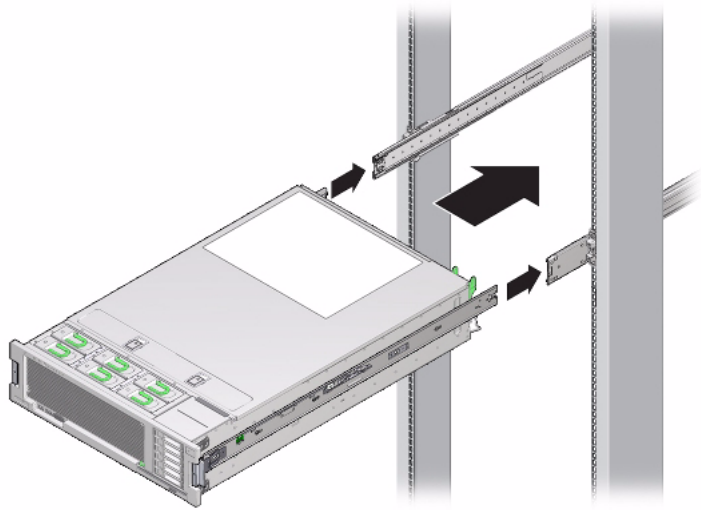
Always load equipment into a rack from the bottom up so that the rack will not become top-heavy and tip over. Extend your rack's anti-tip bar to prevent the rack from tipping during equipment installation.

To install Oracle Exalytics In-Memory Machine into the slide-rail assemblies, complete the following steps:

1. Push the slide-rails into the slide-rail assemblies in the rack as far as possible.
2. Raise the Oracle Exalytics In-Memory Machine so that the rear ends of the mounting brackets are aligned with the slide-rail assemblies that are mounted in the rack, as shown in [Figure 3-7](#).
3. Insert the mounting brackets into the slide-rails, then push the server into the rack until the mounting brackets encounter the slide-rail stops (approximately 12 inches, or 30 cm).

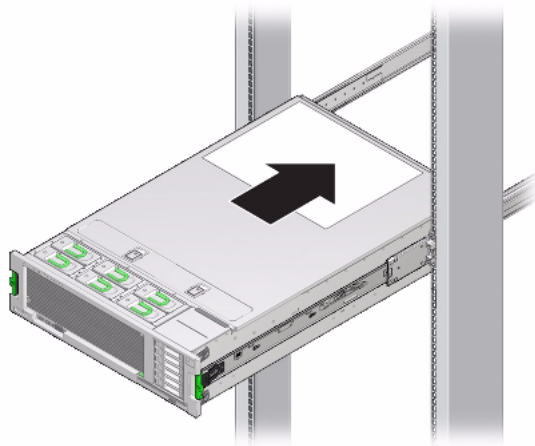
Caution: When inserting the Oracle Exalytics In-Memory Machine into the slide-rail, ensure that both the top and bottom mounting lips of the mounting brackets are inserted into the slide-rail. The Oracle Exalytics In-Memory Machine should slide forward and backward easily if correctly installed. If the unit does not slide easily, ensure that each mounting lip is inserted properly. If the mounting brackets are not inserted properly, the unit may fall when removing it from the rack.

Figure 3–7 Inserting the Oracle Exalytics In-Memory Machine with Mounting Brackets into the Slide-Rails



4. Simultaneously push and hold the green slide-rail release buttons (Figure 3–1) on each mounting bracket while you push the Oracle Exalytics In-Memory Machine into the rack (Figure 3–8). Continue pushing until the slide-rail locks (on the front of the mounting brackets) engage the slide-rail assemblies. You will hear an audible click.

Figure 3–8 Sliding the Oracle Exalytics In-Memory Machine Into the Rack



Caution: Verify that the Oracle Exalytics In-Memory Machine is securely mounted in the rack and that the slide-rail locks are engaged with the mounting brackets before continuing.

3.8 Installing the Cable Management Arm

The cable management arm (CMA) is an optional assembly that you can use to route the server cables in the rack.

To install the optional CMA, complete the following steps:

1. Unpack the CMA parts.
2. Take the CMA to the back of the equipment rack and ensure that you have adequate room to work around the back of the Oracle Exalytics In-Memory Machine.

Note: References to left or right in this procedure assume that you are facing the back of the equipment rack.

3. Remove tape to separate the parts of the CMA.
4. Insert the CMA's mounting bracket connector into the right slide-rail until the connector locks into place with an audible click, as shown in [Figure 3-9](#).

Figure 3-9 Inserting the CMA Mounting Bracket Into the Back of the Right Slide-Rail

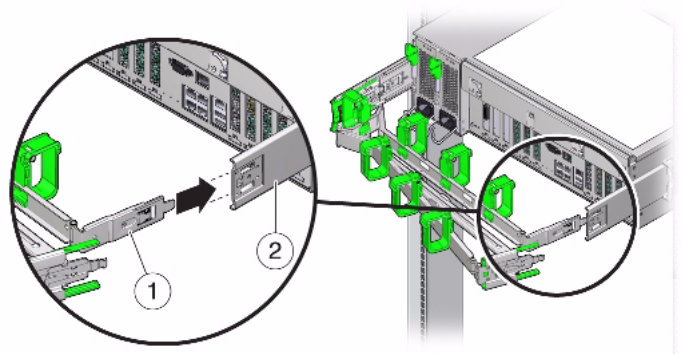
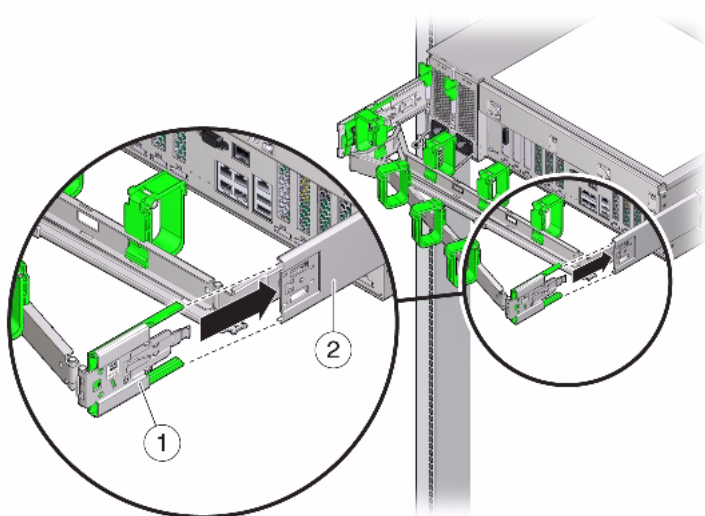


Table 3-3 Figure Legend

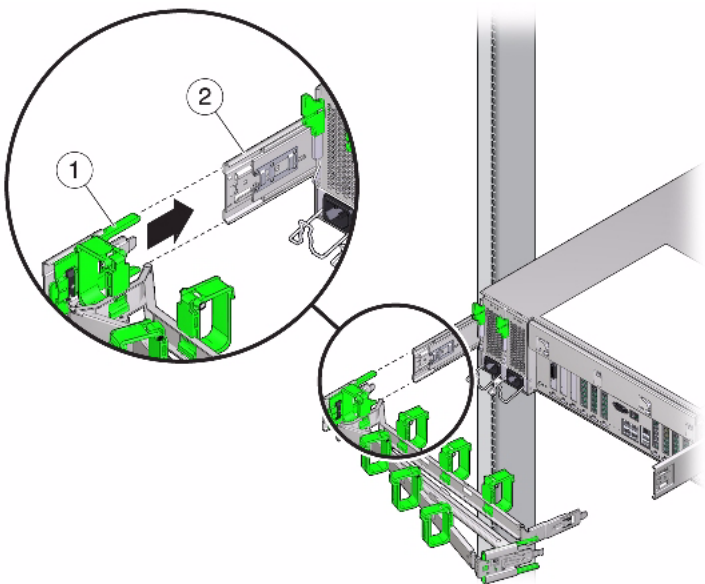
Number	Description
1	CMA mounting bracket
2	Right slide-rail

5. Insert the right CMA slide-rail connector into the right slide-rail assembly until the connector locks into place with an audible click, as shown in [Figure 3-10](#).

Figure 3–10 Inserting CMA Slide-Rail Connector Into the Back of the Right Slide-Rail**Table 3–4 Figure Legend**

Number	Description
1	CMA slide-rail connector
2	Right slide-rail

6. Insert the left CMA slide-rail connector into the left slide-rail assembly until the connector locks into place with an audible click, as shown in [Figure 3–11](#).

