

# **Oracle® Virtual Compute Appliance X3-2**

## **Installation Guide for Release 1.0**

**ORACLE®**

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# Oracle® Virtual Compute Appliance X3-2: Installation Guide for Release 1.0

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# Preface

This document is part of the documentation library for Oracle Virtual Compute Appliance X3-2 Release 1.0, which is available at:

[http://docs.oracle.com/cd/E40371\\_01](http://docs.oracle.com/cd/E40371_01)

The documentation library consists of the following items:

**Oracle Virtual Compute Appliance X3-2 Release Notes**

The release notes provide a summary of the new features, changes, fixed bugs and known issues in Oracle Virtual Compute Appliance X3-2.

**Oracle Virtual Compute Appliance X3-2 Installation Guide**

The installation guide provides detailed instructions to prepare the installation site and install Oracle Virtual Compute Appliance X3-2. It also includes the procedure to install an additional compute node.

**Oracle Virtual Compute Appliance X3-2 Safety and Compliance Guide**

The safety and compliance guide is a supplemental guide to the safety aspects of Oracle Virtual Compute Appliance X3-2. It conforms to Compliance Model No. OCA1A.

**Oracle Virtual Compute Appliance X3-2 Administrator's Guide**

The administrator's guide provides instructions for using the management software. It is a comprehensive guide to how to configure, monitor and administer Oracle Virtual Compute Appliance X3-2.

**Oracle Virtual Compute Appliance Quick Start Poster**

The quick start poster provides a step-by-step description of the hardware installation and initial software configuration of Oracle Virtual Compute Appliance X3-2. A printed quick start poster is shipped with each Oracle Virtual Compute Appliance base rack, and is intended for data center operators and administrators who are new to the product.

The quick start poster is also available in the documentation library as an HTML guide, which contains alternate text for ADA 508 compliance.

**Oracle Virtual Compute Appliance Expansion Node Setup Poster**

The expansion node setup poster provides a step-by-step description of the installation procedure for an Oracle Virtual Compute Appliance expansion node. A printed expansion node setup poster is shipped with each Oracle Virtual Compute Appliance expansion node.

The expansion node setup poster is also available in the documentation library as an HTML guide, which contains alternate text for ADA 508 compliance.

## Audience

The Oracle Virtual Compute Appliance X3-2 documentation is written for technicians, authorized service providers, data center operators and system administrators who want to install, configure and maintain a virtual compute environment in order to deploy virtual machines for users. It is assumed that readers have experience installing and troubleshooting hardware, are familiar with web and virtualization technologies and have a general understanding of operating systems such as UNIX (including Linux) and Windows.

The Oracle Virtual Compute Appliance makes use of Oracle Linux and Oracle Solaris operating systems within its component configuration. It is advisable that administrators have experience of these operating systems at the very least. Oracle Virtual Compute Appliance is capable of running virtual machines with a variety of operating systems including Oracle Solaris and other UNIXes, Linux and Microsoft Windows. The

selection of operating systems deployed in guests on Oracle Virtual Compute Appliance determines the requirements of your administrative knowledge.

## Related Documentation

Additional documentation for components related to Oracle Virtual Compute Appliance X3-2 is available as follows:

- All Oracle products  
<http://www.oracle.com/documentation>
- Sun Rack II 1042 and 1242  
<http://docs.oracle.com/cd/E19844-01/index.html>
- Sun Server X3-2  
[http://docs.oracle.com/cd/E22368\\_01/index.html](http://docs.oracle.com/cd/E22368_01/index.html)
- Sun ZFS Storage Appliance 7320  
[http://docs.oracle.com/cd/E28317\\_01/index.html](http://docs.oracle.com/cd/E28317_01/index.html)
- Oracle Switch ES1-24  
[http://docs.oracle.com/cd/E39109\\_01/index.html](http://docs.oracle.com/cd/E39109_01/index.html)
- NM2-36P Sun Datacenter InfiniBand Expansion Switch  
[http://docs.oracle.com/cd/E26698\\_01/index.html](http://docs.oracle.com/cd/E26698_01/index.html)
- Oracle Fabric Interconnect F1-15 Director Switch  
[http://docs.oracle.com/cd/E38500\\_01/index.html](http://docs.oracle.com/cd/E38500_01/index.html)
- Oracle Integrated Lights Out Manager (ILOM) 3.1  
[http://docs.oracle.com/cd/E24707\\_01/index.html](http://docs.oracle.com/cd/E24707_01/index.html)
- Oracle VM  
[http://docs.oracle.com/cd/E35328\\_01/index.html](http://docs.oracle.com/cd/E35328_01/index.html)

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## Conventions

The following text conventions are used in this document:

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

## Document Revision

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# Chapter 1 Introduction to Oracle Virtual Compute Appliance X3-2

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This document provides instructions for installing Oracle Virtual Compute Appliance X3-2 at your site. Instructions are also provided for extending an existing Oracle Virtual Compute Appliance X3-2 at your site. This chapter provides an overview of these system installation procedures, and describes the features and hardware components of Oracle Virtual Compute Appliance X3-2.

## 1.1 System Installation Procedures

The following table lists the procedures you need to complete to install Oracle Virtual Compute Appliance X3-2 at your site.

Step	Description	Links
1	Review the product notes for any late-breaking information about Oracle Virtual Compute Appliance X3-2.	<i>Oracle Virtual Compute Appliance X3-2 Product Notes</i> at: <a href="http://www.oracle.com/us/products/servers-storage/servers/virtual-compute-appliance/overview/index.html">http://www.oracle.com/us/products/servers-storage/servers/virtual-compute-appliance/overview/index.html</a>
2	Review important safety information.	Before performing the installation, refer to the following documents: <ul style="list-style-type: none"><li>• <i>Oracle Virtual Compute Appliance X3-2 Safety and Compliance Guide</i></li><li>• <i>Important Safety Information for Oracle's Hardware Systems</i></li></ul>
3	Review information about Oracle Virtual Compute Appliance X3-2 features and hardware components.	<a href="#">Chapter 1, Introduction to Oracle Virtual Compute Appliance X3-2</a>
4	Complete the site preparation procedures.	<a href="#">Chapter 2, Site Requirements</a>
5	Complete the site network preparation procedures.	<a href="#">Chapter 3, Network Requirements</a>
6	Install Oracle Virtual Compute Appliance X3-2 at your site.	<a href="#">Chapter 4, Installing Oracle Virtual Compute Appliance X3-2</a>
7	Power on Oracle Virtual Compute Appliance X3-2 and perform initial system configuration.	<a href="#">Chapter 5, Powering On Oracle Virtual Compute Appliance X3-2</a>
8	(Optional) Extend Oracle Virtual Compute Appliance X3-2.	<a href="#">Chapter 6, Extending Oracle Virtual Compute Appliance X3-2</a>

## 1.2 About Oracle Virtual Compute Appliance X3-2

Oracle Virtual Compute Appliance X3-2 is an integrated hardware and software system engineered to enable rapid deployment of a converged compute, network, and storage infrastructure for hosting most applications and workloads, whether running on Linux, Oracle Solaris, or Microsoft Windows.

In combination with customer-provided storage from Oracle or other storage vendors, Oracle Virtual Compute Appliance X3-2 incorporates Sun server and network hardware with Oracle operating system, virtualization, and orchestration software to automate the discovery, configuration, deployment, and management of converged infrastructure for hosting virtual machines (VMs).

Oracle Virtual Compute Appliance X3-2 incorporates the Oracle Fabric Interconnect F1-15 Director switch to provide a converged, wire-once, software-defined networking and storage fabric for all servers and storage in the appliance. Leveraging the software-defined network fabric, users can rapidly and dynamically create or modify private or public networks without having to manually re-cable connections, saving time and reducing the risk of human error. Further, the consolidation of network connections results in up to 70 percent fewer cables and cards.

In addition to rapid infrastructure provisioning, Oracle Virtual Compute Appliance also accelerates complete application stack deployment through support for Oracle VM Templates and Assemblies. Oracle VM Templates and Assemblies are preconfigured applications, middleware, and databases packaged as ready-to-run VMs that can be dynamically configured at deployment time. The result is an unparalleled ability to go from “bare-metal” infrastructure power on to logging in to a newly deployed, running application within days or even hours, instead of weeks or months.

## 1.3 Features of Oracle Virtual Compute Appliance X3-2

Oracle Virtual Compute Appliance X3-2 includes the following features:

- **Converged infrastructure orchestration software:** Automated discovery, configuration, and management of included server, network, and storage resources for rapid infrastructure provisioning.
- **Unified, software-defined network fabric:** Incorporated Oracle Fabric Interconnect hardware provides a single, consolidated fabric allowing new networks to be dynamically added and existing networks to be modified without the need to manually modify cabling.
- **Rapid application stack deployment, not just infrastructure:** Support for ready-to-run Oracle VM Templates and Assemblies enables users to rapidly deploy not only the infrastructure, but also the applications that are hosted on the infrastructure.
- **Support for a wide variety of guest operating systems:** Support for Linux, Oracle Solaris, and Windows operating systems and applications.
- **Support for customer-provided storage:** Oracle Virtual Compute Appliance X3-2 can be configured with external storage from Oracle or existing storage from other storage vendors.
- **Unified management:** Browser-based orchestration software provides at-a-glance status for all hardware components. Role-based access control permits secure administration of the appliance across multiple administrators.

## 1.4 Oracle Virtual Compute Appliance X3-2 Rack Components

Oracle Virtual Compute Appliance X3-2 systems consist of virtualization compute nodes, storage appliances, as well as required InfiniBand and Ethernet networking components. [Table 1.1](#) lists the quantity and description of each component in an Oracle Virtual Compute Appliance X3-2 system.

**Table 1.1 Oracle Virtual Compute Appliance X3-2 Rack Components**

Quantity	Description
2	Sun Server X3-2, used as management nodes
2 to 25	Sun Server X3-2, used as virtualization computing nodes
1	Sun Rack II 1242 base
2	NM2-36P Sun Datacenter InfiniBand Expansion Switch
2	Oracle Switch ES1-24
2	Oracle Fabric Interconnect F1-15 Director Switch
1	Sun ZFS Storage 7320 appliance

## 1.5 Server Components

[Table 1.2](#) lists the components of a Sun Server X3-2.

**Table 1.2 Sun Server X3-2 Components**

Quantity	Description
1	Sun Server X3-2 base
2	Eight-core Intel Xeon processors E5-2600 series (2.2 GHz)
16	16 GB DDR3 DIMMs (256 GB total)
2	900-GB, 2.5-inch, 10,000-RPM drives with LSI RAID controller
1	Ethernet port for remote management
1	Dual-port 4X QDR (40 Gbps) InfiniBand Host Channel Adapter Network Interface Card
2	Redundant power supplies and fans
4	Embedded 10-Gigabit Ethernet port
1	USB-2 4-GB flash drive

## 1.6 Operational Procedures for Oracle Virtual Compute Appliance X3-2

This section provides important operational instructions to help you minimize the risk of injury or damage.

### 1.6.1 Emergency Power-off Considerations

If there is an emergency, then power to Oracle Virtual Compute Appliance X3-2 should be halted immediately. The following emergencies might require powering off the system:

- Natural disasters such as an earthquake, flood, hurricane, tornado or cyclone
- Abnormal noise, smell or smoke coming from the system
- Threat to human safety

#### 1.6.1.1 Emergency Power-off Procedure

To perform an emergency power-off procedure for Oracle Virtual Compute Appliance X3-2, turn off power at the circuit breaker or pull the emergency power-off switch in the computer room.

### 1.6.1.2 Emergency Power-off Switch

Emergency power-off (EPO) switches are required in a computer room when computer equipment contains batteries capable of supplying more than 750 volt-amperes for more than five minutes. Systems that have these batteries include internal EPO hardware for connection to a site EPO switch or relay. Use of the EPO switch will remove power from Oracle Virtual Compute Appliance X3-2.

### 1.6.2 Cautions and Warnings

The following cautions and warnings apply to Oracle Virtual Compute Appliance X3-2:

- Do not touch the parts of this product that use high-voltage power. Touching them might result in serious personal injury.
- Do not power off Oracle Virtual Compute Appliance X3-2 unless there is an emergency. In that case, follow the [Section 1.6.1.1, “Emergency Power-off Procedure”](#).
- Keep the front and rear cabinet doors closed. Failure to do so might cause system failure or result in damage to hardware components.
- Keep the top, front, and back of cabinets clear to allow proper airflow and prevent overheating of components.
- Use only the supplied hardware.

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# Chapter 2 Site Requirements

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This chapter describes the site requirements for the Oracle Virtual Compute Appliance X3-2.



### Note

For site checklists, refer to [Appendix C, Site Checklists](#).

## 2.1 Space Requirements

All Oracle Virtual Compute Appliance X3-2 racks have the same space requirements. The space requirements are as follows:

- Height: 42U - 1998 mm (78.66 inches)
- Width: 600 mm with side panels (23.62 inches)
- Depth (front door handle to rear door handle): 1200 mm (47.24 inches)
- Depth (doors removed): 1112 mm (43.78 inches)
- Weight (base rack, fully populated): 894 kg (1972 lbs)

The minimum ceiling height for the cabinet is 2300 mm (90 inches), measured from the true floor or raised floor, whichever is higher. An additional 914 mm (36 inches) is for top clearance. The space above the cabinet and its surroundings must not restrict the movement of cool air between the air conditioner and the cabinet, or the movement of hot air coming out of the top of the cabinet.

### 2.1.1 Receiving and Unpacking Requirements

Before your Oracle Virtual Compute Appliance X3-2 arrives, ensure that the receiving area is large enough for the package. The following are the package dimensions and weights for Oracle Virtual Compute Appliance X3-2 system:

- Shipping height: 2159 mm (85 inches)
- Shipping width: 1219 mm (48 inches)
- Shipping depth: 1575 mm (62 inches)
- Shipping weight (base rack, fully populated): 996 kg (2197 lbs)

If your loading dock meets the height and ramp requirements for a standard freight carrier truck, then you can use a pallet jack to unload the rack. If the loading dock does not meet the requirements, then you must provide a standard forklift or other means to unload the rack. You can also request that the rack be shipped in a truck with a lift gate.

When Oracle Virtual Compute Appliance X3-2 arrives, leave the rack in its shipping packaging until it arrives at its installation site. Use a conditioned space to remove the packaging material to reduce particles before entering the data center. The entire access route to the installation site should be free of raised-pattern flooring that can cause vibration.

Allow enough space for unpacking the system from its shipping cartons. Ensure that there is enough clearance and clear pathways for moving Oracle Virtual Compute Appliance X3-2 from the unpacking location to the installation location. [Table 2.1](#) lists the access route requirements for Oracle Virtual Compute Appliance X3-2.