Figure 3–11 Inserting CMA Slide-Rail Connector Into the Back of the Left Slide-Rail**Table 3–5 Figure Legend**

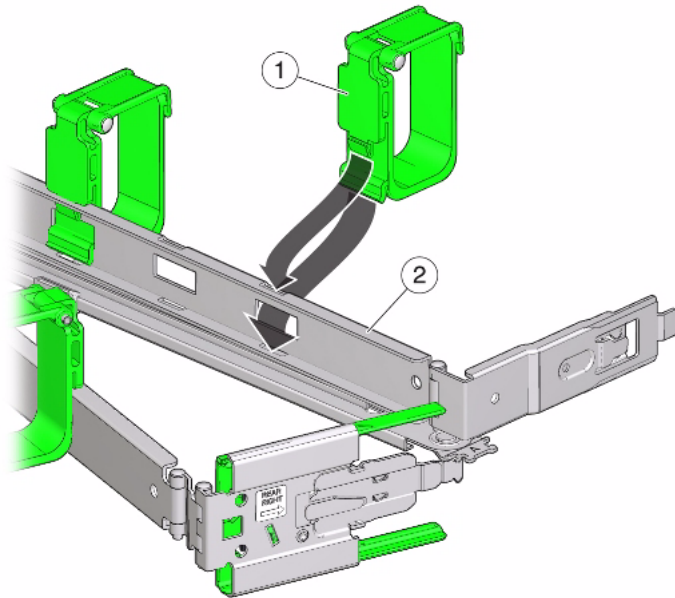
Number	Description
1	CMA slide-rail connector

Table 3–5 (Cont.) Figure Legend

Number	Description
2	Left slide-rail

7. Install and route cables to your Oracle Exalytics In-Memory Machine, as required.
8. If required, attach the cable hook and loop straps to the CMA, and press them into place to secure the cables, as shown in [Figure 3–12](#).

Note: Cable hooks and loop straps are preinstalled on the CMA. Perform the procedure in this step if you need to reinstall cable hooks and straps on the CMA.

Figure 3–12 Installing CMA Cable Straps**Table 3–6 Figure Legend**

Number	Description
1	CMA cable strap
2	CMA arm

3.9 Verifying the Operation of the Slide Rails and CMA

Use the following procedure to ensure that the slide-rails and CMA are operating correctly.

Note: Two persons are recommended for this procedure: one to move the Oracle Exalytics In-Memory Machine in and out of the rack, and one to observe the cables and CMA.

1. Slowly pull the Oracle Exalytics In-Memory Machine out of the rack until the slide-rails reach their stops.
2. Inspect the attached cables for any binding or kinks.
3. Verify that the CMA extends fully from the slide-rails.
4. Push the Oracle Exalytics In-Memory Machine back into the rack, as described in the following sub-steps.

When the Oracle Exalytics In-Memory Machine is fully extended, you must release two sets of slide-rail stops to return the Oracle Exalytics In-Memory Machine to the rack:

- The first set of stops are levers, located on the inside of each slide-rail, just behind the back panel of the Oracle Exalytics In-Memory Machine. Push in both green levers simultaneously and slide the Oracle Exalytics In-Memory Machine toward the rack. The Oracle Exalytics In-Memory Machine will slide in approximately 18 inches (46 cm) and stop. Verify that the cables and the CMA retract without binding before you continue.
 - The second set of stops are the slide-rail release buttons, located near the front of each mounting bracket ([Figure 3-1](#)). Simultaneously push both of the green slide-rail release buttons, and push the Oracle Exalytics In-Memory Machine completely into the rack until both slide-rail locks engage.
5. Adjust the cable straps and CMA, as required.

Adding Oracle Exalytics In-Memory Machine to Your Network

This chapter describes how to connect the Oracle Exalytics In-Memory Machine to your existing network. It also describes how to configure the Oracle Exalytics In-Memory Machine using the `configure_network_for_exalytics.sh` script.

Note: You must download the `configure_network_for_exalytics.sh` script from the edelivery site. Create a directory named `exalytics` in the `/opt` directory on your Oracle Exalytics In-Memory Machine and copy the script to this location. Run the script from this location.

It contains the following topics:

- [Section 4.1, "Before You Begin"](#)
- [Section 4.2, "Overview of Network Ports"](#)
- [Section 4.3, "Transceiver and Optical Modules for 10 GbE Connectivity"](#)
- [Section 4.4, "Default ETH0 IP Address"](#)
- [Section 4.5, "Connecting Exalytics In-Memory Machine to Your Network"](#)
- [Section 4.6, "Configuring the Network for Oracle Exalytics In-Memory Machine"](#)
- [Section 4.7, "What Next?"](#)

4.1 Before You Begin

Before connecting the Oracle Exalytics In-Memory Machine to your data center's existing network, ensure that the following prerequisites are satisfied:

- [Switch Requirements](#)
- [Cable Requirements](#)

4.1.1 Switch Requirements

Before connecting the Oracle Exalytics In-Memory Machine to your data center's network, complete the following preparatory tasks:

- Identify the network switch or connector that you will use to connect the Oracle Exalytics In-Memory Machine to your network.
- Identify the IP subnet and the address range associated with the network switch.

4.1.2 Cable Requirements

The following Ethernet cables are included in the Oracle Exalytics In-Memory Machine package:

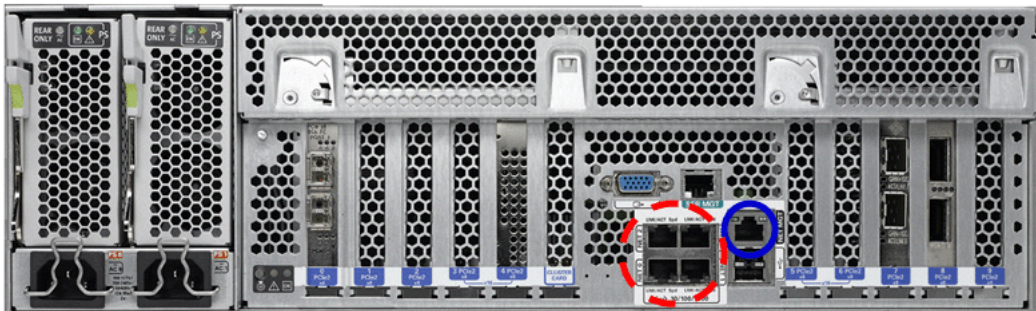
- One 10-foot (CAT5/CAT5E) red cable (part number: 530-4433-01)
- One 10-foot (CAT5/CAT5E) black cable (part number: 530-4435-01)

You can use these cables to connect the Oracle Exalytics In-Memory Machine to your data center's network.

4.2 Overview of Network Ports

Figure 4-1 shows the network ports available on the Oracle Exalytics In-Memory Machine.

Figure 4-1 Network Ports on the Back of the Oracle Exalytics In-Memory Machine



In Figure 4-1, the four 10/100/1000 Gb Ethernet ports located on the rear of the Oracle Exalytics In-Memory Machine are shown in a red circle of dashed line. They are named NET 0, NET 1, NET 2, and NET 3.

Note: Although you can use any of these Gb Ethernet ports, Oracle recommends that you use NET 0.

The ILOM 10/100 Ethernet port is shown in a blue circle of solid line. This port is named NET MGT.

4.3 Transceiver and Optical Modules for 10 GbE Connectivity

To use the 10 GbE network ports, you must provide Small Form-factor Pluggable Plus (SFP+) transceivers and/or cables (either optical or copper) to connect the network ports to your existing 10 GbE network infrastructure. The Oracle Exalytics In-Memory Machine does not ship with SFP+ transceivers or 10 GbE cables. You must purchase them separately.

For copper cables, you can purchase the following cables from Oracle. These cables have built-in SFP+ transceivers, and there is no need to purchase separate SFP+ transceivers for the network ports on the Oracle Exalytics In-Memory Machine.

Table 4–1 Cables

Name	Length	Oracle Part Number
TwinAx 1m	1m	X2130-1M
TwinAx 3m	3m	X2130-3M
TwinAx 5m	5m	X2130-5M
TwinAx 10m	10m	X2130-10M

For optical cables, you must purchase SFP+ transceivers (either Short Range (SR) or Long Range (LR)) for each of the network ports, and then plug in the appropriate optical cable. Currently Oracle sells both the SR and LR SFP+ transceivers.

Table 4–2 Transceivers

Name	Part Number
10 GbE Transceiver SR (SFP+)	X2129A-N
10 GbE Transceiver LR (SFP+)	X5562A-Z

In addition to these transceivers, you must purchase the appropriate LC-LC terminated fiber optic cables from a third party vendor.

4.4 Default ETH0 IP Address

When an Exalytics In-Memory Machine is delivered, the default IP address that is configured for the eth0 (physical NET0 port) interface of the machine might vary. It can be any IP address in the class C subnet 192.168.1.0.

To determine the eth0 IP address of an Exalytics In-Memory Machine, connect to the ILOM of that machine through SSH using the default IP address 192.168.1.200. After logging in, run the following command to view the network configuration information:

```
show /SP/network
```

4.5 Connecting Exalytics In-Memory Machine to Your Network

To connect the Oracle Exalytics In-Memory Machine to your data center's network, complete the following steps:

1. Attach one end of the network cable to a Gb Ethernet port, such as NET 2 (see [Figure 4–1](#)).
2. Connect the other end of the cable to a network connector or switch, if the network is already set up in your building; or to a hub, for a client/server network.
3. Ensure that you have a laptop with functional USB and network ports.
4. Ensure that you have a Category 5E patch cable of maximum length 25 feet and a serial cable of maximum length 15 feet.
5. Connect the network port of your laptop into an unused input port in the network connector or switch. Do not connect to any management ports on the network connector or switch.
6. If you have not booted the operating system on your laptop, start the operating system now.