**Table 2.1 Access Route Requirements**

Access Route Item	With Shipping Pallet	Without Shipping Pallet
Minimum door height	2184 mm (86 inches)	2040 mm (80.32 inches)
Minimum door width	1220 mm (48 inches)	600 mm (23.62 inches)
Minimum elevator depth	1575 mm (62 inches)	1200 mm (47.24 inches)
Maximum incline	6 degrees	6 degrees
Maximum elevator, pallet jack, and floor loading capacity	1134 kg (2500 lbs)	1134 kg (2500 lbs)

## 2.1.2 Maintenance Access Requirements

The maintenance area must be large enough for Oracle Virtual Compute Appliance X3-2, and have the required access space. For example, the required space to remove the side panels is 675.64 mm (26.6 inches). [Table 2.2](#) lists the maintenance access requirements for Oracle Virtual Compute Appliance X3-2.

**Table 2.2 Maintenance Access Requirements**

Location	Maintenance Access Requirement
Rear maintenance	914 mm (36 inches)
Front maintenance	914 mm (36 inches)
Top maintenance	914 mm (36 inches)

## 2.2 Flooring Requirements

Oracle recommends that Oracle Virtual Compute Appliance X3-2 be installed on raised flooring. The site floor and the raised flooring must be able to support the total weight of the system as specified in [Section 2.1, “Space Requirements”](#).

[Table 2.3](#) lists the floor load requirements.

**Table 2.3 Floor Load Requirements**

Description	Requirement
Maximum allowable weight of installed rack equipment	952.54 kg (2100 lbs)
Maximum allowable weight of installed power distribution units	52.16 kg (115 lbs)

Description	Requirement
Maximum dynamic load (maximum allowable weight of installed equipment including power distribution units)	1004.71 kg (2215 lbs)

## 2.3 Electrical Power Requirements

Oracle Virtual Compute Appliance X3-2 can operate effectively over a wide range of voltages and frequencies. However, it must have a reliable power source. Damage might occur if the ranges are exceeded. Electrical disturbances such as the following might damage the system:

- Fluctuations caused by brownouts
- Wide and rapid variations in input voltage levels or in input power frequency
- Electrical storms
- Faults in the distribution system, such as defective wiring

To protect your system from such disturbances, you should have a dedicated power distribution system, power-conditioning equipment, as well as lightning arresters or power cables to protect from electrical storms.

Each rack has two preinstalled power distribution units (PDUs). The PDUs accept different power sources. You must specify the type of PDU that is correct for your data center.

[Table 2.4](#) lists the PDU low-voltage requirements.

**Table 2.4 PDU Requirements for Low Voltage**

Item		
Size	22 kVA	24 kVA
Market Part Number	7100873	6444A
Manufacturing Part Number	7018123	594-5596-01
Input Voltage Range	200-240 VAC	190-220 VAC
Number of Input Cords per PDU	3	2
Electrical Input Ratings	3x 2ph. [2W+ground] 208VAC 50/60Hz, max. 36.8A per phase	2x 3ph. [3W+ground] 208VAC 50/60Hz, max. 34.6A per phase
Data Center Receptacle	Hubbell CS8265C	IEC309-3P4W-IP67  (60A, 250V, AC, 3ph) IEC309 60A 3ph 4 Wire  Hubbell HBL460R/C9W or equivalent
Number of Outlets Per Rack	6	4

[Table 2.5](#) lists the PDU high-voltage requirements.

**Table 2.5 PDU Requirements for High Voltage**

Item		
Size	22 kVA	24 kVA

Item		
Market Part Number	7100874	6445A
Manufacturing Part Number	7018124	594-5600-01
Input Voltage Range	220-240 VAC	380-415 VAC
Number of Input Cords per PDU	3	2
Electrical Input Ratings	3x 1ph. [2W+ground] 230VAC 50/60Hz, max. 32A per phase	2x 3ph. [4W+ground] 230/400VAC 50/60Hz, max. 18A per phase
Data Center Receptacle	Hubbell CS8265C	IEC309-4P5W-IP44  (32A, 400V, AC, 3ph)  IEC309 32A 3ph 5 Wire  Hubbell HBL532R/C9W or equivalent
Number of Outlets Per Rack	6	4

### 2.3.1 Facility Power Requirements

Electrical work and installations must comply with applicable local, state, or national electrical codes. Contact your facilities manager or qualified electrician to determine what type of power is supplied to the building.

To prevent catastrophic failures, design the input power sources to ensure adequate power is provided to the power distribution units (PDUs). Use dedicated AC breaker panels for all power circuits that supply power to the PDU. When planning for power distribution requirements, balance the power load between available AC supply branch circuits. In the United States and Canada, ensure that the overall system AC input current load does not exceed 80 percent of the branch circuit AC current rating.

PDU power cords are 4 meters (13.12 feet) long, and 1 to 1.5 meters (3.3 to 4.9 feet) of the cord will be routed within the rack cabinet. The installation site AC power receptacle must be within 2 meters (6.6 feet) of the rack.

### 2.3.2 Circuit Breaker Requirements

To prevent catastrophic failures, the design of your power system must ensure that adequate power is provided to all of the compute nodes. Use dedicated AC breaker panels for all power circuits that supply power to the compute nodes. Electrical work and installations must comply with applicable local, state, or national electrical codes. Compute nodes require electrical circuits to be grounded to the Earth.

In addition to circuit breakers, provide a stable power source, such as an uninterruptible power supply (UPS) to reduce the possibility of component failures. If computer equipment is subjected to repeated power interruptions and fluctuations, then it is susceptible to a higher rate of component failure.



**Note**

Circuit breakers are supplied by the customer. One circuit breaker is required for each power cord.

### 2.3.3 Grounding Guidelines

The cabinets for Oracle Virtual Compute Appliance X3-2 are shipped with grounding-type power cords (three-wire). Always connect the cords to grounded power outlets. Because different grounding methods



are used, depending on location, check the grounding type, and refer to documentation, such as IEC documents, for the correct grounding method. Ensure that the facility administrator or qualified electrical engineer verifies the grounding method for the building, and performs the grounding work.

## 2.4 Temperature and Humidity Requirements

Airflow through Oracle Virtual Compute Appliance X3-2 is from front to back. For information, see [Section 2.5, “Ventilation and Cooling Requirements”](#).

Studies have shown that temperature increases of 10 degrees Celsius (15 degrees Fahrenheit) above 20 degrees Celsius (70 degrees Fahrenheit) reduce long-term electronics reliability by 50 percent. Excessive internal temperatures might result in full or partial shutdown of Oracle Virtual Compute Appliance X3-2.

[Table 2.6](#) lists the temperature, humidity and altitude requirements for operating and non-operating systems.

**Table 2.6 Temperature, Humidity, and Altitude Requirements**

Condition	Operating Requirement	Non-operating Requirement	Optimum
Temperature	5 ° to 32 ° Celsius (59 ° to 89.6 ° Fahrenheit)	-40 ° to 70 ° Celsius (-40 ° to 158 ° Fahrenheit)	For optimal rack cooling, data center temperatures from 21 ° to 23 ° Celsius (70 ° to 47 ° Fahrenheit)
Relative humidity	10 to 90 percent relative humidity, non-condensing	Up to 93 percent relative humidity	For optimal data center rack cooling, 45 to 50 percent non-condensing
Altitude	3,048 meters (10,000 feet) maximum	12,000 meters (40,000 feet)	Ambient temperature is reduced by 1 ° Celsius per 300 meters above 900 meters altitude above sea level

Set conditions to the optimal temperature and humidity ranges to minimize the chance of downtime due to component failure. Operating Oracle Virtual Compute Appliance X3-2 for extended periods at or near the operating range limits, or installing it in an environment when it remains at or near non-operating range limits could significantly increase hardware component failure.

The ambient temperature range of 21 ° to 23 ° Celsius (70 ° to 74 ° Fahrenheit) is optimal for server reliability and operator comfort. Most computer equipment can operate in a wide temperature range, but near 22 ° Celsius (72 ° Fahrenheit) is desirable because it is easier to maintain safe humidity levels. Operating in this temperature range provides a safety buffer in the event that the air conditioning system goes down for a period of time.

Relative humidity is the percentage of the total water vapor that can exist in the air without condensing, and is inversely proportional to air temperature. Humidity goes down when the temperature rises, and goes up when the temperature drops. For example, air with a relative humidity of 45 percent at a temperature of 24 ° Celsius (75 ° Fahrenheit) has a relative humidity of 65 percent at a temperature of 18 ° Celsius (64 ° Fahrenheit). As the temperature drops, the relative humidity rises to more than 65 percent, and water droplets are formed.

The ambient relative humidity range of 45 to 50 percent is suitable for safe data processing operations. Most computer equipment can operate in a wide range (20 to 80 percent), but the range of 45 to 50 percent is recommended for the following reasons:

- Optimal range helps protect computer systems from corrosion problems associated with high humidity levels.
- Optimal range provides the greatest operating time buffer in the event of air conditioner control failure.
- This range helps to avoid failures or temporary malfunctions caused by intermittent interference from static discharges that may occur when relative humidity is too low.



**Note**

Electrostatic discharge (ESD) is easily generated, and hard to dissipate in areas of low relative humidity, such as below 35 percent. ESD becomes critical when humidity drops below 30 percent. It is not difficult to maintain humidity in a data center because of the high-efficiency vapor barrier and low rate of air changes normally present.

## 2.5 Ventilation and Cooling Requirements

Always provide adequate space in front of and behind the rack to allow for proper ventilation. Do not obstruct the front or rear of the rack with equipment or objects that might prevent air from flowing through the rack. Rack-mountable servers and equipment typically draw cool air in through the front of the rack and let warm air out the rear of the rack. There is no airflow requirement for the left and right sides due to front-to-back cooling.

If the rack is not completely filled with components, then cover the empty sections with filler panels. Gaps between components can adversely affect airflow and cooling within the rack.

Air conditioning facilities usually do not precisely monitor or control temperature and humidity throughout an entire computer room. Generally, monitoring is done at individual points corresponding to multiple exhaust vents in the main unit, and other units in the room. Special consideration should be paid to humidity when using underfloor ventilation. When underfloor ventilation is used, monitoring is done at each point close to an exhaust vent. Distribution of the temperature and humidity across the entire room is uneven.

Oracle Virtual Compute Appliance X3-2 has been designed to function while installed in a natural convection airflow. The following requirements must be followed to meet the environmental specification:

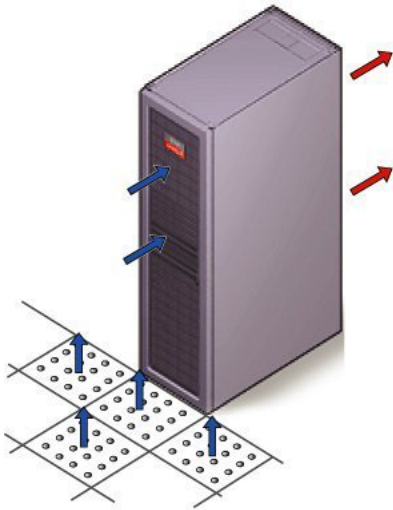
- Ensure that there is adequate airflow through the system.
- Ensure that the system has front-to-back cooling. The air intake is at the front of the system, and the air outlet is at the rear of the system.
- Allow a minimum clearance of 914 mm (36 inches) at the front of the system, and 914 mm (36 inches) at the rear of the system for ventilation.

Use perforated tiles, approximately 400 CFM/tile, in front of the rack for cold air intake. The tiles can be arranged in any order in front of the rack, as long as cold air from the tiles can flow into the rack. Inadequate cold airflow could result in a higher intake temperature in the system due to exhaust air recirculation. The following is the recommended number of floor tiles:

- Four floor tiles for Oracle Virtual Compute Appliance X3-2 with up to 25 compute nodes (fully loaded)
- Three floor tiles for Oracle Virtual Compute Appliance X3-2 with up to 16 compute nodes (half loaded)
- One floor tile for Oracle Virtual Compute Appliance X3-2 with 8 compute nodes (quarter loaded)

Figure 2.1 shows a typical installation of the floor tiles in a data center for Oracle Virtual Compute Appliance X3-2 with more than 16 compute nodes.

**Figure 2.1 Typical Data Center Configuration for Perforated Floor Tiles**





# Chapter 3 Network Requirements

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  - 3.1.1 Network Connection Requirements ..... 13
  - 3.1.2 IP Address Requirements ..... 14
- 3.2 General Network Configuration ..... 14

This chapter describes the network requirements for Oracle Virtual Compute Appliance X3-2.



**Note**

See [Appendix A, Default IP Addresses](#) for default IP addresses.

## 3.1 Network Connection and IP Address Requirements

This section describes the network connection requirements and IP address requirements to connect Oracle Virtual Compute Appliance X3-2 to your existing network infrastructure.

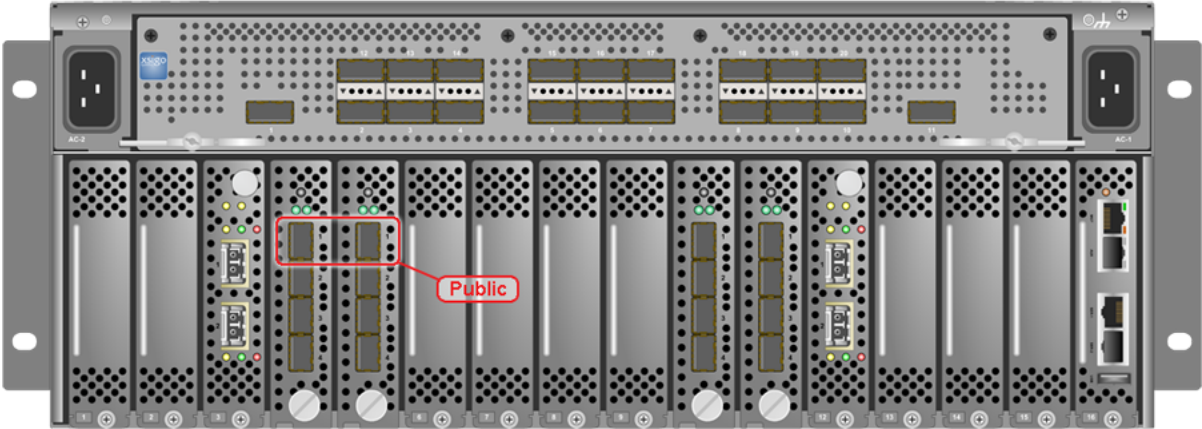
### 3.1.1 Network Connection Requirements

Before installation, you must run network cables from your existing network infrastructure to the Oracle Virtual Compute Appliance X3-2 installation site.

You must connect two 10 Gigabit Ethernet (GbE) IO module ports labeled “Public” on each F1-15 Director switch to your public Ethernet network.

[Figure 3.1](#) shows the location of the 10 GbE Public IO module ports on the F1-15 Director switch.

**Figure 3.1 F1-15 Director Switch 10 GbE Public IO Module Ports**



In addition to the public Ethernet connection, you may connect the management network port on each Oracle Switch ES1-24 switch to a management or machine administration network at your installation site. The system contains two Oracle Switch ES1-24 switches, making up one logical management network. The daisy-chained Oracle Switch ES1-24 arrangement has a special high availability (HA) configuration. Each switch can have an uplink to the customer management network, but only one link will be active at a given time. Link tracking is done in software on the Oracle Switch ES1-24.

### 3.1.2 IP Address Requirements

Oracle Virtual Compute Appliance X3-2 requires a large number of IP addresses. For lists of default IP addresses that are preassigned to Oracle Virtual Compute Appliance X3-2, see [Appendix A, Default IP Addresses](#).

To gain initial access to the Oracle Virtual Compute Appliance Dashboard, you must connect a terminal or workstation with a web browser directly to the management network. Use the blue Ethernet cable connected to port 24 of an Oracle Switch ES1-24, and statically configure the wired network connection of the workstation to use the IP address `192.168.4.254`.



#### Caution

Port 24 of the Oracle Switch ES1-24 has a minimum transfer rate of 1000 Mbit/s (GbE). If your workstation requires a lower speed (Fast Ethernet, 100 Mbit/s), you may use port 19 of the second Oracle Switch ES1-24, which is the one on the right hand side if you look from the rear of the rack. A Cat5 Ethernet cable is plugged in and coiled up on the side.

During the initial software configuration of the Oracle Virtual Compute Appliance X3-2, you reconfigure the network settings of the management nodes. For this purpose, you should reserve three IP addresses in the public (data center) network: one for each management node, and one to be used as virtual IP address by both management nodes. The virtual IP address provides access to the Dashboard once the software initialization is complete.

## 3.2 General Network Configuration

[Table 3.1](#) is a general network configuration worksheet to help you configure your Oracle Virtual Compute Appliance X3-2. These selections are optional for Oracle Virtual Compute Appliance X3-2. Information entered in this worksheet is used as input in the Dashboard. This worksheet includes fields in the utility that typically require data.

**Table 3.1 General Network Configuration Worksheet**

Item	Your Configuration	Description and Example
Domain Name		Company network domain name.  Example: <code>abc.example.com</code>
Region		Name of the country in which Oracle Virtual Compute Appliance X3-2 resides.
Time Zone		Valid time zone.
IP address of the Domain Name Server		IP address of one or more network name servers (up to three servers).  Example: <code>10.25.45.123</code> , <code>10.25.45.125</code>
NTP Server		IP address of a Network Time Protocol server.  Example: <code>10.12.13.14</code>
Search Domains		A list of search domains for name lookup.  Example: <code>example.com</code> , <code>example.org</code>
Default Gateway		IP address of the default gateway in your organization.

Item	Your Configuration	Description and Example
IP address of Management node 1		Example: <a href="#">10.203.72.2</a> IP address of the first management node in your company network. Example: <a href="#">10.203.72.101</a>
IP address of Management node 2		IP address of the second management node in your company network. Example: <a href="#">10.203.72.102</a>
Management virtual IP address		Virtual IP address of the management node cluster in your company network. Example: <a href="#">10.203.72.100</a>





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# Chapter 4 Installing Oracle Virtual Compute Appliance X3-2

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This chapter explains how to prepare for the installation of Oracle Virtual Compute Appliance X3-2 and how to install the system at your site.

## 4.1 Installation Task Map

[Table 4.1](#) describes the steps for installing Oracle Virtual Compute Appliance X3-2 at your site.

**Table 4.1 Steps for Installing Oracle Virtual Compute Appliance X3-2**

Step	Description	Links
1	Review the safety precautions, guidelines, site checklists, and site requirements.	<a href="#">Section 4.2.2, "Review Safety Guidelines"</a>
2	Ensure that the site is prepared for the installation of the system.	<a href="#">Section 4.2.3, "Prepare the Installation Site"</a>
3	Unpack the system.	<a href="#">Section 4.2.5, "Unpack Oracle Virtual Compute Appliance X3-2"</a>
4	Install the system in its allocated place.	<a href="#">Section 4.3, "Install Oracle Virtual Compute Appliance X3-2 in Its Allocated Space"</a>

## 4.2 Prepare to Install Oracle Virtual Compute Appliance X3-2

This section describes the preparation steps to perform before installing Oracle Virtual Compute Appliance X3-2.

### 4.2.1 Before You Begin

Before installing Oracle Virtual Compute Appliance X3-2, or installing any server equipment into the rack, read the *Important Safety Information for Oracle's Hardware Systems (7063567)* document that is shipped with the system.

Observe all safety notices printed on the packaging and listed in the *Sun Rack II Safety and Compliance Guide* (820-4762) and the *Sun Rack II Power Distribution Users Guide* (E23956-01). Go to <http://download.oracle.com/docs/cd/E19657-01/index.html> to download these guides.

## 4.2.2 Review Safety Guidelines

Before Oracle Virtual Compute Appliance X3-2 arrives, review the following safety precautions to ensure that the site is safe, as well as ready for delivery. Failure to observe these precautions can result in personal injury, equipment damage, or malfunction.

- Do not block ventilation openings.
- Do not install the system in a location that is exposed to direct sunlight or near a device that may become hot.
- Do not install the system in a location that is exposed to excessive dust, corrosive gases, or air with high salt concentrations.
- Do not install the system in a location that is exposed to frequent vibrations. Install the system on a flat, level surface.
- Use a power outlet that uses proper grounding. When using shared grounding, the grounding resistance must not be greater than 10 ohms. Ensure that your facility administrator or a qualified electrical engineer verifies the grounding method for the building, and performs the grounding work.
- Ensure that each grounding wire used for the system is used exclusively for Oracle Virtual Compute Appliance X3-2. Also observe the precautions, warnings, and notes about handling that appear on labels on the equipment.
- Do not place cables under the equipment or stretch the cables too tightly.
- Do not disconnect power cords from the equipment while its power is on.
- Do not place anything on top of the system or perform any work directly above it.
- If you cannot reach the connector lock when disconnecting LAN cables, then press the connector lock with a flathead screwdriver to disconnect the cable. You could damage the system board if you force your fingers into the gap rather than using a flathead screwdriver.
- Do not let the room temperature rise sharply, especially in winter. Sudden temperature changes can cause condensation to form inside the system. Allow for a sufficient warm-up period prior to server operation.
- Do not install the system near a photocopy machine, air conditioner, welding machine, or any other equipment that generates loud, electronic noises.
- Avoid static electricity at the installation location. Static electricity transferred to the system can cause malfunctions. Static electricity is often generated on carpets.
- Confirm that the supply voltage and frequency match the electrical ratings indicated on Oracle Virtual Compute Appliance X3-2.
- Do not insert anything into any Oracle Virtual Compute Appliance X3-2 opening, unless doing so is part of a documented procedure. The system contains high-voltage parts. If a metal object or other electrically-conductive object enters an opening in the system, then it could cause a short circuit. This could result in personal injury, fire, electric shock, and equipment damage.

### 4.2.3 Prepare the Installation Site

The following procedure describes how to prepare the site prior to unpacking and situating Oracle Virtual Compute Appliance X3-2.

1. Thoroughly clean and vacuum the area in preparation for the installation.
2. Note problems or peculiarities at the site that require special equipment.
3. Verify that the installation site flooring has a strength rating to withstand the combined weight of Oracle Virtual Compute Appliance X3-2 and any other installed equipment.

For more information, see [Section 2.1, "Space Requirements"](#).

4. Install all necessary electrical equipment and ensure that sufficient power is provided.

See also the *Sun Rack II Power Distribution Units User's Guide* for the Sun Rack II Power Distribution Unit (PDU) power requirements.

5. Ensure that the installation site provides adequate air conditioning.

For details, see [Chapter 2, Site Requirements](#).

6. Operate the air conditioning system for 48 hours to bring the room temperature to the appropriate level.

### 4.2.4 Tools Required for Unpacking and Installation

The following tools are required for installation:

- Screwdriver handle (magnetic)
- T-30 Torx wrench key
- T-25 Torx wrench key
- 6-mm hexagon Allen wrench key
- SW 12-mm single-headed wrench
- Side panel removal tool
- Keys to the front door, rear door, and side panel locks
- Cage nut mounting tool
- 32 M6 cage nuts
- 32 M6 screws
- Straight tip

### 4.2.5 Unpack Oracle Virtual Compute Appliance X3-2

Refer to the *Sun Rack II Unpacking Guide* (820-5210) included with the packaging when unpacking the Oracle Virtual Compute Appliance X3-2 rack from the shipping carton. After unpacking the rack, follow local laws and guidelines to recycle the packaging properly.



**Caution**

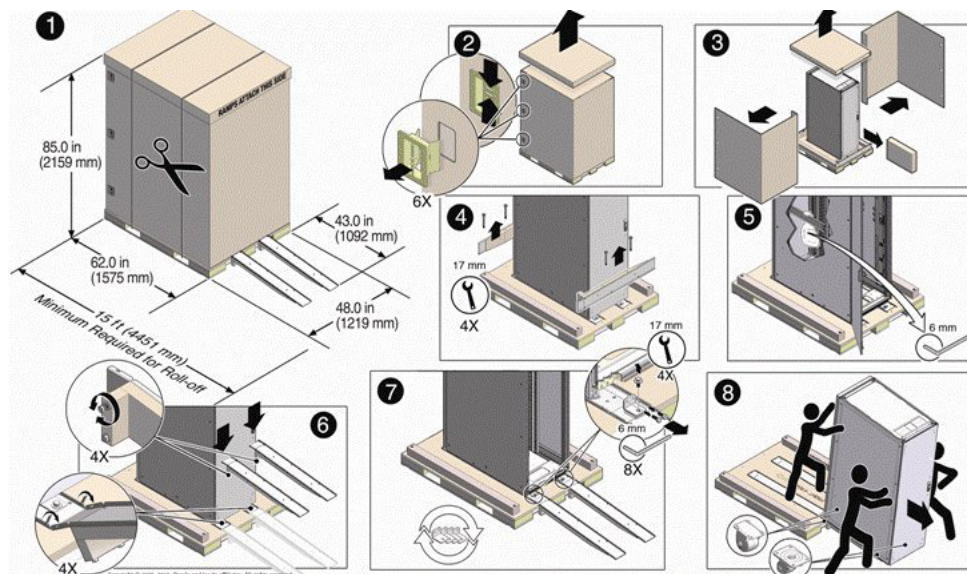
Carefully unpack the rack from the packaging and shipping pallet. Rocking or tilting the rack can cause it to fall over and cause serious injury or death. You should always use professional movers when unpacking and installing this rack.



**Note**

After unpacking the rack from the packaging, save the mounting brackets used to secure the rack to the shipping pallet. You can use these mounting brackets to secure the rack permanently to the installation site floor. Do not dispose of these brackets, as you will not be able to order replacement brackets.

**Figure 4.1 Unpacking the Oracle Virtual Compute Appliance X3-2**



## 4.3 Install Oracle Virtual Compute Appliance X3-2 in Its Allocated Space

This section describes each phase of the hardware installation procedure for Oracle Virtual Compute Appliance X3-2.

### 4.3.1 Move Oracle Virtual Compute Appliance X3-2

The following procedure describes how to move Oracle Virtual Compute Appliance X3-2:

1. Ensure that the rack doors are closed and secured.
2. Ensure that the leveling and stabilizing feet on the rack are raised and out of the way.
3. Push the system from the back of the rack to the installation site.



**Caution**

Never attempt to move Oracle Virtual Compute Appliance X3-2 by pushing on the rack side panels. Pushing on the rack side panels can tip over the rack.

This action can cause serious personal injury or death as well as damage to the equipment.

When moving Oracle Virtual Compute Appliance X3-2 to the installation site, the front casters do not pivot; you must steer the unit by moving the rear casters. You can safely maneuver the system by carefully pushing it. See [Figure 4.2](#).

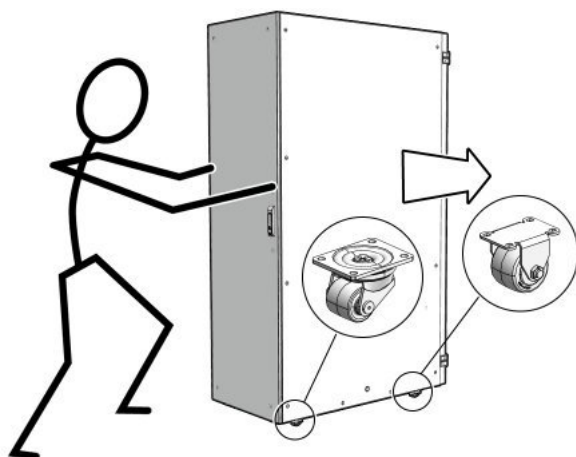
It is preferred to use three people to move the rack: one person in front and two persons in back to help guide the rack. When transporting configured racks from one location to another, take care to move them slowly, 0.65 meters per second (2.13 feet per second) or slower.

Carefully examine the transportation path. Avoid obstacles such as doorways or elevator thresholds that can cause abrupt stops or shocks. Go around obstacles by using ramps or lifts to enable smooth transport.

 **Caution**

Never tip or rock Oracle Virtual Compute Appliance X3-2 because the rack can fall over.

**Figure 4.2 Carefully Push Oracle Virtual Compute Appliance X3-2 From the Back of the Rack**



4. When the rack is at the installation site, verify that no components or connections have become dislodged or disconnected during transport. If necessary, re-attach components and cables properly.

### 4.3.2 Stabilize Oracle Virtual Compute Appliance X3-2

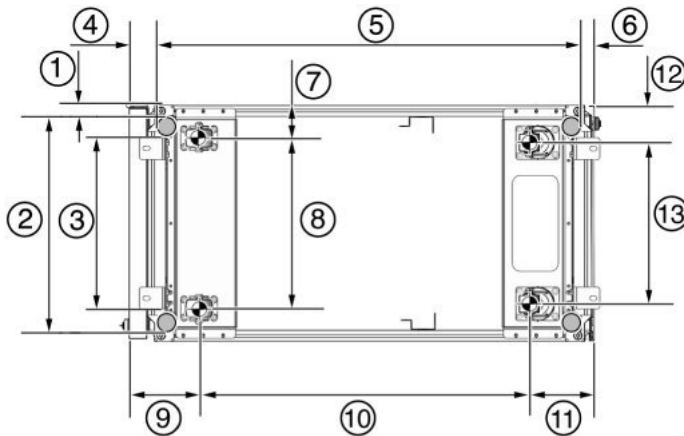
After moving Oracle Virtual Compute Appliance X3-2 to the installation site, stabilize the rack to ensure that it does not move or tip over. You can stabilize the rack permanently by extending the rack leveling feet, using mounting brackets, or both. After installation, use the leveling feet and the brackets to stabilize the system.