- If you are using the Windows operating system on your laptop, do the following:
 - a. Go to **Control Panel > Network Connections**. Select your wired network adapter in the list of network connections, right-click and select **Properties**. The network properties screen is displayed.
 - b. Click the **General** tab, and select **Internet Protocol (TCP/IP)**. Click **Properties**. The Internet Protocol (TCP/IP) Properties screen is displayed.
 - c. Select the **Use the following IP address:** option, and enter a static IP address for your laptop. Although a default gateway is not necessary, enter the same IP address in the **Default Gateway** field. Click **OK** to exit the network connections screen.

Note: This static IP should be on the same subnet and address range as the network on which your data center's network switch or connector resides.

- If you are using a Linux operating system on your laptop, do the following:
 - a. Log in as a root user.
 - b. At the command prompt, enter the following command to display the network devices, such as `ETH0`, attached to the Oracle Exalytics In-Memory Machine:

```
# ifconfig -a
```

The list of network devices or adapters attached to the Oracle Exalytics In-Memory Machine is displayed.

- c. To set up the desired network interface, run the `ifconfig` command at the command prompt, as in the following example:

```
# ifconfig eth0 192.0.2.10 netmask 255.255.255.0 up
```

In this example, the `ifconfig` command assigns the IPv4 address `192.0.2.10`, with a network mask of `255.255.255.0`, to the `eth0` interface.

4.6 Configuring the Network for Oracle Exalytics In-Memory Machine

This section describes how to use the `configure_network_for_exalytics.sh` script, to configure the network for Oracle Exalytics In-Memory Machine.

It contains the following topics:

- [Overview](#)
- [State of the Oracle Exalytics In-Memory Machine Before Running the Script](#)
- [Running the `configure_network_for_exalytics.sh` Script](#)
- [Verifying the Configuration](#)

4.6.1 Overview

The `configure_network_for_exalytics.sh` script is used to configure the Oracle Exalytics In-Memory Machine after the initial operating system image is installed.

This script verifies the following:

- When started, the script verifies that the user is `root`. Users other than `root` are not allowed to run the script.
- It verifies that the Oracle Exalytics In-Memory Machine is installed with a 10 GbE card. If the card is not installed or the drivers are not configured, the script stops its execution.
- It verifies connectivity to all gateways and hostnames configured in the session.

You can run the script to configure the following multiple interfaces:

- [InfiniBand](#)
- [10 GbE Interfaces](#)
- [1 GbE Interfaces](#)
- [Host Name](#)
- [Time](#)
- [Domain Name Server \(DNS\)](#)

Note: You cannot configure Fiber Channel using the `configure_network_for_exalytics.sh` script.

4.6.1.1 InfiniBand

The `configure_network_for_exalytics.sh` script optionally configures the InfiniBand network interface by bonding two InfiniBand interfaces. This interface is for IPoIB communication (`bond0`) intended for Oracle Exalytics In-Memory Machine's connectivity with Exalogic machine or Oracle Exadata Database Machine. You must specify an IP address and netmask for the script. A gateway address for this InfiniBand interface is not necessary.

When you configure InfiniBand using the `configure_network_for_exalytics.sh` script, the following files are updated:

```
/etc/sysconfig/network-scripts/ifcfg-ib*
/etc/sysconfig/network-scripts/ifcfg-bond0
/etc/modprobe.conf
```

Note: The script keeps a copy of these files in the `/tmp/exalytics.save/` directory and creates a flat backup for the files that may be modified.

4.6.1.2 10 GbE Interfaces

The `configure_network_for_exalytics.sh` script verifies whether bonding is required on the 10 GbE interfaces. If you opt for bonding, the script configures the bonded interfaces using `bond1` on all 10 GbE interfaces. For `bond1` interface, the script requires an IP address, netmask, and gateway address.

If you do not opt for a bonded interface, the script verifies whether you want to configure each interface separately. You are prompted to enter an IP address, netmask, and gateway address for each individual interface configured.

When you configure 10 GbE interfaces using the `configure_network_for_exalytics.sh` script, the following files are updated:

```
/etc/sysconfig/network-scripts/ifcfg-eth*
```

```
/etc/sysconfig/network-scripts/ifcfg-bond1  
/etc/modprobe.conf
```

Note: The script keeps a copy of the interface files in the `/tmp/exalytics.save/` directory and creates a flat backup for the files that may be modified.

4.6.1.3 1 GbE Interfaces

The `configure_network_for_exalytics.sh` script verifies whether bonding is required on the 1 GbE interfaces. If you opt for bonding, the script configures the bonded interfaces using `bond2` on all 1 GbE interfaces. For `bond2` interface, the script requires an IP address, netmask, and gateway address.

If you do not opt for a bonded interface, the script verifies whether you want to configure each interface separately. You are prompted to enter an IP address, netmask, and gateway address for each individual interface configured.

When you configure 1 GbE interfaces using the `configure_network_for_exalytics.sh` script, the following files are updated:

```
/etc/sysconfig/network-scripts/ifcfg-eth*  
/etc/sysconfig/network-scripts/ifcfg-bond2  
/etc/modprobe.conf
```

Note: The script keeps a copy of the interface files in the `/tmp/exalytics.save/` directory and creates a flat backup for the files that may be modified.

4.6.1.4 Host Name

The `configure_network_for_exalytics.sh` script optionally configures a host name and a domain name for your Oracle Exalytics In-Memory Machine. You cannot configure a domain name without configuring a host name.

The configured host name maps to an IP address in the following sequence:

- The Last IP configured in this session.
- If no IP configured, it will take the IP from first active interface from: `bond1`, `bond2`, ..., `eth5`.
- If no IP is found, then no IP is configured in the `/etc/hosts` file.

When you configure host name using the `configure_network_for_exalytics.sh` script, the following files are updated:

```
/etc/sysconfig/network  
/etc/hosts
```

Note: The script keeps a copy of the interface files in the `/tmp/exalytics.save/` directory and creates a flat backup for the files that may be modified.

4.6.1.5 Time

The `configure_network_for_exalytics.sh` script optionally configures the time zone using the `tzselect` script. This script guides you to select a continent, country, and city using numbered menu selection. The script verifies whether a network time server

should be configured. If you choose to configure a server, the script prompts you to enter the server name and other required information.

If you do not opt for time server configuration, the script prompts you to set time and date.

For network time server configuration, the script modifies the `/etc/ntp.conf` file, and it starts the `ntpd` daemon and adds it to start at boot.

For time zone selection, the script creates a new soft link to `/etc/localtime`.

Note: The script keeps a copy of the interface files in the `/tmp/exalytics.save/` directory and creates a flat backup for the files that may be modified.

4.6.1.6 Domain Name Server (DNS)

The `configure_network_for_exalytics.sh` script optionally configures one or more domain name servers that you specify.

When you configure domain name servers using the `configure_network_for_exalytics.sh` script, the following file is updated:

`/etc/resolv.conf`

Note: The script keeps a copy of the interface files in the `/tmp/exalytics.save/` directory and creates a flat backup for the files that may be modified.

4.6.2 State of the Oracle Exalytics In-Memory Machine Before Running the Script

Before running the `configure_network_for_exalytics.sh` script, your Oracle Exalytics In-Memory Machine is not configured with the following:

- 10 GbE and 1 GbE network interfaces
- Optional InfiniBand network interfaces
- Host name, domain name, and time zone
- Time server and domain name servers

4.6.3 Running the `configure_network_for_exalytics.sh` Script

Run the `configure_network_for_exalytics.sh` script, and choose your configuration option, as described in [Table 4–3](#).

Table 4–3 *configure_network_for_exalytics.sh Properties*

Question/Parameter	Description
Do you want to configure InfiniBand for Exadata connection? [y/n] [n]	Enter y if you want to configure InfiniBand for connecting Oracle Exalytics In-Memory Machine to Oracle Exadata Database Machine.
Enter bond0 IP address	Enter a bond0 IP address. For example, 192.168.21.12.
Use xx.xxx.xx.xx for bond0 ip address (y/n) [y]	Verify the bond0 IP address you specified, and enter y.