### 4.3.3 Stabilize Oracle Virtual Compute Appliance X3-2 Using Leveling Feet

The rack contains four leveling feet that can be lowered to stabilize the rack. The leveling feet can be used even when the rack is permanently secured to the floor. To adjust the leveling feet, do the following:

1. Locate the four leveling feet at the bottom four corners of the rack. See [Figure 4.3](#).

**Figure 4.3 Location of Leveling Feet on Rack**



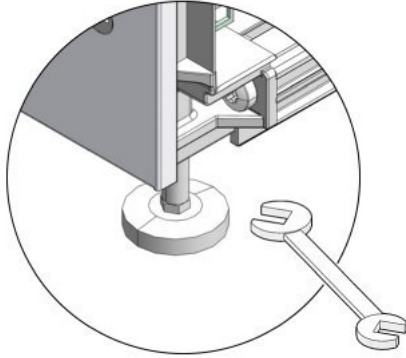
**Table 4.2 Figure Legend**

Item	Description
1	Distance from the edge of the mounting feet to the side of the rack is 33.75 mm (1.33 inches)
2	Width from the outside edges of the leveling feet is 532.5 mm (20.96 inches)
3	Width from the inside edges of the leveling feet is 429 mm (16.89 inches)
4	Distance from the edge of the feet to the front rack surface is 73.75 mm (2.90 inches)
5	Depth of the outside edges of the leveling feet is 1058.5 mm (41.67 inches)
6	Distance from the edge of the leveling feet to the rear rack surface is 32.5 mm (1.28 inches)
7	Distance from the center of front casters to the side of the rack is 86.7 mm (3.41 inches)
8	Width between the center of the front casters is 426.6 mm (16.80 inches)
9	Distance from the center of the rear casters to the rear of the rack is 173.7 mm (6.83 inches)
10	Depth between the front and rear casters is 828.6 mm (32.62 inches)
11	Distance between the rear casters and the rear of the rack is 162.4 mm (6.39 inches)
12	Distance from the center of rear casters to the side of the rack is 96.4 mm (3.80 inches)
13	Width between the center of the rear casters is 407.2 mm (16.03 inches)

- Using the SW 12-mm wrench, lower the leveling feet to the floor. See [Figure 4.4](#).

When lowered correctly, the four leveling feet should support the full weight of Oracle Virtual Compute Appliance X3-2.

**Figure 4.4 Securing the Rack Using the Leveling Feet**



### 4.3.4 Stabilize Oracle Virtual Compute Appliance X3-2 Using Mounting Brackets

The rack can be permanently mounted to the installation site floor using the same four mounting brackets that secured the rack to the shipping pallet. Use the front and rear brackets to stabilize the rack to the installation floor. Prepare the installation site by drilling four holes into the floor. Before permanently stabilizing the Oracle Virtual Compute Appliance X3-2 rack using the mounting brackets, drill the mounting holes.

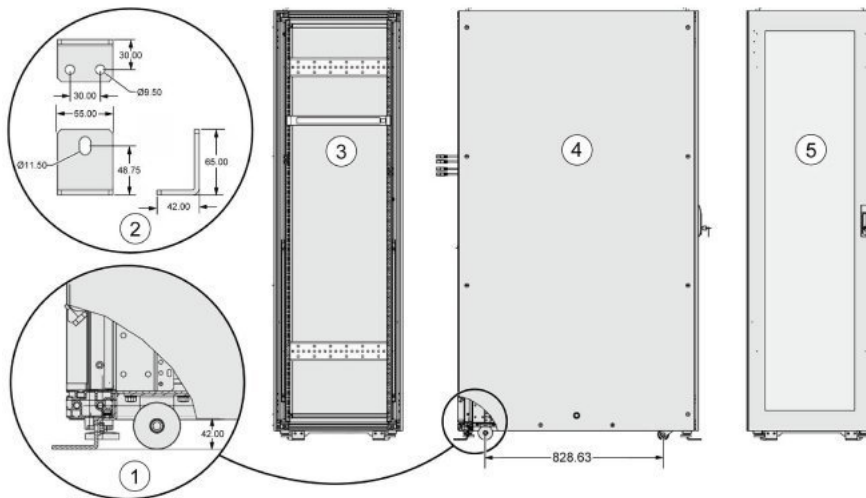
1. Obtain four bolts and washers to mount the system to the floor.

The bolt holes in the mounting bracket have a 10-mm diameter.

Oracle does not provide mounting bolts because different floors require different bolt types and strengths.

2. See [Figure 4.5](#) to find the location and dimensions of the mounting brackets.

**Figure 4.5 Location of Mounting Brackets on Oracle Virtual Compute Appliance X3-2 Rack**





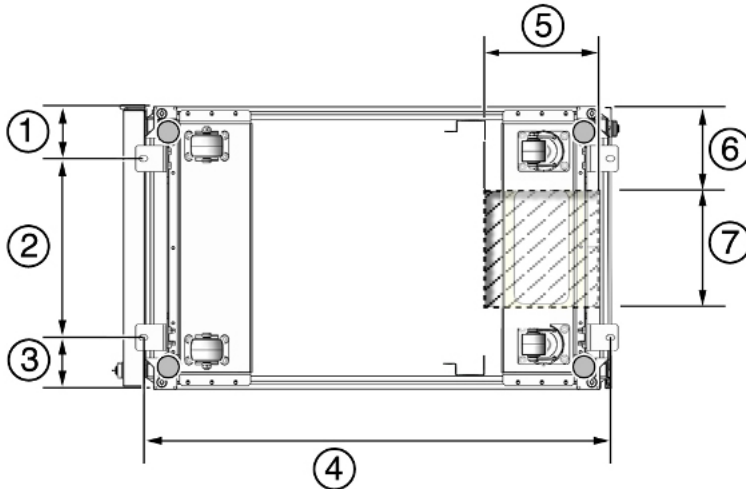
**Table 4.3 Figure Legend**

Item	Description
1	Mounting bracket location
2	Mounting bracket dimensions
3	Rack rear
4	Rack side
5	Rack front

- Position the Oracle Virtual Compute Appliance X3-2 rack over the drilled holes.

Figure 4.6 shows the bottom view of the system, and the location for the mounting hole and floor cutout dimensions.

**Figure 4.6 Bottom View of Oracle Virtual Compute Appliance X3-2 Rack Showing Mounting Hole and Floor Cutout Dimensions**



**Table 4.4 Figure Legend**

Item	Description
1	Distance from mounting bracket to the edge of the rack is 113 mm (4.45 inches)
2	Width between the centers of the mounting hole slots is 374 mm (14.72 inches)
3	Distance between mounting bracket to the edge of the rack is 113 mm (4.45 inches)
4	Distance between the centers of the front and rear mounting hole slots is 1120 mm (44.1 inches)
5	Depth of cable-routing floor cutout is 330 mm (13 inches)
6	Distance between the floor cutout and the edge of the rack is 160 mm (6.3 inches)
7	Width of cable-routing floor cutout is 280 mm (11 inches)

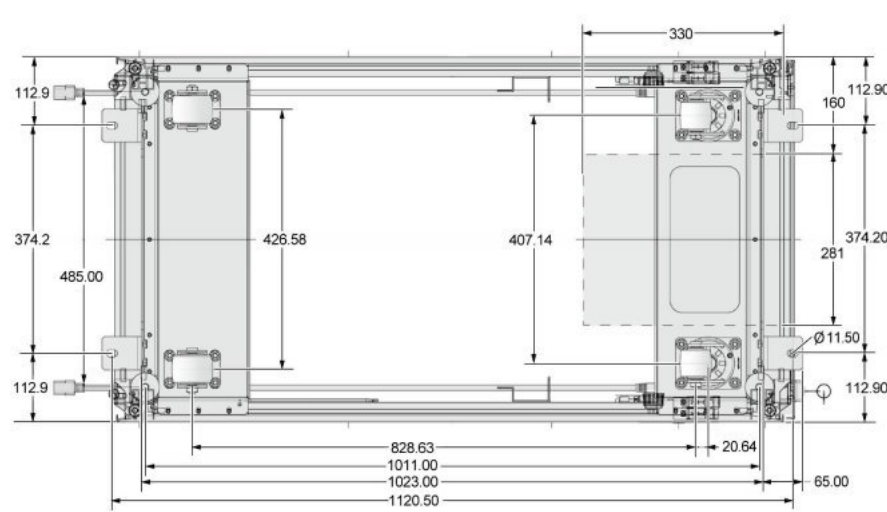
- (Optional) If you plan to route data or power distribution unit (PDU) power cords down through the bottom of the rack, you will need to cut a hole in the installation site floor. Cut a rectangular hole below



the rear portion of the rack, between the two rear casters and behind the RETMA (Radio Electronics Television Manufacturers Association) rails.

Figure 4.7 shows the base positions of the rack from the bottom.

**Figure 4.7 Base Position to Measure**

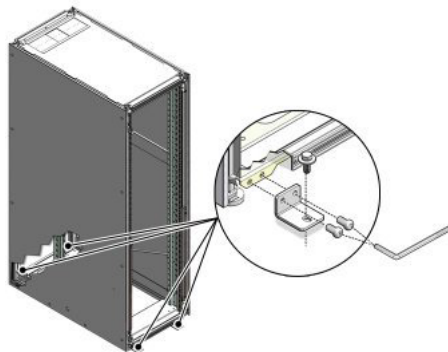


**Caution**

Do not create a hole where the rack casters or leveling feet brackets will be placed.

5. Open the front and rear Oracle Virtual Compute Appliance X3-2 rack doors.
6. Using a 6-mm hexagon Allen wrench key, install the mounting brackets to the rack. See Figure 4.8.

**Figure 4.8 Securing Oracle Virtual Compute Appliance X3-2 Using Mounting Brackets**



7. Using bolts and washers that are appropriate for your installation site, permanently mount your system to the floor using the four mounting brackets. See Figure 4.8.



**Note**

The bolts that are required for securing the Oracle Virtual Compute Appliance X3-2 rack to the floor vary depending on the installation location. Select bolts that are appropriate for your location.

8. Firmly tighten all of the bolts that secure the mounting brackets to the Oracle Virtual Compute Appliance X3-2 rack side doors and to the floor.

### 4.3.5 Attach a Ground Cable (Optional)

Oracle Virtual Compute Appliance X3-2 power distribution units (PDUs) achieve earth ground through their power cords. Final chassis ground is achieved by way of the ground prong when you connect the power cord to a socket. For additional grounding, attach a chassis earth ground cable to the system. The additional ground point enables electrical current leakage to dissipate more efficiently.



#### Caution

The PDU power input lead cords and the ground cable must reference a common earth ground. If they do not, then a difference in ground potential can be introduced. If you are unsure of your facility's PDU receptacle grounding, then do not install a ground cable until you confirm that there is a proper PDU receptacle grounding. If a difference in ground potential is apparent, then you must take corrective action.



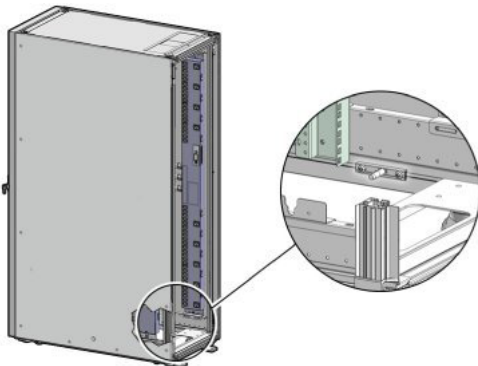
#### Note

A grounding cable is not shipped with Oracle Virtual Compute Appliance X3-2.

1. Ensure that the installation site has properly grounded the power source in the data center. The facility PDU must have earth ground.
2. Ensure that all grounding points, such as raised floors and power receptacles, reference the facility ground.
3. During manufacturing, the ground cable attachment area might be a painted or coated surface. Ensure that direct, metal-to-metal contact is made for this installation.
4. Attach the ground cable to one of the attachment points located at the bottom rear of the system frame. See [Figure 4.9](#).

The attachment point is an adjustable bolt that is inside the rear of the system cabinet on the right side.

**Figure 4.9 Earth Ground Attachment Bolt Location**

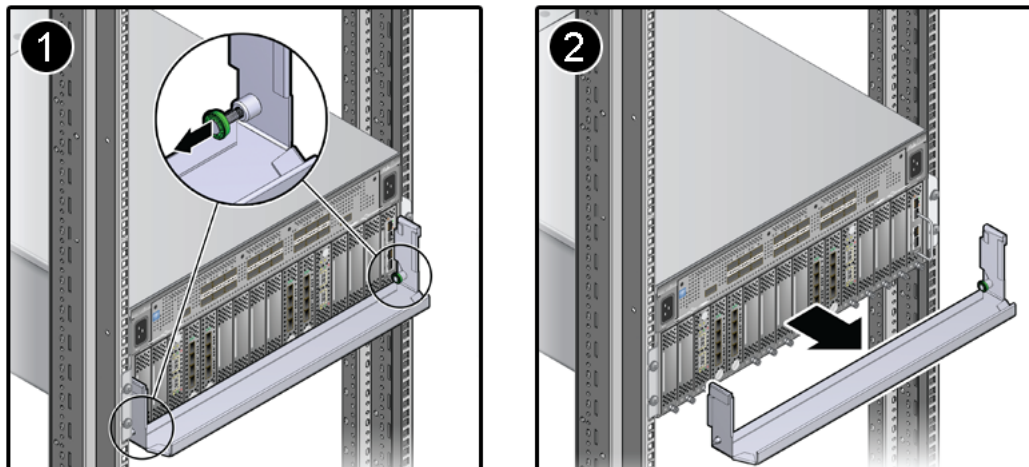


### 4.3.6 Remove the F1-15 Director Switch Bracket

Each F1-15 Director Switch is shipped with a bracket that secures the IO modules in their installed position. This shipping bracket is removed after the Oracle Virtual Compute Appliance X3-2 is installed and stabilized in its allocated space.

1. Locate the shipping bracket at the rear of the F1-15 Director Switch.
2. Pull the tabs on the left and right hand side towards the center to unlock the bracket.

**Figure 4.10 Unlocking and removing the bracket securing the IO modules in the F1-15 Director Switch**



3. Carefully pull the bracket away from the F1-15 Director Switch and out of the rack.
4. Repeat these steps to remove the shipping bracket on the second F1-15 Director Switch.

## 4.4 What's Next?

After installing Oracle Virtual Compute Appliance X3-2 at your site, continue the installation process by powering on and performing the initial configuration of the system. For instructions, see [Chapter 5, Powering On Oracle Virtual Compute Appliance X3-2](#).



# Chapter 5 Powering On Oracle Virtual Compute Appliance X3-2

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This chapter explains how to power on Oracle Virtual Compute Appliance X3-2 for the first time at your site.



### Warning

Before starting the system and applying the initial configuration, read and understand the [Oracle Virtual Compute Appliance X3-2 Release Notes](#). The section [Known Limitations and Workarounds](#) provides information that is critical for correctly executing the procedures in this document. Ignoring the release notes may cause you to configure the system incorrectly. Bringing the system back to normal operation may require a complete factory reset.

## 5.1 Power On Task Map

[Table 5.1](#) describes the steps for powering on Oracle Virtual Compute Appliance X3-2 at your site.

**Table 5.1 Steps for Powering On Oracle Virtual Compute Appliance X3-2**

Step	Description	Links
1	Review the safety precautions, guidelines, site checklists, and site requirements.	<a href="#">Section 5.3.1, "Review Safety Guidelines"</a>
2	Perform preliminary checks before connecting the power cords.	<a href="#">Section 5.3.2, "Inspect Oracle Virtual Compute Appliance X3-2"</a>
3	Verify the hardware by visually inspecting the system.	
4	Connect the F1-15 Director switch and Oracle Switch ES1-24 switches. Also connect a workstation with monitor to the Oracle Switch ES1-24.	<a href="#">Section 5.2, "Before Initial Power On"</a>
5	Supply rack power, and perform the power-on self-test device checks.	<a href="#">Section 5.3.3, "Connect the Power Cords"</a>
6	Switch on the two power distribution unit (PDU) circuit breakers located on the rear of the main PDU (PDU A).	<a href="#">Section 5.3.4, "Power On Oracle Virtual Compute Appliance X3-2"</a>
7	Power on the management nodes.	

Step	Description	Links
8	Wait 3 to 5 minutes and then connect to Oracle Virtual Compute Appliance X3-2.	

## 5.2 Before Initial Power On

Before you power on the Oracle Virtual Compute Appliance X3-2 for the first time, ensure that you have connected the F1-15 Director switches according to the network installation requirements in [Section 3.1, “Network Connection and IP Address Requirements”](#).

In addition, you need to connect a workstation with a monitor to the Oracle ES1-24 switch, using the supplied blue Ethernet cable connected to port 24, and start a web session in order to initially administer Oracle Virtual Compute Appliance X3-2 using the pre-defined IP address (192.168.4.3). For information, see [Section 5.3.5, “Connect Oracle Virtual Compute Appliance X3-2 to the Network”](#).



### Caution

Port 24 of the Oracle Switch ES1-24 has a minimum transfer rate of 1000 Mbit/s (GbE). If your workstation requires a lower speed (Fast Ethernet, 100 Mbit/s), you may use port 19 of the second Oracle Switch ES1-24, which is the one on the right hand side if you look from the rear of the rack. A Cat5 Ethernet cable is plugged in and coiled up on the side.

## 5.3 Power On for the First Time

This section provides instructions for each phase of the initial power-on sequence.

### 5.3.1 Review Safety Guidelines

Before powering on the system or installing any server equipment into the rack, read the *Important Safety Information for Oracle's Hardware Systems (7063567)* document included with the system.

Before powering on the system, review the following safety precautions. Failure to observe these precautions can result in personal injury, equipment damage, or malfunction.

- Do not block ventilation openings.
- Do not place cables under the equipment or stretch the cables too tightly.
- Do not disconnect power cords from the equipment while its power is on.
- If you cannot reach the connector lock when disconnecting LAN cables, then press the connector lock with a flathead screwdriver to disconnect the cable. You could damage the system board if you force your fingers into the gap rather than using a flathead screwdriver.
- Do not place anything on top of the system or perform any work directly above it.
- Do not let the room temperature rise sharply, especially during winter. Sudden temperature changes can cause condensation to form inside the system. Allow for a sufficient warm-up period prior to system operation.
- Avoid static electricity at the installation location. Static electricity transferred to the system can cause malfunctions. Static electricity is often generated on carpets.

- Confirm that the supply voltage and frequency match the electrical ratings indicated on Oracle Virtual Compute Appliance X3-2.
- Do not insert anything into any system opening, unless doing so is part of a documented procedure. The system contains high-voltage parts. If a metal object or other electrically-conductive object enters an opening in the system, then it could cause a short circuit. This could result in personal injury, fire, electric shock, and equipment damage.

### 5.3.2 Inspect Oracle Virtual Compute Appliance X3-2

The following procedure describes how to visually inspect Oracle Virtual Compute Appliance X3-2 after it is in place at your site, and prior to power being applied to the system.

1. Check for rack damage.
2. Check the rack for loose or missing screws.
3. Check your Oracle Virtual Compute Appliance X3-2 for the ordered configuration. Refer to the Customer Information Sheet (CIS) on the side of the packaging.

**Note**

Oracle Virtual Compute Appliance X3-2 is preconfigured by Oracle as a self-contained system. You should not move any equipment or add any unsupported hardware to the system.

4. Check that all cable connections are secure and firmly in place as follows:
  - a. Check the power cables. Ensure that the correct connectors have been supplied for the data center facility power source.
  - b. Check the network data cables.
5. Check the site location tile arrangement for cable access and airflow.
6. Check the data center airflow that leads in to the front of the system.

For more information, see [Section 2.5, “Ventilation and Cooling Requirements”](#).

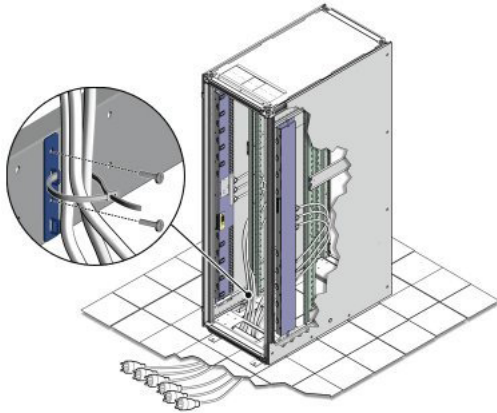
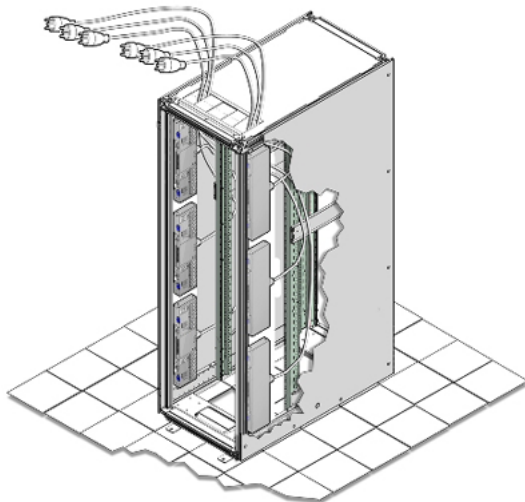
### 5.3.3 Connect the Power Cords

The following procedure describes how to connect power cords to Oracle Virtual Compute Appliance X3-2.

1. Open the rear cabinet door.
2. Ensure that the correct power connectors have been supplied.
3. Unfasten the power cord cable ties.

The ties are for shipping only and are no longer needed.

4. Route the power cords to the facility receptacles either above the rack or below the flooring. See [Figure 5.1](#) and [Figure 5.2](#).
5. Secure the power cords in bundles. See [Figure 5.1](#).
6. Plug the power distribution unit (PDU) power cord connectors into the facility receptacles.

**Figure 5.1 Power Cord Routing From the Bottom of the Rack****Figure 5.2 Power Cord Routing From the Top of the Rack**

### 5.3.4 Power On Oracle Virtual Compute Appliance X3-2

The following procedure describes how to power on Oracle Virtual Compute Appliance X3-2.



#### Note

You can connect to Oracle Virtual Compute Appliance X3-2 using a network connection to monitor the system power-on procedure. For instructions, see [Section 5.3.5, “Connect Oracle Virtual Compute Appliance X3-2 to the Network”](#).

1. Ensure that the three main power cords are connected to a reliable power source.

For more information, see [Section 2.3, “Electrical Power Requirements”](#).

2. Switch on the power distribution unit (PDU) circuit breakers located on the rear of PDU A and B inside Oracle Virtual Compute Appliance X3-2.

The circuit breakers are on the rear of the system cabinet as shown in [Figure 5.3](#). Press the ON (I) side of the toggle switch.

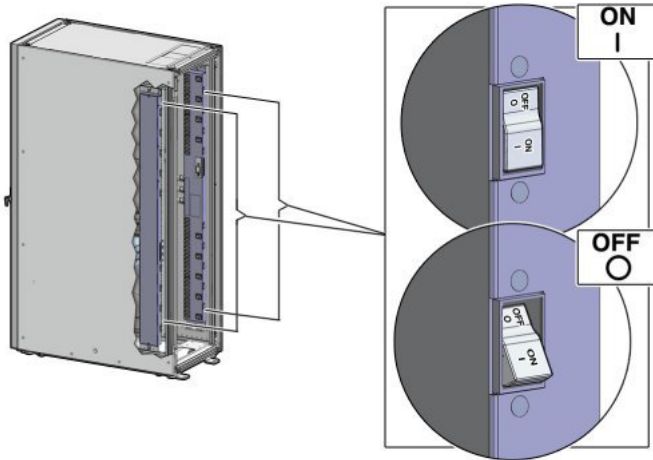




**Note**

Ensure that the PDU switches have had power applied for approximately two minutes to complete power-on configuration before starting the management nodes.

**Figure 5.3 PDU Switch Locations**



3. Make sure that the circuit breakers located on the rear left and right side power supplies of the Sun ZFS Storage Appliance are in the ON (I) position.

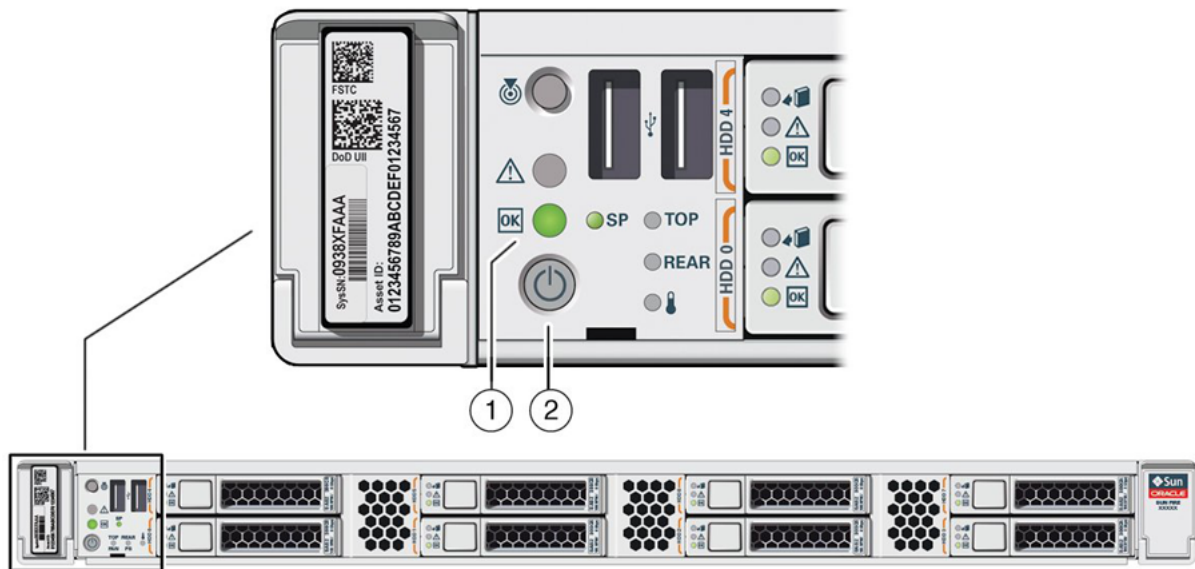
**Figure 5.4 Sun ZFS Storage Appliance Circuit Breakers**



4. Press the Power button located on the front of the first (bottom) Sun Server X3-2 management node. See [Figure 5.5](#).

The first management node is located in rack unit 5 (U5). The second management node is located in rack unit 6 (U6). It is switched on and configured automatically during the initial power-on sequence.

A management nodes take approximately three to five minutes to power on completely. Once complete, the Power/OK LED illuminates and remains a steady green.

**Figure 5.5 Oracle Virtual Compute Appliance X3-2 Management Node****Table 5.2 Figure Legend**

Item	Description
1	Power/OK LED
2	Power button

- After powering on the first management node, wait while the second management node and all compute nodes are powered on and discovered.

**Note**

After power is applied, the LEDs on all compute nodes and storage server heads will start to blink after approximately two minutes. From the rear of the rack, you can see the green LEDs on the power supply units (PSUs) on the Sun Server X3-2 compute nodes turn on instantly after power is applied. In addition, from the rear of the rack, you can see the display on the power distribution units (PDUs) illuminate once power is available.

The management nodes will verify all components within the system. The management nodes ensure that the correct networking switches and storage devices are installed in the system, and search for compute nodes to add to the compute fabric. Once compute nodes are located, the management nodes automatically install the proper drivers and the Oracle VM Server version 3.2.5 operating system on each compute node.

Depending on your system configuration, the Oracle Virtual Compute Appliance X3-2 power-on process should take approximately three to five minutes to become available for use, and 20 to 30 minutes for the entire fabric to be ready. When completed, message alerts will appear in the web browser configuration utility alerting you to configure initial system settings (for example: network properties and passwords). For instructions on connecting to the Oracle Virtual Compute Appliance X3-2 and accessing the web browser configurator utility, see [Section 5.3.5, "Connect Oracle Virtual Compute Appliance X3-2 to the Network"](#).

## 5.3.5 Connect Oracle Virtual Compute Appliance X3-2 to the Network

For initial access to Oracle Virtual Compute Appliance X3-2, you can use the pre-installed blue Ethernet cable connected to port 24 on the Oracle ES1-24 switch to connect a workstation with a monitor. The Oracle Virtual Compute Appliance Dashboard can be reached by means of a web browser.



### Caution

Port 24 of the Oracle Switch ES1-24 has a minimum transfer rate of 1000 Mbit/s (GbE). If your workstation requires a lower speed (Fast Ethernet, 100 Mbit/s), you may use port 19 of the second Oracle Switch ES1-24, which is the one on the right hand side if you look from the rear of the rack. A Cat5 Ethernet cable is plugged in and coiled up on the side.



### Note

You can connect to the Ethernet port at any time during the system power-on process. However, you should wait approximately two to three minutes after starting the power-on process to allow the IP address to become active. If you connect too soon to the port, you will see an HTTP error code 404 or similar code. If this occurs, wait a few minutes and try to connect again.

You can connect Oracle Virtual Compute Appliance X3-2 to the network as follows:

1. Ensure that the F1-15 Director switch is connected to your data center (public) network.

For details, see [Section 3.1.1, “Network Connection Requirements”](#).

2. Connect a workstation with a web browser directly to the management network using the supplied blue Ethernet cable connected to port 24 of an Oracle ES1-24 switch.



### Caution

Port 24 of the Oracle Switch ES1-24 has a minimum transfer rate of 1000 Mbit/s (GbE). If your workstation requires a lower speed (Fast Ethernet, 100 Mbit/s), you may use port 19 of the second Oracle Switch ES1-24, which is the one on the right hand side if you look from the rear of the rack. A Cat5 Ethernet cable is plugged in and coiled up on the side.

3. Configure the wired network connection of the workstation to use the static IP address [192.168.4.254](#).
4. Using the web browser on the workstation, connect to the Oracle Virtual Compute Appliance Dashboard with the predefined IP address of the first management node: <https://192.168.4.3:7002/ovca>.