Table 4–3 (Cont.) *configure_network_for_exalytics.sh* Properties

Question/Parameter	Description
Enter bond0 netmask address	Enter a bond0 netmask address. For example, 255.255.255.0.
Use xx.xxx.xxx.xx for bond0 netmask (y/n) [y]	Verify the bond0 netmask address you specified, and enter y.
Do you want to configure 10G network(y/n) [n]	Depending on your configuration option, enter y or n.
Configure bonding on eth0 eth1? (y/n) [n]	Depending on your configuration option, enter y or n.
Configure eth0 Interface? (y/n) [n]	Depending on your configuration option, enter y or n.
Enter eth0 IP address	Enter an eth0 IP address. For example, 10.10.10.10.
Use xx.xxx.xx.xx for eth0 ip address (y/n) [y]	Verify the eth0 IP address you specified, and enter y.
Enter eth0 netmask address	Enter a netmask for the eth0 interface. For example, 255.255.248.0.
Use xx.xxx.xxx.xx for eth0 netmask (y/n) [y]	Verify the eth0 netmask you specified, and enter y.
Enter eth0 gateway address	Enter the eth0 gateway address. For example, 10.20.30.40.
Use xx.xxx.xxx.xx for eth0 gateway (y/n) [y]	Verify the eth0 gateway address you specified, and enter y.
Configure eth1 Interface? (y/n) [n]	Depending on your configuration option, enter y or n.
Disable eth1	Depending on your configuration option, enter y or n.
Do you want to configure 1G network (y/n) [y]	Depending on your configuration option, enter y or n.
Configure bonding on eth2 eth3 eth4 eth5? (y/n) [n]: n	Depending on your configuration option, enter y or n.
Configure eth2 Interface? (y/n) [n]: y	Depending on your configuration option, enter y or n.
Enter eth2 IP address	Enter an eth2 IP address. For example, 10.10.10.11.
Use xx.x.x.xx for eth2 ip address (y/n) [y]: y	Verify the eth2 IP address you specified, and enter y.
Enter eth2 netmask address	Enter a netmask for the eth2 interface. For example, 255.255.255.254.
Use xxx.xxx.xxx.xxx for eth2 netmask (y/n) [y]: y	Verify the eth2 netmask address you specified and then enter y.
Enter eth2 gateway address	Enter an eth2 gateway address. For example, 10.1.1.1.
Use xx.x.x.x for eth2 gateway (y/n) [y]: y	Verify the eth2 gateway address you specified, and enter y.
Configure eth3 Interface? (y/n) [n]: n	Depending on your configuration option, enter y or n.

Table 4–3 (Cont.) *configure_network_for_exalytics.sh* Properties

Question/Parameter	Description
Disable eth3	Depending on your configuration option, enter y or n.
Configure eth4 Interface? (y/n) [n]: n	Depending on your configuration option, enter y or n.
Disable eth4	Depending on your configuration option, enter y or n.
Configure eth5 Interface? (y/n) [n]: n	Depending on your configuration option, enter y or n.
Disable eth5	Depending on your configuration option, enter y or n.
Do you want to configure hostname (y/n) [n]: y	Depending on your configuration option, enter y or n.
Enter hostname	Enter a hostname for the machine. For example, myhost.
Use xxxxx for host_name (y/n) [y]: y	Verify the hostname you specified, and enter y.
Enter domainname:mydomain	Enter a domain name. For example, mydomain.
Use xxxxx in for domainname (y/n) [y]: y	Verify the domain name you specified, and enter y.
Do you want to configure timezone (y/n) [y]: y	Depending on your configuration option, enter y or n.
Please identify a location so that time zone rules can be set correctly.	Enter your location. For example, if your location is Americas, enter 2.
Please select a continent or ocean.	
Please select a country.	Enter your country. For example, if your country is United States, enter 47.
Please select one of the following time zone regions	Enter your time zone. For example, if your time zone is Pacific time, enter 21.
The following information has been given: United States Pacific Time Therefore TZ='America/Los_Angeles' will be used. Local time is now: Thu Oct 20 07:19:36 PDT 2005. Universal Time is now: Thu Oct 20 14:19:36 UTC 2005. Is the above information OK?	If the information is correct, enter 1.

Table 4–3 (Cont.) *configure_network_for_exalytics.sh* Properties

Question/Parameter	Description
Here is that TZ value again, this time on standard output so that you can use the /usr/bin/tzselect command in shell scripts: do you want to configure time server (y/n) [y]: y	If you want to configure a time server, enter y.
Enter network time server:10.162.39.1 Use 10.162.39.1 for timeserver (y/n) [y]: y Do you want to configure DNS(s) (y/n) [y]: y Enter DNS: 10.162.39.57 Use 10.162.39.57 for DNS (y/n) [y]: y configure another DNS? (y/n) [n]: n	If you want to configure one or more domain name servers, enter y.
Commit changes? (y/n) [n]: y	To confirm your configuration options and values, enter y.

4.6.4 Verifying the Configuration

After the `configure_network_for_exalytics.sh` script runs successfully, you can verify the network configuration for your Oracle Exalytics In-Memory Machine machine as follows:

- Ping 10 GbE network addresses to verify the 10 GbE network interfaces
- Ping 1 GbE network addresses to verify the 1 GbE network interfaces
- Run the `ibstat` command on the Oracle Exalytics In-Memory Machine to verify the InfiniBand network interface
- Ping the gateway addresses
- Ping an IP address of a machine that is in the same subnet as Oracle Exalytics In-Memory Machine for each of the interfaces
- Verify the log file (`/var/log/init-exalytics/init-exalytics.log`)
- Run the `ifconfig -a` command to verify the network configuration

4.7 What Next?

After configuring network for the Oracle Exalytics In-Memory Machine, you can proceed to install the Oracle Business Intelligence software on the machine. For more information, see the *Oracle Fusion Middleware Installation and Administration Guide for Oracle Exalytics In-Memory Machine*.

For information about installing Oracle Essbase, see *Oracle Hyperion Enterprise Performance Management System Installation and Configuration Guide*.

Storage Configuration

This chapter describes the storage configuration for the Oracle Exalytics In-Memory Machine.

It contains the following topics:

- [Section 5.1, "Overview of Disk Partitions"](#)
- [Section 5.2, "Connecting Exalytics to a Storage Area Network"](#)
- [Section 5.3, "For Additional Help"](#)

5.1 Overview of Disk Partitions

[Table 5–1](#) lists the disk partitions configured on the Oracle Exalytics In-Memory Machine.

Table 5–1 *Partitions*

Partition	Capacity	Hardware RAID	Mount Point	Description
boot	99 MB	RAID1	/boot	Boot partition
base operating system, logs, and temp space	447 GB	RAID1	/	Partition for the base operating system, logs, and temp space
Software, data files, and so on	1.797TB	RAID5	Not formatted or mounted in the factory, but intended to be mounted on /u01	Data partition

5.2 Connecting Exalytics to a Storage Area Network

Note: Starting with Oracle Exalytics Release 1 Patchset 1 (1.0.0.1), the Storage Area Network (SAN) feature is supported. This section describes the procedure for connecting Exalytics to a Storage Area Network.

Connecting Exalytics to a Storage Area Network involves the following steps:

- [Before You Begin](#)
- [Preparing for Storage Area Network \(SAN\) Configuration](#)
- [Connecting the Optical Cable](#)

- [Installing Diagnostic Support for the Red Hat/SUSE Linux OS \(Optional\)](#)
- [Verifying the Connectivity](#)
- [Completing the Setup](#)

5.2.1 Before You Begin

Before connecting the Oracle Exalytics In-Memory Machine to your data center's existing network, ensure that the following prerequisites are satisfied:

- [Cable Requirements](#)
- [Host Bus Adapter Features and Specifications](#)

5.2.1.1 Cable Requirements

Fiber-optic media, short-wave, multimode fiber (400-M5- SN-S)

5.2.1.2 Host Bus Adapter Features and Specifications

For more information, see "HBA Features and Specifications" in the *StorageTek 8 Gb FC PCI-Express HBA Installation Guide Installation Guide For HBA Models SG-XPCIE1FC-QF8-Z, SG-PCIE1FC-QF8-Z, SG-XPCIE1FC-QF8-N, SG-PCIE1FC-QF8-N and SG-XPCIE2-QF8-Z, SG-PCIE2FC-QF8-Z, SG-XPCIE2-QF8-N, SG-PCIE2FC-QF8-N*.

5.2.2 Preparing for Storage Area Network (SAN) Configuration

To prepare Oracle Exalytics In-Memory Machine for SAN Configuration, complete the following steps:

1. Configure the system to enable loading of the following kernel module at boot:

- `qla2xxx.ko`
- `dm-multipath.ko`

2. Initialize the `/etc/multipath.conf` file by running the following command:

```
/sbin/mpathconf
```

3. Enable multipath startup during an operating system boot, by running the following commands as the root user:

```
chkconfig multipathd on
chkconfig --level 345 multipathd on
service multipathd start
```

5.2.3 Connecting the Optical Cable

To connect the optical cable, complete the following steps:

Note: The HBA does not allow normal data transmission on an optical link unless it is connected to another similar or compatible Fibre Channel product (that is, multimode to multimode).

1. Connect the fiber-optic cable to an LC connector on the HBA.

Figure 5–1 Connecting the Optical Cable: Dual Port HBA

2. Connect the other end of the cable to the FC device.

After the optical cable is connected to the HBA, you can power on the system, as described in [Section 2.8, "Powering On the Machine"](#).