[192.168.4.3](#) is the predefined port IP address for configuring Oracle Virtual Compute Appliance X3-2. If there is another device on your network that is using this IP address, you should change the conflicting device's IP address prior to connecting to Oracle Virtual Compute Appliance X3-2.

5. Log into the Dashboard using the user name [ovcaadmin](#) and password [Welcome1](#).

The Dashboard opens in the Hardware View tab. This view indicates the status of the appliance as it is being powered on. All the networking and storage should be green. As the compute nodes are discovered, they will change from red to green. Once the system has discovered and provisioned at least one compute node, the Dashboard interface becomes available.

- Using the Dashboard, configure the system environment parameters, including: domain name, NTP and DNS servers.
- Go to the Network Setup tab and replace the default IP configuration of the management nodes with the reserved IP addresses in your data center network. Enter the default gateway of your data center network.



**Note**

During the initial configuration of the Oracle Virtual Compute Appliance X3-2, you change the predefined configuration IP address to the reserved virtual IP address in your data center network. For details, see [Section 3.1.2, "IP Address Requirements"](#).

- Reconnect to the Oracle Virtual Compute Appliance Dashboard at the new virtual IP address of the management node cluster: `https://<virtual_ip>:7002/ovca`.

For details about the software configuration process, and for advanced configuration and update options, refer to the Oracle Virtual Compute Appliance X3-2 Administrator's Guide.

## 5.4 What's Next?

After powering on Oracle Virtual Compute Appliance X3-2 and performing the initial system configuration, the environment is ready for virtual machine deployment. Refer to the Oracle Virtual Compute Appliance X3-2 Administrator's Guide for information about working with an operational environment:

- Refer to the section [Update](#) in the [Oracle Virtual Compute Appliance X3-2 Administrator's Guide](#) for instructions to update the Oracle Virtual Compute Appliance controller software.



**Warning**

After initial power-on, downloading and updating the Oracle Virtual Compute Appliance software is mandatory. Compute node provisioning is locked as long as the update has not been completed successfully.

- See [Monitoring and Managing Oracle Virtual Compute Appliance X3-2](#) for instructions to work with the Oracle Virtual Compute Appliance Dashboard.
- See [Managing the Oracle VM Virtual Infrastructure](#) for instructions to work with virtual machines within Oracle VM.
- See [Servicing Oracle Virtual Compute Appliance X3-2 Components](#) for instructions to service customer-replaceable components in the Oracle Virtual Compute Appliance X3-2.



**Note**

Optionally, you can extend Oracle Virtual Compute Appliance X3-2 by adding more compute nodes to the system. For more information and instructions, see [Chapter 6, Extending Oracle Virtual Compute Appliance X3-2](#).

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# Chapter 6 Extending Oracle Virtual Compute Appliance X3-2

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This chapter explains how to extend Oracle Virtual Compute Appliance X3-2 by adding compute nodes to the system.

## 6.1 Extending the System Task Map

[Table 6.1](#) describes the steps for extending Oracle Virtual Compute Appliance X3-2 at your site.

**Table 6.1 Steps for Extending Oracle Virtual Compute Appliance X3-2**

Step	Description	Links
1	Review safety guidelines and site checklists.	<a href="#">Section 6.2, “Review Safety Guidelines”</a>
2	Review safety precautions for rack-mounting a server.	<a href="#">Section 6.3, “Rack-mount Safety Precautions”</a>
3	Prepare to add the server to the rack, including: <ul style="list-style-type: none"><li>• Unpacking the upgrade kit</li><li>• Powering down the system</li><li>• Removing the rear doors from the rack</li></ul>	<a href="#">Section 6.4, “Prepare to Add a Server”</a>
4	Install the server into the rack, including: <ul style="list-style-type: none"><li>• Installing mounting brackets to the server</li><li>• Attaching slide-rail assemblies to the rack</li><li>• Installing the server into the slide-rail assemblies</li><li>• Installing the cable management arm</li><li>• Cabling the server</li><li>• Replacing the doors on the rack</li></ul>	<a href="#">Section 6.5, “Install the Server Into the Rack”</a>

---

## 6.2 Review Safety Guidelines

Before expanding Oracle Virtual Compute Appliance X3-2, read the following important safety information:

- *Important Safety Information for Oracle's Hardware Systems (7063567)*
- [Section 2.3, "Electrical Power Requirements"](#)
- [Section C.5, "Facility Power Checklist"](#)

## 6.3 Rack-mount Safety Precautions

This section describes rack-mount safety precautions you must follow when installing a compute node into Oracle Virtual Compute Appliance X3-2.



### Caution

Deploy the anti-tilt bar or legs on the equipment rack before beginning an installation.



### Caution

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-tilt bar to prevent the rack from tipping during equipment installation.



### Caution

**Elevated operating ambient temperature:** If the server 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 specified for the server. For information, refer to [Section 2.5, "Ventilation and Cooling Requirements"](#).



### Caution

**Reduced airflow:** Installation of the equipment in a rack should be such that the amount of airflow required for safe operation of the equipment is not compromised.



### Caution

**Mechanical loading:** Mounting of the equipment in the rack should be such that a hazardous condition is not created due to uneven mechanical loading.



### Caution

**Circuit overloading:** 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.



### Caution

**Reliable earthing:** Reliable earthing of rack-mounted 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).

**Caution**

Slide-rail-mounted equipment is not to be used as a shelf or a work space.

## 6.4 Prepare to Add a Server

This section describes the preparation steps to perform before installing an additional compute node as part of your Oracle Virtual Compute Appliance X3-2.

**Caution**

When adding expansion nodes, always populate the compute rack units starting from the bottom most open slot, and work your way up. If you do not populate the rack units in the right order, the monitoring software may no longer report the correct status of the rack components.

### 6.4.1 Unpack the Server Upgrade Kit

Perform the following procedure to unpack the server upgrade kit.

1. Remove the packaging from the Oracle Virtual Compute Appliance X3-2 Expansion Node upgrade kit.
2. Verify that all items are included. The upgrade kit should contain the following:
  - Sun Server X3-2
  - Cable management arm assembly with installation instructions
  - Rack-mount kit containing rack rails and installation instructions
  - (Optional) Sun server documentation

**Note**

Cables are not included in the server upgrade kit. Oracle Virtual Compute Appliance X3-2 comes with pre-installed and labeled cables for all rack units. These should not be unplugged or removed from the rack.

### 6.4.2 Prepare the Oracle Virtual Compute Appliance X3-2 Rack

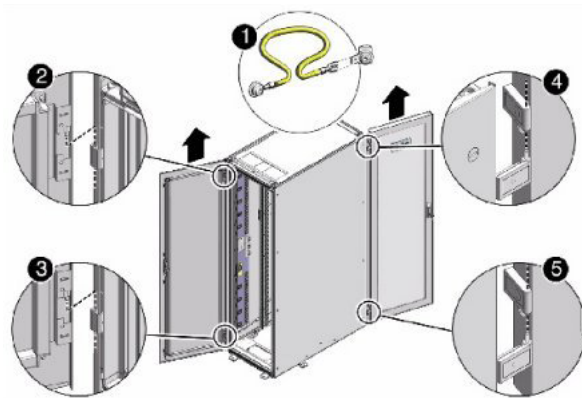
Perform the following procedure to prepare the rack.

**Caution**

To reduce the risk of personal injury, stabilize the rack cabinet and extend all anti-tilt devices before performing this procedure.

1. Remove the Oracle Virtual Compute Appliance X3-2 front and rear rack doors, as follows:
  - a. Unlock the front and rear rack doors.
  - b. Open the doors.
  - c. Detach the grounding straps connected to the doors by pressing down on the tabs of the grounding strap's quick-release connectors, and pull the straps from the frame.
  - d. Lift the doors up and off their hinges. See [Figure 6.1](#).

**Figure 6.1 Removing the Rack Doors**



**Table 6.2 Figure Legend**

Item	Description
1	Detaching the grounding cable
2	Top rear hinge
3	Bottom rear hinge
4	Top front hinge
5	Bottom front hinge

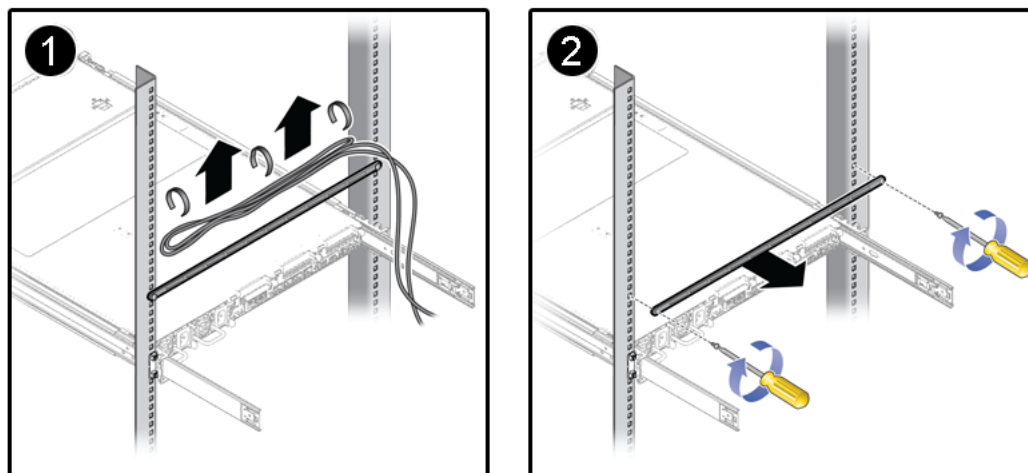
2. Remove the filler panel(s) where the upgrade server will be installed.

The filler panels have snap-in attachments. No screwdriver is required to remove them.

3. Remove the lacer bar that holds the pre-installed cables in place at the rear side of the rack. See [Figure 6.2](#)
  - a. Detach the pre-installed cables from the lacer bar on the rack unit for the new expansion node.
  - b. Use a No. 2 Phillips screwdriver to remove the M6 screws from the lacer bar.
  - c. Remove the lacer bar from the rack. Save lacer bar and screws for future use.



**Figure 6.2 Removing the Lacer Bar**



## 6.5 Install the Server Into the Rack

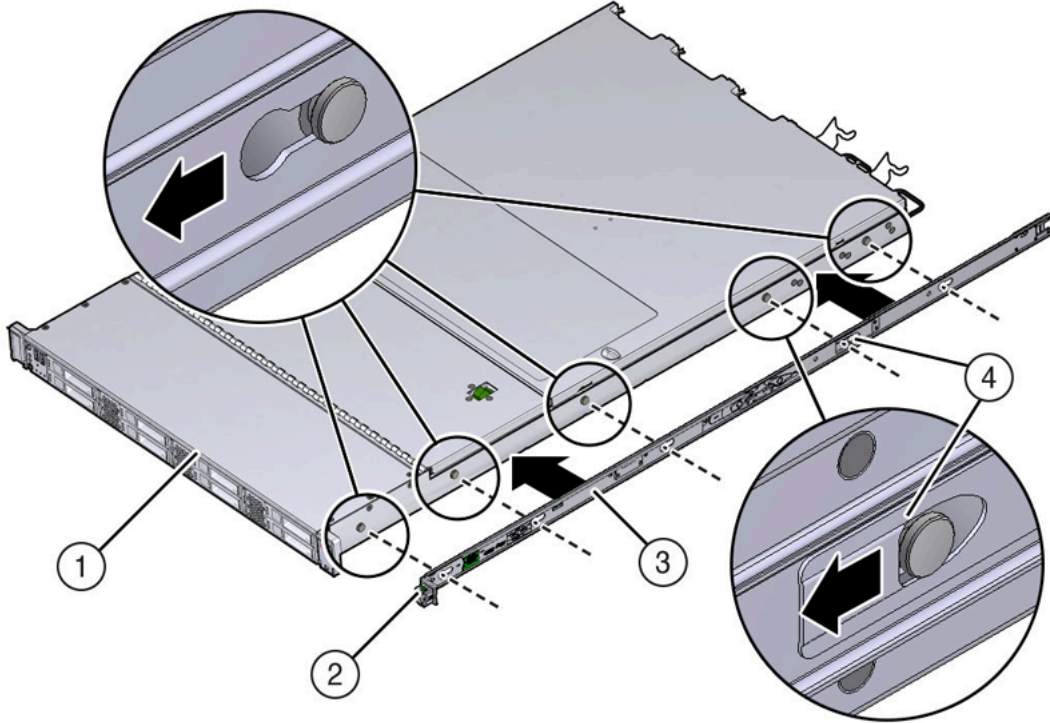
This section describes the steps to install an additional compute node as part of your Oracle Virtual Compute Appliance X3-2.

### 6.5.1 Install Mounting Brackets

Perform the following procedure to install mounting brackets onto the sides of the server.

1. Position a mounting bracket against the chassis so that the slide-rail lock is at the server front, and the five keyhole openings on the mounting bracket are aligned with the five locating pins on the side of the chassis. See [Figure 6.3](#).

**Figure 6.3 Aligning the Mounting Bracket With the Server Chassis**



**Table 6.3 Figure Legend**

Item	Description
1	Chassis front
2	Slide-rail lock
3	Mounting bracket
4	Mounting bracket clip

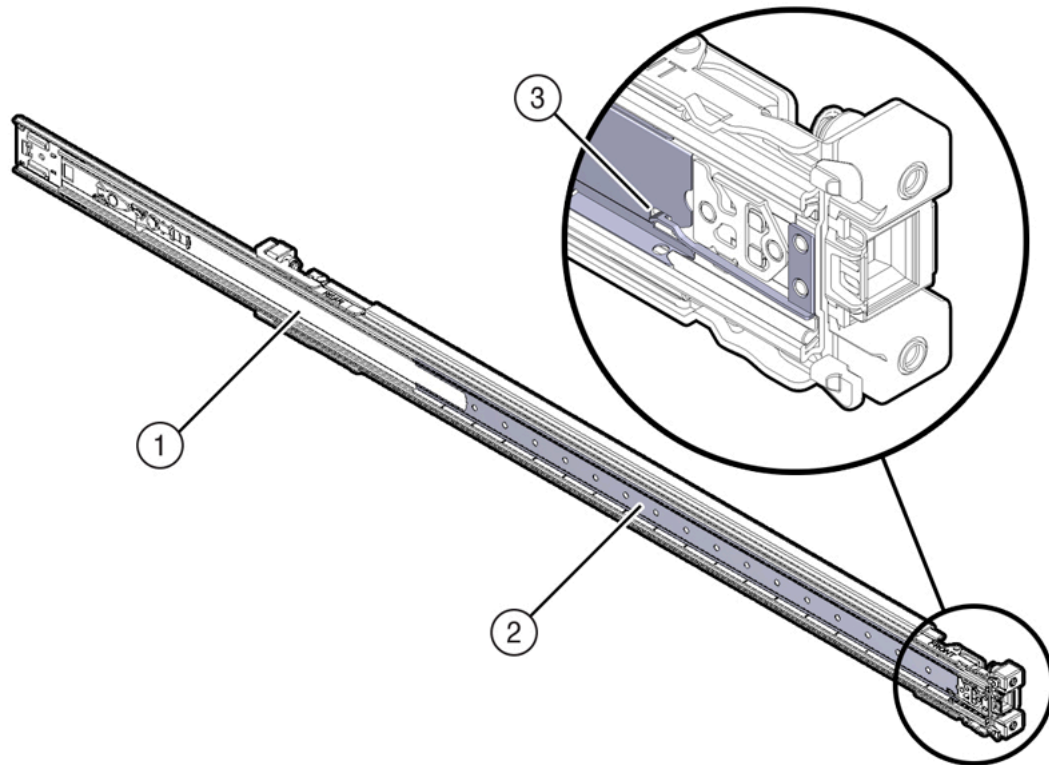
2. With the heads of the five chassis locating pins protruding through the five keyhole openings in the mounting bracket, pull the mounting bracket toward the front of the chassis until the mounting bracket clip locks into place with an audible click.
3. Verify that the rear locating pin has engaged the mounting bracket clip.
4. Repeat these steps to install the remaining mounting bracket on the other side of the server.

## 6.5.2 Attach Slide-Rail Assemblies

Perform the following procedure to attach slide-rail assemblies to the rack.

1. Orient the slide-rail assembly so that the ball-bearing track is forward and locked in place.

**Figure 6.4 Orienting the Slide-Rail With the Ball-Bearing Track**

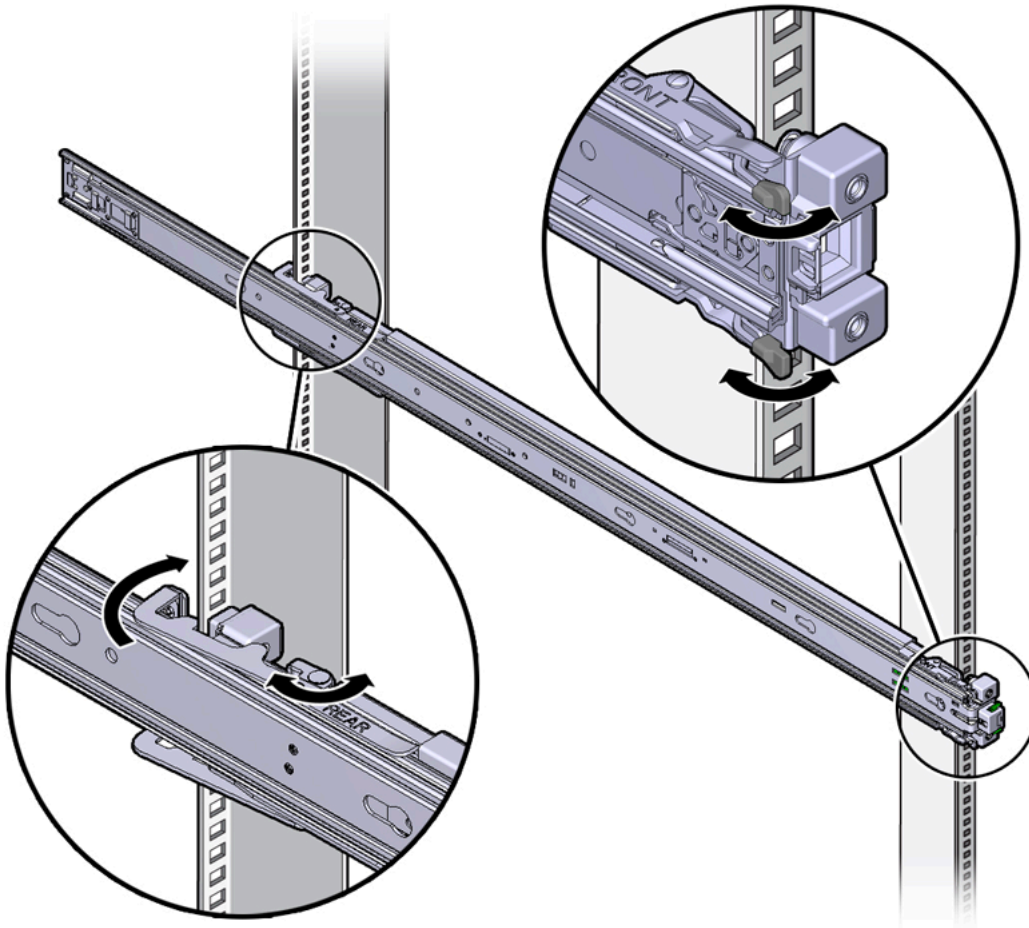


**Table 6.4 Figure Legend**

Item	Description
1	Slide-rail
2	Ball-bearing track
3	Locking mechanism

2. Starting with either the left or right side of the rack, align the rear of the slide-rail assembly against the inside of the rear rack rail, and push until the assembly locks into place with an audible click. See [Figure 6.5](#).

**Figure 6.5 Aligning the Slide-Rail Assembly With the Rack**



3. Align the front of the slide-rail assembly against the outside of the front rack rail, and push until the assembly locks into place with an audible click. See [Figure 6.5](#).
4. Repeat these steps to attach the slide-rail assembly to the other side of the rack.

### 6.5.3 Install the Server Into the Slide-Rail Assemblies

Perform the following procedure to install the server, with mounting brackets, into the slide-rail assemblies that are mounted to the rack.



#### **Caution**

This procedure requires a minimum of two people because of the weight of the server. Attempting this procedure alone could result in equipment damage or personal injury.

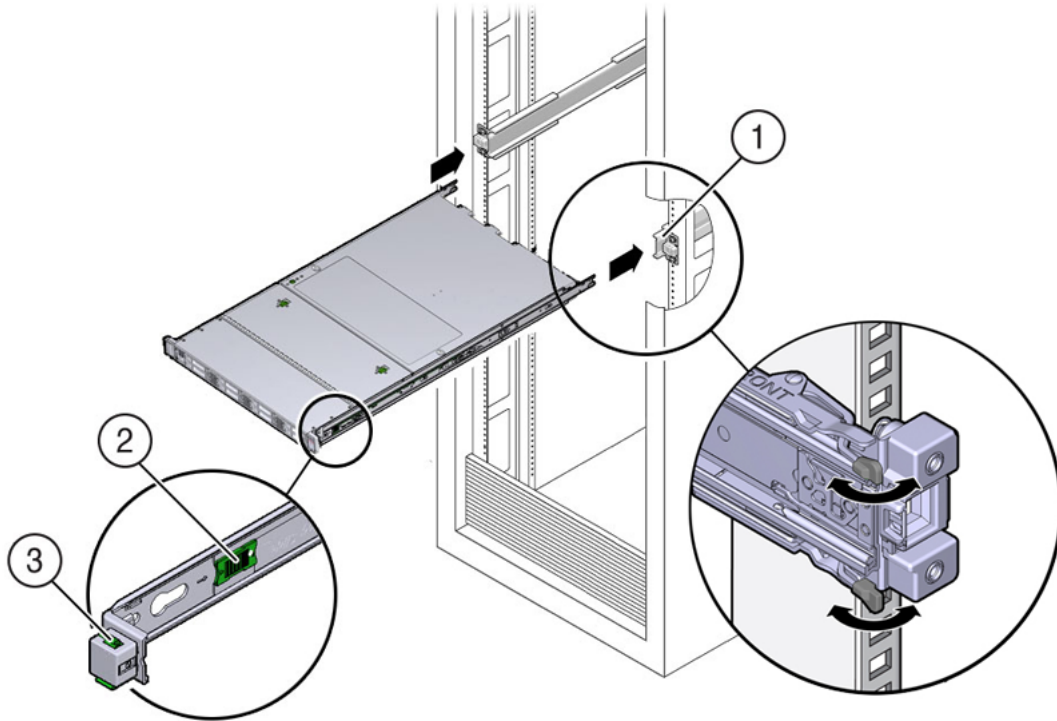


#### **Caution**

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-tilt bar to prevent the rack from tipping during equipment installation.

1. Push the slide-rails as far as possible into the slide-rail assemblies in the rack.
2. Position the server so that the rear ends of the mounting brackets are aligned with the slide-rail assemblies that are mounted in the rack. See [Figure 6.6](#).
3. Insert the mounting brackets into the slide-rails, and then push the server into the rack until the mounting brackets encounter the slide-rail stops (approximately 30 cm, or 12 inches).

**Figure 6.6 Inserting the Server With Mounting Brackets Into the Slide-Rails**



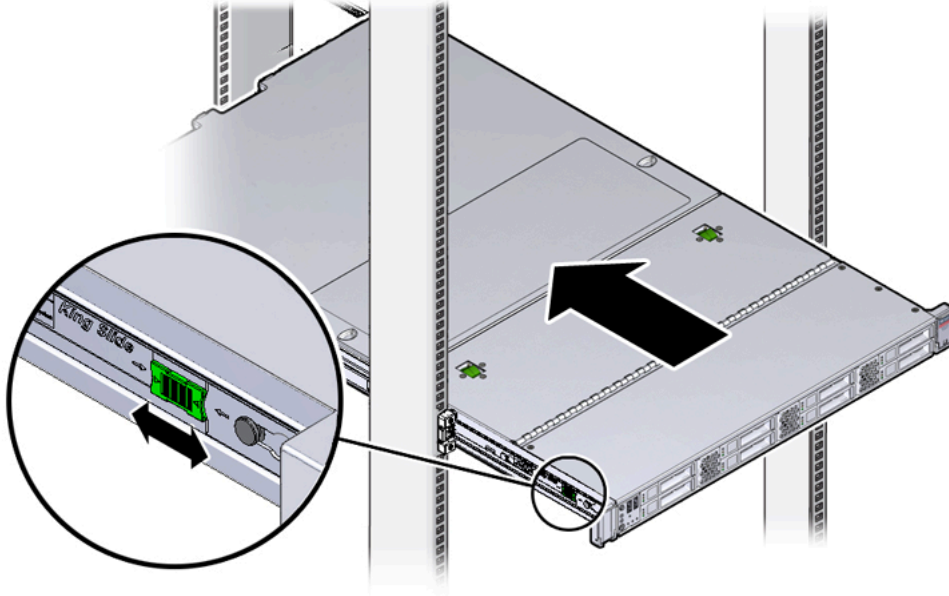
**Table 6.5 Figure Legend**

Item	Description
1	Inserting mounting bracket into slide-rail
2	Slide-rail release button
3	Slide-rail lock

4. Simultaneously push and hold the green slide-rail release buttons on each mounting bracket while you push the server into the rack. Continue pushing the server into the rack until the slide-rail locks (on the front of the mounting brackets) engage the slide-rail assemblies. See [Figure 6.7](#).

You will hear an audible click.

**Figure 6.7 Sliding the Server Into the Rack**



### 6.5.4 Install the Cable Management Arm

Perform the following procedure to install the cable management arm (CMA) to rear of the server.

1. Unpack the CMA.
2. To make it easier to install the CMA, extend the server approximately 13 cm (5 inches) out of the front of the rack.
3. Take the CMA to the back of the equipment rack, and ensure that you have adequate room to work at the back of the server.



**Note**

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



**Note**

Throughout this installation procedure, support the CMA and do not allow it to hang under its own weight until it is secured at all four attachment points.

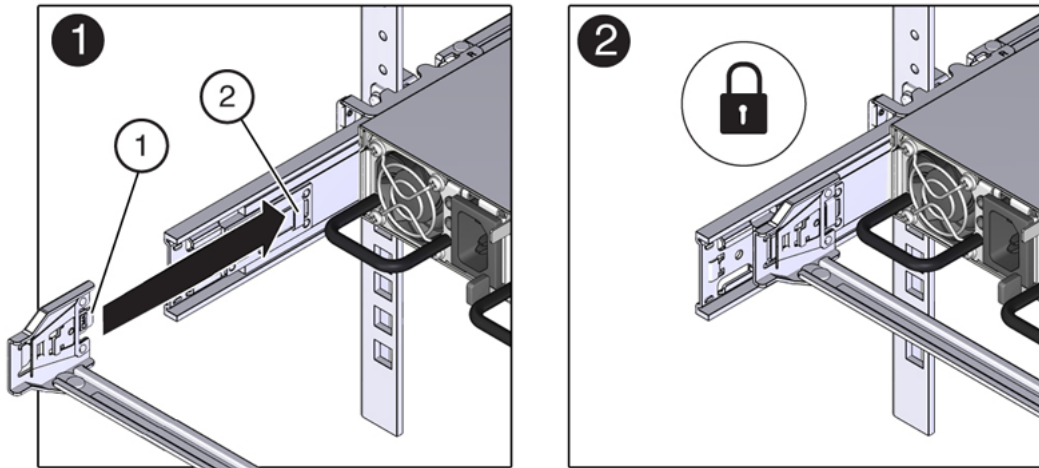
4. Insert the CMA's connector A into the front slot on the left slide-rail until it locks into place with an audible click. See [Figure 6.8](#), frames 1 and 2.

The connector A tab (see call-out 1) goes into the slide-rail's front slot (call-out 2).

Gently tug on the left side of the front slide bar to verify that connector A is properly seated.



**Figure 6.8 Installing Connector A Into the Left Slide-Rail**



**Table 6.6 Figure Legend**

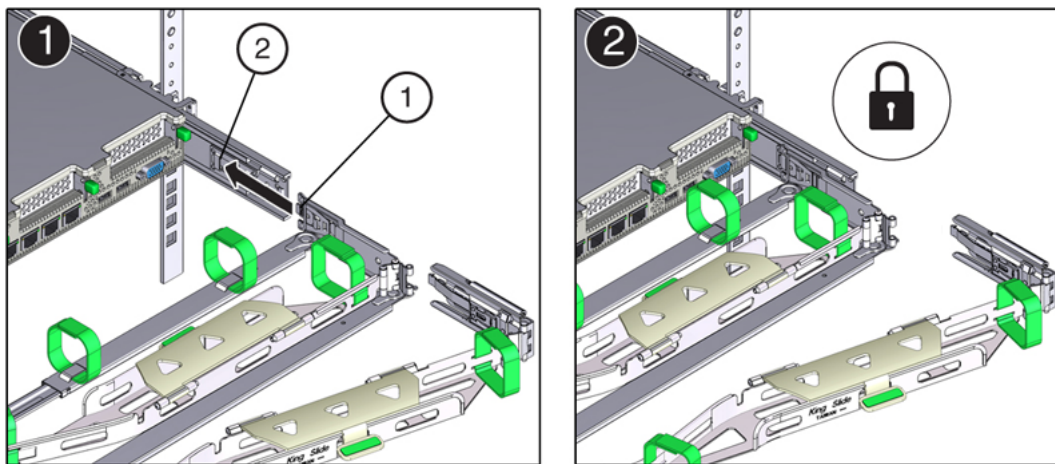
Item	Description
1	Connector A tab
2	Left slide-rail front slot

5. Insert the CMA's connector B into the front slot on the right slide-rail until it locks into place with an audible click. See [Figure 6.9](#), frames 1 and 2.