5.2.4 Installing Diagnostic Support for the Red Hat/SUSE Linux OS (Optional)

For more information, see "Diagnostic Support for the Red Hat/SUSE OS" in the *StorageTek 8 Gb FC PCI-Express HBA Installation Guide* *Installation Guide For HBA Models SG-XPCIE1FC-QF8-Z, SG-PCIE1FC-QF8-Z, SG-XPCIE1FC-QF8-N, SG-PCIE1FC-QF8-NandSG-XPCIE2FC-QF8-Z, SG-PCIE2FC-QF8-Z, SG-XPCIE2-QF8-N, SG-PCIE2FC-QF8-N.*

5.2.5 Verifying the Connectivity

To verify the connectivity, complete the following steps:

1. Check the status of the multipath daemon as follows:

```
[root@node1 ~]# service multipathd status
multipathd (pid xxxx) is running...
```

2. Run `multipath -ll` command to view the detailed information of the multipath devices as shown in the following example:

```
# multipath -ll
mpath2 (3600144f0d153d65600004f90462c0003) dm-3 SUN,Sun Storage 7410
[size=100G][features=0][hwhandler=0][rw]
\_ round-robin 0 [prio=1][active]
  \_ 7:0:0:0 sdc 8:32 [active][ready]
  \_ round-robin 0 [prio=1][enabled]
    \_ 8:0:0:0 sde 8:64 [active][ready]
mpath3 (3600144f0d153d65600004f90464f0004) dm-4 SUN,Sun Storage 7410
[size=200G][features=0][hwhandler=0][rw]
\_ round-robin 0 [prio=1][active]
  \_ 7:0:0:2 sdd 8:48 [active][ready]
  \_ round-robin 0 [prio=1][enabled]
    \_ 8:0:0:2 sdf 8:80 [active][ready]
```

In the above example, `mpath2` and `mpath3` are the two LUNs configured in the storage device.

5.2.6 Completing the Setup

Complete the following steps:

1. Mount the LUNs to a mount point:

```
# mount /dev/mapper/mpathXX <mount_point>
```

Note: The multipath LUNs are available as block devices at:
/dev/mapper/mpathXX.

2. Add the mount point to `/etc/fstab` to auto mount during an operating system boot.

5.3 For Additional Help

For additional help or information regarding the storage configuration, contact the Oracle support personnel.

Using Oracle Integrated Lights Out Manager (ILOM)

This chapter describes how to set up and access Oracle Integrated Lights Out Manager (ILOM) for managing the Oracle Business Intelligence Machine.

It contains the following topics:

- [Section 6.1, "ILOM Overview"](#)
- [Section 6.2, "Important Notes Before You Begin"](#)
- [Section 6.3, "Connecting to ILOM via the Network"](#)
- [Section 6.4, "Connecting to ILOM via a Serial Connection"](#)
- [Section 6.5, "Configuring Network Access"](#)

6.1 ILOM Overview

Oracle Integrated Lights Out Manager (ILOM) provides advanced service processor (SP) hardware and software that you can use to manage and monitor your Oracle Business Intelligence Machine.

ILOM enables you to actively manage and monitor your Oracle Business Intelligence Machine independently of the operating system state, providing you with a reliable Lights Out Management (LOM) system.

With ILOM, you can proactively:

- Learn about hardware errors and faults as they occur
- Remotely control the power state of your compute node
- View the graphical and non-graphical consoles for the host
- View the current status of sensors and indicators on the system
- Determine the hardware configuration of your system
- Receive generated alerts about system events in advance via IPMI PETs, SNMP Traps, or E-mail Alerts.

The ILOM service processor (SP) runs its own embedded operating system and has a dedicated Ethernet port, which together provide out-of-band management capability. In addition, you can access ILOM from the operating system (Oracle Linux) installed on the Oracle Business Intelligence Machine. Using ILOM, you can remotely manage your compute node as if you were using a locally attached keyboard, monitor, and mouse.

ILOM automatically initializes as soon as power is applied to your compute node. It provides a full-featured, browser-based web interface and has an equivalent command-line interface (CLI).

6.1.1 ILOM Interfaces

ILOM supports multiple interfaces for accessing its features and functions. You can choose to use a browser-based web interface or a command-line interface.

Web Interface

The web interface provides an easy-to-use browser interface that enables you to log in to the SP, then to perform system management and monitoring.

Command-Line Interface

The command-line interface enables you to operate ILOM using keyboard commands and adheres to industry-standard DMTF-style CLI and scripting protocols. ILOM supports SSH v2.0 and v3.0 for secure access to the CLI. Using the CLI, you can reuse existing scripts with Sun systems, and automate tasks using familiar interfaces.

6.2 Important Notes Before You Begin

You require at least one static IP address for Service Processor (ILOM access).

Note the following:

- As a general convention, **root** is used as the default user name.
- The default value of the Service Processor (SP ILOM) password is **changeme**.

6.3 Connecting to ILOM via the Network

Under normal circumstances, you can access ILOM via the network. You can use the Ethernet connection method to connect to the ILOM. You must know the ILOM IP address. The default ILOM IP address is 192.168.1.200 (netmask 255.255.255.0). You can use either the CLI or the web interface to access ILOM. Alternatively, you can launch a remote KVM session to access ILOM.

Note: You can use this connection method only if ILOM IP addresses are configured and can be accessed over the network. The network must be connected to the `NET0` port (with sideband) of the Oracle Business Intelligence Machine.

Oracle recommends that you use this connection method to access ILOM for the Oracle Business Intelligence Machine.

This section discusses the following topics:

- [Connecting to the CLI](#)
- [Connecting to the Web GUI](#)
- [Launching a Remote KVM Session](#)

6.3.1 Connecting to the CLI

1. Start your SSH client, such as PuTTY.

2. In the **Host Name (or IP address)** field, enter the ILOM IP address of your Oracle Business Intelligence Machine. The default ILOM IP address is 192.168.1.200.
3. Ensure that **SSH** is chosen as the **Connection Type**.
4. Type the user name and the password, when prompted. The default user name is `root`, and the default password is `changeme`.

The CLI command prompt is displayed.

6.3.2 Connecting to the Web GUI

1. In the address bar of a web browser, type the ILOM IP address of an Oracle Business Intelligence Machine. The default ILOM IP address is 192.168.1.200.

Press **Enter**.

The login screen is displayed.

2. Enter the user name and the password. The default user name is `root`, and the default password is `changeme`.
3. Click **Log In**.

The web GUI is displayed.

6.3.3 Launching a Remote KVM Session

To access the ILOM console for your Oracle Business Intelligence Machine that is connected to ILOM, do the following:

1. Ensure that pop-up blockers are disabled in your browser before you launch the remote console.
2. In the address bar of a browser, type the ILOM IP address of your Oracle Business Intelligence Machine.
3. Log in to ILOM using the default user name and password (`root` and `changeme`). After login, the ILOM home page is displayed.
4. Click the **Remote Control** tab, and click **Launch Remote Console**.

The remote console is displayed.

6.4 Connecting to ILOM via a Serial Connection

You can connect to ILOM via a serial connection if you are unable to access ILOM via the network due to any of the following problems:

- Misconfiguration of the network
- Misconfiguration of ILOM IP addresses

Note: You can reconfigure network access after connecting to ILOM via a serial connection. For more information, see [Configuring Network Access](#).

To connect to ILOM using a serial connection, complete the following steps:

1. Attach a serial cable from a terminal or a PC running terminal emulation software to the `SER_MGT` port of your Oracle Business Intelligence Machine. The cable should be of length 15 feet or less.

2. Verify that your terminal or laptop is operational.
3. Configure the terminal device or the terminal emulation software to use the following settings:
 - 8N1: eight data bits, no parity, one stop bit
 - 9600 baud (default, but can be set to any standard rate up to 115200)
 - Disable software flow control (XON/XOFF)
 - Disable hardware control
4. Verify that power is supplied to either PSU.

If there is power applied to either PSU, then ILOM will be functional regardless of the power state of compute nodes.
5. Press Enter on the terminal device. A connection between the terminal device and the ILOM is established.

The ILOM login prompt is displayed.
6. Log in to the CLI using the default user name and the password (`root` and `changeme`).

The ILOM default command prompt is displayed.

6.5 Configuring Network Access

You must configure network access after connecting to the ILOM using a serial connection or an Ethernet connection.

Note: Oracle recommends that you use an Ethernet connection if reconfiguration of network access becomes necessary.

This section contains the following topics:

- [Using a Serial Connection](#)
- [Using the Ethernet Connection](#)

Using a Serial Connection

1. Connect to the ILOM using a serial connection, as described in [Connecting to ILOM via a Serial Connection](#).
2. Run the following commands at the ILOM command prompt:

```
cd /SP/network
set pendingipdiscovery=static
set pendingipaddress=<ip_address>
set pendingipnetmask=<ip_netmask>
set pendingipgateway=<ip_gateway>
set commitpending=true
```

Using the Ethernet Connection

1. Connect to the ILOM using the Ethernet connection, as described in [Connecting to ILOM via the Network](#).

2. Run the following commands at the ILOM command prompt:

```
cd /SP/network
set pendingipdiscovery=static
set pendingipaddress=<ip_address>
set pendingipnetmask=<ip_netmask>
set pendingipgateway=<ip_gateway>
set commitpending=true
```

Using ipmitool Commands When SP Network Information Is Lost

If the service processor (SP) network information gets lost, you can use an SSH shell to connect to the ETH0 interface of the operating system on the compute node and run appropriate `ipmitool` commands to reconfigure network settings, as in the following example:

```
/opt/ipmitool/bin/ipmitool sunoem cli 'set
/SP/users/rootpassword=somepasswd' somepasswd
```

This example resets the ILOM root password.

Note: For more information about `ipmitool` commands and options, see the `ipmitool` man page at the following URL:

<http://ipmitool.sourceforge.net/manpage.html>

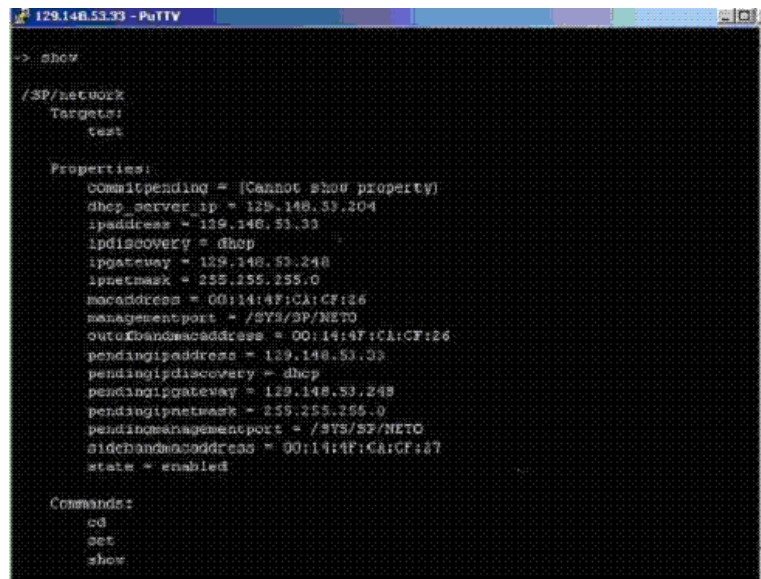
6.5.1 Configuring ILOM IP Addresses Manually

If ILOM IP addresses get misconfigured, you can configure ILOM IP addresses manually. Under normal circumstances, you do not need to configure ILOM IP addresses manually.

To configure IP addresses manually, complete the following steps:

1. Obtain a free static IP address from the network to which the Exalytics machine is connected.
2. Configure the IP address and sideband management by using a serial port connection as follows:
 - a. Establish a serial connection to the SP of a compute node by inserting a serial cable into the **SER MGT** port on the rear of the compute node.
 - b. In the terminal window, configure the following settings:


```
8N1: Eight data bit, no parity, one stop bit
9600 Baud
Disable hardware control
Disable software control
```
 - c. At the login prompt, enter `root` as the user name, and `changeme` as the password.
 - d. From your present working directory, use the `cd` command to move to the `/SP/network` directory, as shown in [Figure 6-1](#).

Figure 6–1 Configuring ILOM IP Using Serial Port Connection


```

129.148.53.33 - PuTTY
-> show

/SP/network
  Targets:
    test

  Properties:
    commitpending = (Cannot show property)
    dhcp_server_ip = 129.148.53.204
    ipaddress = 129.148.53.33
    ipdiscovery = dhcp
    ipgateway = 129.148.53.248
    ipnetmask = 255.255.255.0
    macaddress = 00:14:4F:CA:CF:26
    managementport = /SYS/SP/NET0
    outofbandmacaddress = 00:14:4F:CA:CF:26
    pendingipaddress = 129.148.53.33
    pendingipdiscovery = dhcp
    pendingipgateway = 129.148.53.248
    pendingipnetmask = 255.255.255.0
    pendingmanagementport = /SYS/SP/NET0
    sidebandmacaddress = 00:14:4F:CA:CF:27
    state = enabled

  Commands:
    cd
    set
    show

```

- e. Run the following commands at the command prompt:

```

cd /SP/network
set pendingipdiscovery=static
set pendingipaddress=<ip_address>
set pendingipnetmask=<ip_netmask>
set pendingipgateway=<ip_gateway>
set commitpending=true

```

Connecting Oracle Exalytics In-Memory Machine to Oracle Exadata Database Machine

This chapter describes how to connect an Oracle Exalytics In-Memory Machine and an Oracle Exadata Database Machine together on the same InfiniBand fabric.

It contains the following topics:

- [Section 7.1, "Understanding InfiniBand Card, Cable, and Switch Firmware Requirements"](#)
- [Section 7.2, "Physically Connecting the Network"](#)
- [Section 7.3, "Choosing a Subnet Manager"](#)
- [Section 7.4, "Loading the Kernel Modules"](#)
- [Section 7.5, "Monitoring the InfiniBand Fabric"](#)
- [Section 7.6, "Checking Network Health"](#)
- [Section 7.7, "Testing the Extended Network Connectivity"](#)

7.1 Understanding InfiniBand Card, Cable, and Switch Firmware Requirements

This section contains the following topics:

- [InfiniBand Card](#)
- [InfiniBand Cables](#)
- [InfiniBand Switches in the Oracle Exadata Database Machine](#)

7.1.1 InfiniBand Card

Each Oracle Business Intelligence Machine includes an InfiniBand card, such as the 2-port QDR InfiniBand Host Channel Adapter (HCA).

This InfiniBand card is installed in the Oracle Business Intelligence Machine in its PCIe Slot 6.

7.1.2 InfiniBand Cables

You may use any spare 5-meter InfiniBand cables included in your Oracle Exadata Database Machine. If you need assistance, contact Oracle support personnel. You need

these cables for connecting your Oracle Business Intelligence Machine to an Oracle Exadata Database Machine on the same InfiniBand fabric.

7.1.3 InfiniBand Switches in the Oracle Exadata Database Machine

Oracle Exadata Database Machine includes two 36-port InfiniBand leaf switches (Sun Datacenter QDR InfiniBand Switch 36). These two switches located in the middle of the rack are referred to as leaf switches. A spine switch is included in unit 1 of Oracle Exadata Database Machine Full Rack and Half Rack configurations.

Note: In this document, the leaf switch located in the lower unit of the Oracle Exadata Database Machine rack is referred to as **leaf 1**. The leaf switch located above leaf 1 in the Oracle Exadata Database Machine rack is referred to as **leaf 2**.

For more information about Oracle Exadata Database Machine's rack layout and hardware components, see the *Oracle Exadata Database Machine Owner's Guide*.

7.2 Physically Connecting the Network

This section describes the following topics:

- [Physical Layout Considerations](#)
- [Scenario 1: Single Exalytics In-Memory Machine with Oracle Exadata Database Machine](#)
- [Scenario 2: Clustered Exalytics In-Memory Machine with Oracle Exadata Database Machine](#)

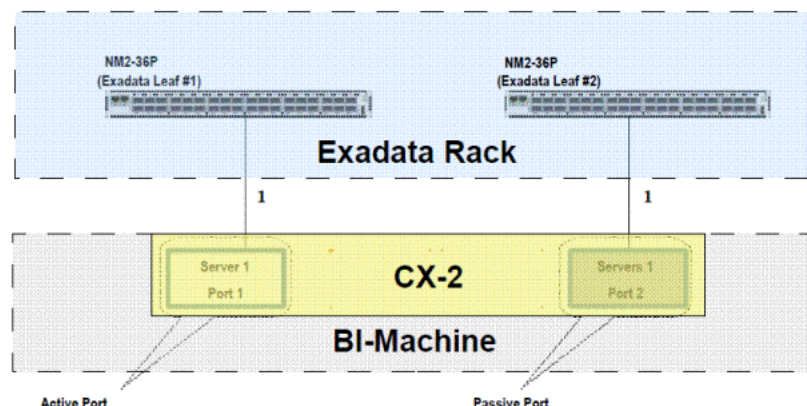
7.2.1 Physical Layout Considerations

It is assumed that the rack containing the Oracle Business Intelligence Machine and the Oracle Exadata Database Machine rack are placed side by side in the data center. Consider the length of the connecting InfiniBand cables when placing the racks in your data center. Do not place the Oracle Business Intelligence Machine in an Oracle Exadata Database Machine rack.

7.2.2 Scenario 1: Single Exalytics In-Memory Machine with Oracle Exadata Database Machine

[Figure 7-1](#) shows how a single (non-clustered) Oracle Business Intelligence Machine is connected to an Oracle Exadata Database Machine rack.

Figure 7–1 Non-Clustered Oracle Exalytics In-Memory Machine Connected to Oracle Exadata Database Machine



For high availability purposes, connect the two ports of the InfiniBand card, which is installed in the Oracle Business Intelligence Machine, to separate leaf switches of the Oracle Exadata Database Machine. For example, as shown in [Figure 7–1](#), you can connect port 1 of the Oracle Business Intelligence Machine’s InfiniBand card to the leaf 1 switch (Sun Datacenter InfiniBand Switch 36 installed in the lower unit of the Oracle Exadata Database Machine). In addition, you should connect port 2 of the Oracle Business Intelligence Machine’s InfiniBand card to the leaf 2 switch (Sun Datacenter InfiniBand Switch 36 installed in the upper unit of the Oracle Exadata Database Machine). Port 1 can function as the active port, and port 2 can function as the passive port.

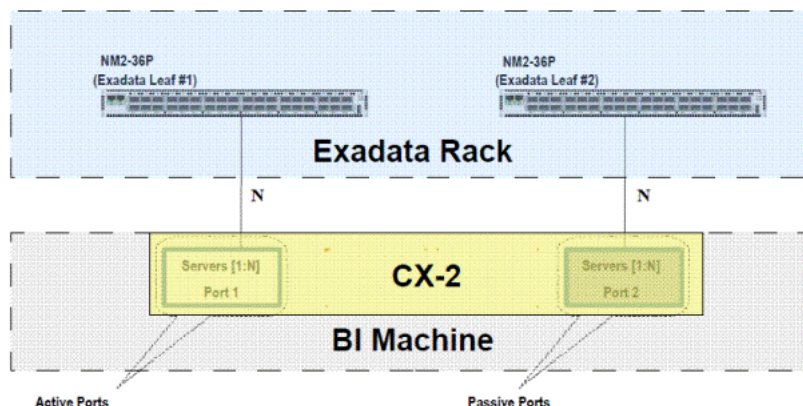
Note: On the leaf switches of the Oracle Exadata Database Machine, the following free ports can be used:

Ports 5B, 6A, 6B, 7A, 7B, and 12A

7.2.3 Scenario 2: Clustered Exalytics In-Memory Machine with Oracle Exadata Database Machine

[Figure 7–2](#) shows how a cluster of Oracle Business Intelligence Machines is connected to an Oracle Exadata Database Machine rack.

Figure 7–2 Clustered Oracle Exalytics In-Memory Machine Connected to Oracle Exadata Database Machine



For high availability purposes, connect the active port of the InfiniBand card included in each of the Oracle Business Intelligence Machines to the leaf 1 switch (Sun Datacenter InfiniBand Switch 36 installed in the lower unit of the Oracle Exadata Database Machine). In addition, you should connect the passive port of the InfiniBand card included in each of the Oracle Business Intelligence Machines to the leaf 2 switch (Sun Datacenter InfiniBand Switch 36 installed in the upper unit of the Oracle Exadata Database Machine). Port 1 can function as the active port, and port 2 can function as the passive port.

Note: On the leaf switches of the Oracle Exadata Database Machine, the following free ports can be used:

Ports 5B, 6A, 6B, 7A, 7B, and 12A

7.3 Choosing a Subnet Manager

Each InfiniBand network requires a Subnet Manager (SM). You can use the SM running on one of the Oracle Exadata Database Machine's leaf switches in your fabric.

For more information about using the InfiniBand switch, see the following documents:

- *Sun Datacenter InfiniBand Switch 36 User's Guide*
- *Sun Datacenter InfiniBand Switch 36 Command Reference*

7.4 Loading the Kernel Modules

The kernel modules required for InfiniBand network support are loaded by the Oracle Linux base operating system, which is pre-installed on the Oracle Business Intelligence Machine.

7.5 Monitoring the InfiniBand Fabric

You can monitor many aspects of the InfiniBand fabric by running InfiniBand commands on the Sun Datacenter InfiniBand Switch 36, which is included in the Oracle Exadata Database Machine.

For more information about these commands, see the *Sun Datacenter InfiniBand Switch 36 Command Reference*.

7.6 Checking Network Health

After establishing InfiniBand network connectivity, you can verify the status of the InfiniBand link by using the `ibstat` command on the CLI of the switch.

The `ibstat` command displays the basic status, as in the following example:

```
# ibstat
Switch 'is4_0'
Switch type: MT48436
Number of ports: 0
Firmware version: 7.3.0
Hardware version: a0
Node GUID: 0x00212856cfe2c0a0
System image GUID: 0x00212856cfe2c0a3
Port 0:
State: Active
Physical state: LinkUp
Rate: 40
Base lid: 16
LMC: 0
SM lid: 16
Capability mask: 0x4250084a
Port GUID: 0x00212856cfe2c0a0
```

The physical state of connected ports is shown as `LinkUp`.

7.7 Testing the Extended Network Connectivity

After verifying the basic InfiniBand network connectivity, you can run the `ibhosts`, `ibswitches`, and `ibnetdiscover` commands on the switch CLI.

The `ibhosts` command displays host nodes in the InfiniBand fabric, the `ibswitches` command displays the InfiniBand switch nodes in the fabric, and the `ibnetdiscover` command discovers the InfiniBand topology.

For more information such monitoring and diagnostic commands, see the *Sun Datacenter InfiniBand Switch 36 Command Reference*.

Installing Auto Service Request (ASR) Software

This chapter describes how to install Auto Service Request (ASR) for Exalytics machines.

Note: Starting with the Oracle Exalytics Release 1 Patchset 1 (1.0.0.1), the Auto Service Request (ASR) feature is supported. For more information, see the chapter "New Features for Exalytics Machine" in the *Oracle Fusion Middleware Installation and Administration Guide for Oracle Exalytics In-Memory Machine*.

It contains the following topics:

- [Section 8.1, "About Oracle Auto Service Request \(ASR\)"](#)
- [Section 8.2, "Recommended Configuration"](#)
- [Section 8.3, "Before You Begin"](#)
- [Section 8.4, "Installing ASR Manager on a Standalone System"](#)
- [Section 8.5, "Activating Exalytics Assets Manually"](#)
- [Section 8.6, "Viewing and Verifying ASR Assets ASR Manager"](#)
- [Section 8.7, "Configuring Telemetry Sources"](#)
- [Section 8.8, "Enabling Exalytics Machine Assets in My Oracle Support"](#)
- [Section 8.9, "Sending Test Alerts"](#)
- [Section 8.10, "Fault Coverage"](#)

8.1 About Oracle Auto Service Request (ASR)

Auto Service Request (ASR) is a secure, scalable, customer-installable software feature of warranty and Oracle Support Services that provides auto-case generation when common hardware component faults occur. ASR is designed to enable faster problem resolution by eliminating the need to initiate contact with Oracle Support Services for common hardware component failures, reducing both the number of phone calls needed and overall phone time required.

ASR also simplifies support operations by using electronic diagnostic data. Easily installed and deployed, ASR is completely controlled by you, the customer, to ensure security. ASR is applicable only for component faults. Not all component failures are

covered, though the most common components (such as disk, fan, and power supplies) are covered.

Note: ASR is not a replacement for other monitoring mechanisms, such as SMTP and SNMP alerts, within your data center. It is a complementary mechanism that expedites and simplifies the delivery of replacement hardware. ASR should not be used for downtime events in high-priority systems. For high-priority events, contact Oracle Support Services directly.

8.2 Recommended Configuration

The recommended configuration is to install the ASR Manager on a machine outside of Exalytics, on a Management only network away from the Data network. The supported operating systems are Oracle Linux 5.3 and above, and Solaris 10 Update 5 and above.

Note: ASR Manager should not to be on the same subnet as the Bonded Data network interfaces.

ETH0 must be on a separate subnet that does not overlap the Bonded Data network.

8.3 Before You Begin

Before installing ASR, ensure that the following conditions are met:

- Ensure that you have access to My Oracle Support (<http://support.oracle.com>) and confirm your contact information is correct and current.
- Make sure that all of your Exalytics machine assets have a contact assigned and that the contact is correct and current.
- Identify and designate a system, outside of Exalytics, to serve as ASR Manager.
- Retrieve the IP address of your ASR Manager.
- Identify and verify ASR assets.
- Ensure connectivity to the Internet using HTTPS.
- Download and install the Oracle Exalytics Configuration Utility patch and ASR utility, on the Exalytics host machine.

To download and install the Oracle Exalytics Configuration utility patch and ASR utility, perform the following actions:

- a. Download and install the Oracle Exalytics Configuration Utility patch (1.0.0.4) and ASR utility for Oracle Exalytics Release 1, Patchset 1 (ex_x2-4_config_utils_linux_x86_64.zip file) from the Oracle Software Delivery Cloud Web site at the following link:

<http://edelivery.oracle.com>

- b. Unzip the file into a temporary directory.

The zip file contains the files that are listed in [Table 8-1](#).

Table 8–1 Files in the Oracle Exalytics Configuration Utility Zip File

File Name	Notes
configure_network_for_exalytics.sh	Oracle Exalytics network configuration script
SUN-HW-TRAP-MIB.mib	ASR (Auto Service Request) on Oracle Exalytics
bda_mon_hw_asr.pl	ASR mail script on Oracle Exalytics
common_subs.pm	ASR on Oracle Exalytics
setup_asr_ilom.pl	ASR on Oracle Exalytics

c. Create the following directories:

- `mkdir -p /opt/exalytics`
- `mkdir -p /opt/exalytics/asr`

d. Copy the file `configure_network_for_exalytics.sh` to `/opt/exalytics`. Copy the following files to the `/opt/exalytics/asr` directory:

- `bda_mon_hw_asr.pl`
- `setup_asr_ilom.pl`
- `common_subs.pm`
- `SUN-HW-TRAP-MIB.mib`

Note: Before copying the file, ensure that you back up the existing file as `configure_network_for_exalytics.sh_V1` first.

e. Execute the Oracle Exalytics network configuration script to configure the network interfaces.

```
#cd /opt/exalytics
#./configure_network_for_exalytics.sh
```

■ Complete the following steps to configure ASR:

a. Go to the `/opt/exalytics/asr` directory, and run the following commands to add executive permissions on the two Perl files:

```
chmod +x bda_mon_hw_asr.pl
chmod +x setup_asr_ilom.pl
```

b. Add the following line to the `/etc/inittab` file:

```
emh1:345:respawn:/opt/exalytics/asr/bda_mon_hw_asr.pl -server
```

c. At the command line, execute the `init q` command to initialize and start the `bda_mon` server.

8.4 Installing ASR Manager on a Standalone System

You must install ASR Manager on a standalone system (a machine outside of Exalytics running Oracle Linux, as described in the section "Install Software" in the *Oracle Auto Service Request Installation and Operations Guide*.

8.5 Activating Exalytics Assets Manually

If you need to activate HOST and ILOM for Exalytics manually, complete the following steps in the ASR Manager:

1. Login as the root user in your ASR Manager. Start the ASR menu by running the following command:

```
#cd /opt/SUNWswasr/bin
#./asr
```

2. Activate ASR on Exalytics host machine by running the following command:

```
asr> activate_asset -i IP_address_of_exalytics_host_machine

or
```

```
asr> activate_asset -h host_name_exalytics_machine
```

3. Activate ILOM for Exalytics individually by running the following command:

```
asr> activate_asset -i ILOM_IP_address_of_compute_node

or
```

```
asr> activate_asset -h ILOM_host_name_of_exalytics_machine
```

8.6 Viewing and Verifying ASR Assets ASR Manager

View and verify ASR Asset (Exalytics machine components whose ASR is active) by running the following command from the ASR Manager system:

```
asr> list_asset - lists all assets associated with this ASR Manager
```

For example:

```
xx.xxx.xxx.xx exalytics 1234567890 Enabled SNMP FMA SUN FIRE X4470 M2
SERVER x86/x64 System

xx.xxx.xxx.xxx exalytics-sp 1234567890 Enabled SNMP ILOM SUN FIRE X4470 M2
SERVER
```

8.7 Configuring Telemetry Sources

You must configure telemetry sources for ILOM and Exalytics host machine to forward their telemetry to the ASR Manager. Scripts are provided to configure both ILOM and the Host. The scripts are found in /opt/exalytics/asr. These scripts should be executed on the Exalytics host machine.

Complete the following steps:

1. Login to the Exalytics Host as the root user.
2. Configure ILOM telemetry by running the following command:

```
#cd /opt/exalytics/asr
#./setup_asr_ilom.pl -i <IP Address Of ASR Manager>
```

3. Configure Exalytics host machine telemetry by running the following command:

```
#cd /opt/exalytics/asr
#./bda_mon_hw_asr.pl -set_snmp_subscribers type=asr,host=<IP Address Of ASR
Manager>,fromip=<IP Address of Exalytics Host>
```

8.8 Enabling Exalytics Machine Assets in My Oracle Support

Complete the following steps to enable Exalytics machine assets:

1. Log in to My Oracle Support (<https://support.oracle.com>).
2. In the My Oracle Support Dashboard, click the **More...** tab. Then select **Settings** from the menu.
3. In the **Settings** pane on the left of the window, select **Assets** (located under the Administrative submenu). For your Support Identifier, select **ASR Status** from the sort filter, then select **Pending** from the **All Statuses** drop-down menu.
4. You can approve a Pending asset in two ways:

- **Activate via Asset Toolbar**

Click the asset's serial number to display a toolbar with following options:

- Assign Contact - select this option to assign a contact to the asset. Only users associated with the support identifier can be a contact.
- Change Address - select this option to update the asset's physical location.
- Approve - for assets that are Pending, click **Approve** to enable ASR for the asset.
- Other Actions - you can also perform other actions such as **Activate** (for an inactive asset), **Deactivate** (for an active asset), or **Deny** (for a pending request).

- **Activate via Asset Details**

At the bottom of the Asset pane, there is a "Show Asset Details" option. Click an asset's serial number and then the **Show Asset Details** to update information about the asset. Required fields for ASR asset activation are indicated by an asterisk (*).

For more information, see the Knowledge Management article ID **1329200.1** on My Oracle Support. To obtain this article on My Oracle Support, complete the following steps:

1. Log in to My Oracle Support (<https://support.oracle.com>).
2. Click the **Knowledge** tab.
3. In the Knowledge Base section, click the **Search & Browse** tab.
4. In the Enter search terms option, enter **1329200.1** and click **Search**. The article "How to activate ASR within My Oracle Support" is displayed.

8.9 Sending Test Alerts

To send test alerts, complete the following:

1. Login to the Exalytics Host as the root user.
2. Send Test Alerts for ILOM telemetry by running the following command:


```
#ipmitool sunoem cli "set /SP/alertmgmt/rules/1 testrule=true"
```
3. Send Test Alerts for Exalytics host machine by running the following command:


```
#./opt/exalytics/asr/bda_mon_hw_asr.pl -validate_snmp_subscriber -type asr
```

You will receive an e-mail notification for the test alerts.

Note: Oracle highly recommends to send test alerts from the ILOM, and the Exalytics host machine.

8.10 Fault Coverage

For more information, see *Oracle ASR ILOM Fault Coverage*.

Troubleshooting

This appendix provides basic information about troubleshooting your Oracle Business Intelligence Machine.

It contains the following topics:

- [Section A.1, "Troubleshooting the Setup"](#)
- [Section A.2, "Additional Troubleshooting Information"](#)
- [Section A.3, "Locating the Machine Serial Number"](#)

A.1 Troubleshooting the Setup

This section contains information to help you troubleshoot minor machine problems.

If you experience problems while setting up your Oracle Business Intelligence Machine, refer to the troubleshooting information in [Table A-1](#).

Table A–1 Troubleshooting Procedures

Problem	Possible Solution
Oracle Exalytics In-Memory Machine does not power on when the front panel Power button is pressed.	<p>Keep notes on the following situations in case you need to call service:</p> <ul style="list-style-type: none"> ■ Is the Power/OK LED flashing or constantly illuminated on the front of the system? (Ensure that the power cord is connected to the system and to a grounded power receptacle.) ■ Does the wall outlet have power? Test by plugging in another device. ■ Does the monitor sync within five minutes after power on? (The green LED on the monitor stops flashing and remains illuminated.) ■ Has the system fully booted the ILOM SP? (Note that the system will block Power button presses until the ILOM SP is fully booted.)
Oracle Exalytics In-Memory Machine appears to be in standby power mode, but the Power/OK LED does not blink.	<p>The Power/OK LED only blinks when all Oracle Exalytics In-Memory Machine components are in standby power mode. A tape drive might be connected to your server. Because tape drives do not enter standby power mode, the Power/OK LED does not blink.</p>
Hung or frozen server: No response from mouse or keyboard or any application.	<p>Try to access your system from a different machine on the network:</p> <ol style="list-style-type: none"> 1. On another system, type: <code>ping IP_address_of_server</code>. 2. If a response is returned, then try logging in to the Oracle Exalytics In-Memory Machine using either <code>telnet</code>, <code>ssh</code>, or <code>rlogin</code>. 3. If you successfully log in, list the running processes using the <code>ps</code> command. 4. Kill any processes that appear unresponsive or should not be running, by using the <code>kill process_ID</code> command. 5. Check the responsiveness of the Oracle Exalytics In-Memory Machine after each process is killed. <p>If the this procedure does not work, power cycle the Oracle Exalytics In-Memory Machine:</p> <ol style="list-style-type: none"> 1. Press the Power/OK button to power off the Oracle Exalytics In-Memory Machine and wait 20 to 30 seconds. 2. Press the Power/OK button again to power on the system.

A.2 Additional Troubleshooting Information

For additional troubleshooting information, see the *Sun Fire X4470 M2 Server Service Manual* (821-0703) and the *Oracle x86 Servers Diagnostics Guide* (820-6750).

A.3 Locating the Machine Serial Number

You might need to have the serial number of your Oracle Business Intelligence Machine when you ask for service on your system. Record this number for future use. Use one of the following methods to locate your machine's serial number:

- On the front panel of the Oracle Business Intelligence Machine, look at the bottom ledge (near the center) to locate the machine's serial number. For an illustration of the Oracle Business Intelligence Machine front panel, see [Section 2.5.1, "Front Panel Features"](#).
- Locate the yellow Customer Information Sheet (CIS) attached to your Oracle Business Intelligence Machine packaging. This sheet includes the serial number.
- From ILOM, enter the `show/SYS` command, or go to the **System Information** tab in the ILOM browser interface.

Use [Table A-2](#) to collect information that you might need to communicate with Oracle support personnel.

Table A-2 System Information Required for Support

System Configuration Information Required	Your Information
Service contract number	
System model	
Operating environment	
System serial number	
Peripherals attached to the system	
Email address and phone number for you and a secondary contact	
Street address where the system is located	
Administrator password	
Summary of the problem and the work being done when the problem occurred	
Other useful information	
IP address	
Oracle Exalytics In-Memory Machine name (system host name)	
Network or internet domain name	
Proxy server configuration	