The connector B tab (call-out 1) goes into the slide-rail front slot (call-out 2).

Gently tug on the right side of the front slide bar to verify that connector B is properly seated.

**Figure 6.9 Installing Connector B Into the Right Slide-Rail**



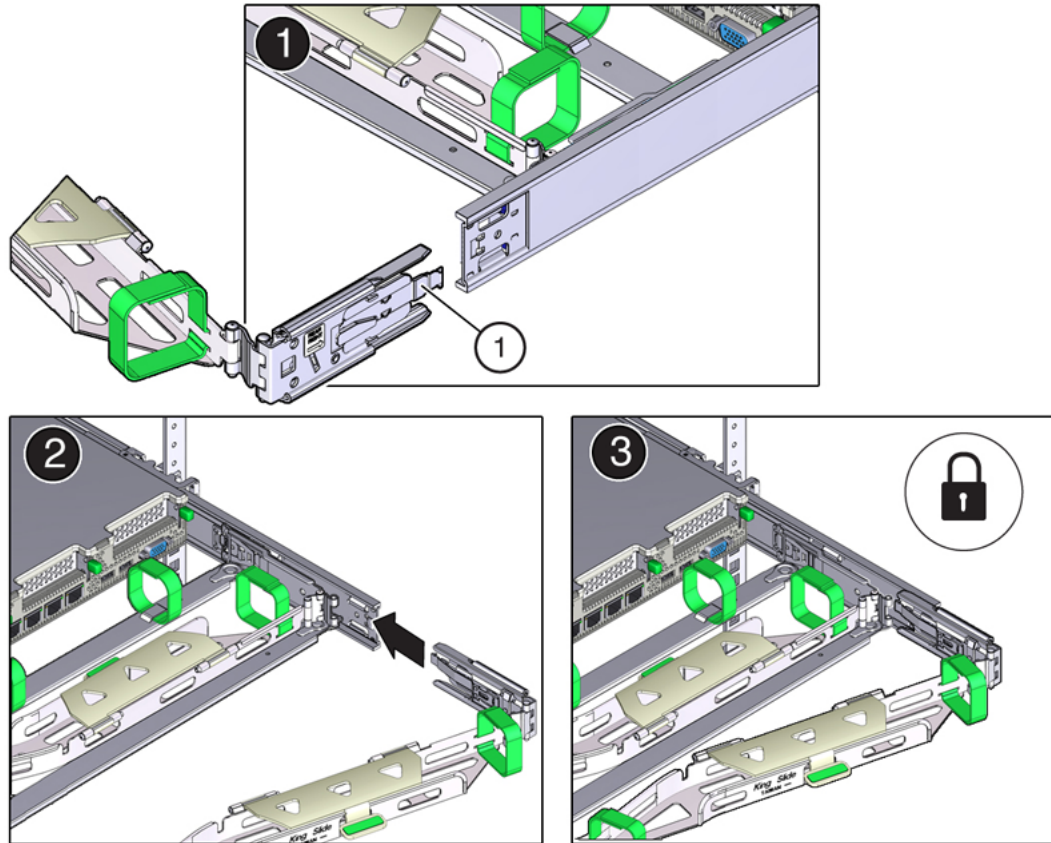
**Table 6.7 Figure Legend**

Item	Description
1	Connector B tab

Item	Description
2	Right slide-rail front slot

6. To install the CMA's connector C into the right slide-rail, perform the following steps:
  - a. Align connector C with the slide-rail so that the locking spring (call-out 1) is positioned inside (server side) of the right slide-rail. See [Figure 6.10](#), frame 1.

**Figure 6.10 Installing Connector C Into the Right Slide-Rail**



**Table 6.8 Figure Legend**

Item	Description
1	Connector C locking spring

- b. Insert connector C into the right side-rail until it locks into place with an audible click (frames 2 and 3).
    - c. Gently tug on the right side of the CMA's rear slide bar to verify that connector C is properly seated.
7. To prepare the CMA's connector D for installation, remove the tape that secures the slide-rail latching bracket to connector D and ensure that the latching bracket is properly aligned with connector D. See [Figure 6.11](#), frames 1 and 2.

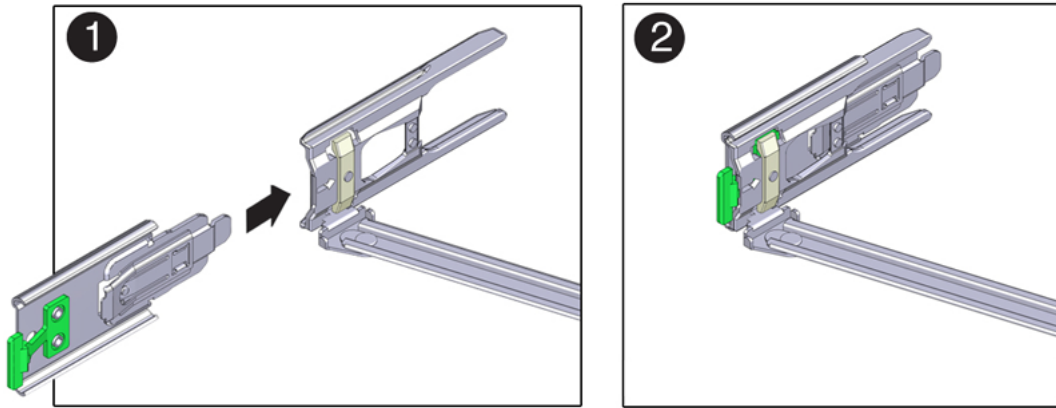




**Note**

The CMA is shipped with the slide-rail latching bracket taped to connector D. You must remove the tape before you install this connector.

**Figure 6.11 Aligning the CMA Slide-Rail Latching Bracket With Connector D**



8. While holding the slide-rail latching bracket in place, insert connector D and its associated slide-rail latching bracket into the left slide-rail until connector D locks into place with an audible click. See [Figure 6.12](#), frames 1 and 2.

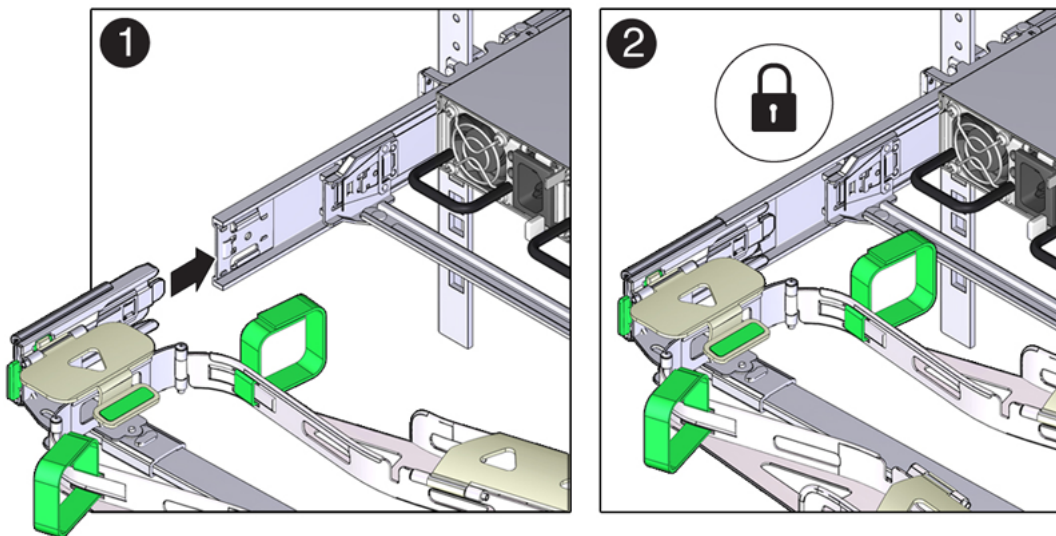


**Note**

When inserting connector D into the slide-rail, the preferred and easier method is to install connector D and the latching bracket as one assembly into the slide-rail.

Gently tug on the left side of the CMA's rear slide bar to verify that connector D is properly seated.

**Figure 6.12 Installing Connector D Into the Left Slide-Rail**





**Note**

The slide-rail latching bracket has a green release tab. This tab is used to release and remove the latching bracket so that you can remove connector D.

9. Gently tug on the four CMA connection points to ensure that the CMA connectors are fully seated before you allow the CMA to hang by its own weight.
10. To verify that the slide-rails and the CMA are operating properly before routing cables through the CMA, perform the following steps:
  - a. Extend the server from the front of the rack until the CMA is fully extended.



**Caution**

To reduce the risk of personal injury, stabilize the rack cabinet and extend all anti-tilt devices before extending the server from the rack.

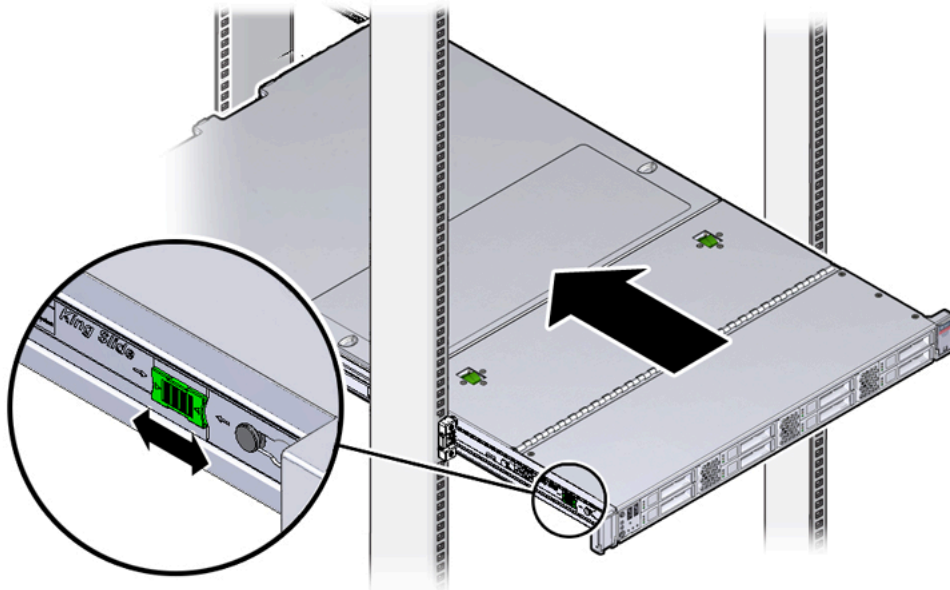
- b. Simultaneously pull and hold the two green release tabs (one on each side of the server) toward the front of the server (see the following figure) while you push the server into the rack. As you push the server into the rack, verify that the CMA retracts without binding. See [Figure 6.13](#).



**Note**

To pull the green release tabs, place your finger in the center of each tab, not on the end, and apply pressure as you pull the tab toward the front of the server.

**Figure 6.13 Location of the Slide-Rail Release Tabs**



- c. Continue pushing the server into the rack until the slide-rail locks (on the front of the server) engage the slide-rail assemblies.

You will hear an audible click when the server is in the normal rack position.

11. Connect the cables to the server, as required.

Instructions for connecting server cables are provided in [Section 6.5.5, “Cable the Server”](#).

### 6.5.5 Cable the Server

After the server is installed in the rack and proper cable management arm (CMA) operation is verified, perform the procedures in this section to cable the server.



**Note**

If you are installing more than one server into the rack, perform the procedures in the previous sections for each server before performing the cabling instructions in this section.

You should observe the following guidelines when attaching cables to a newly rack-mounted server:

- Do not remove existing cable connections in the rack.
- Attach and route cables in the CMA and rear panel one server at a time. Do not slide out more than one server at a time.
- Start from the bottom of the rack, and work upward. Route cables through the CMA with the dongle on the top and power cables on the bottom.



**Note**

The Oracle Virtual Compute Appliance X3-2 rack is pre-cabled for all Ethernet and InfiniBand cabling, including for future compute nodes. Cable bundles are cable-tied to the correct rack unit for each future server. You should not modify any of the cabling on the Oracle Switch ES1-24, NM2-36 Sun Datacenter switch, ZFS Storage appliances, or the InfiniBand ports on the F1-15 Director switches. For cabling reference information, see [Appendix B, Cabling Reference](#).

1. Connect the pre-installed power and data cables of the appropriate rack unit to the back of the expansion node. The cables are labeled for your convenience, and should be connected according to [Figure 6.14](#).

**Figure 6.14 Server Cabling Requirements**



**Table 6.9 Figure Legend**

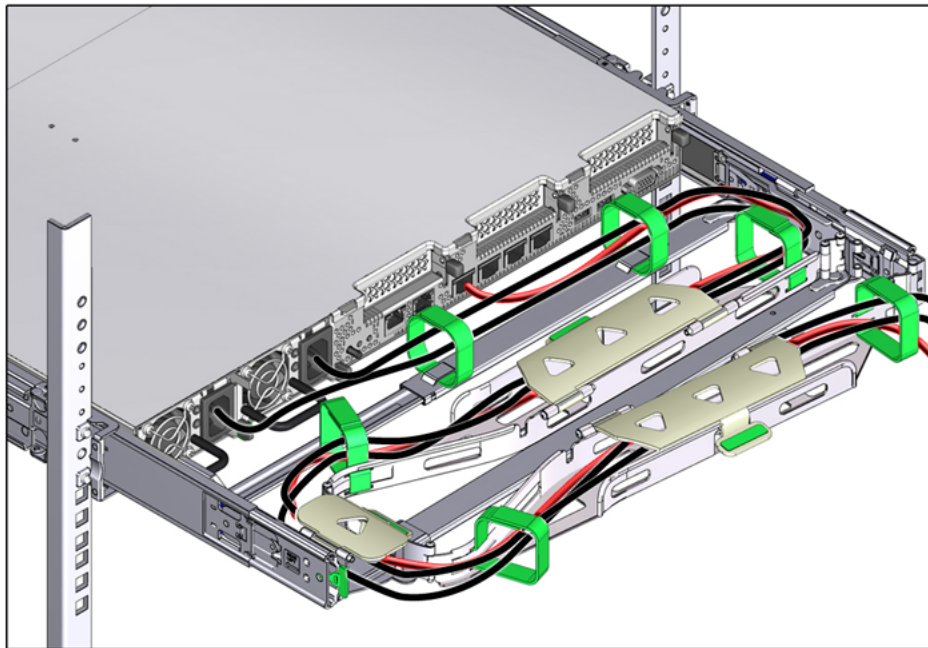
Item	Description
A	Power supplies
B	InfiniBand connectors

Item	Description
C	NETO Ethernet port

2. Open the CMA cable covers, route server cables through the CMA's cable troughs, close the cable covers, and secure the cables with the six Velcro straps. See [Figure 6.15](#).
  - a. First through the front-most cable trough.
  - b. Then through the small cable trough.
  - c. Then through the rear-most cable trough.

**Note**

When securing the cables with the Velcro straps located on the front slide bar, ensure that the Velcro straps do not wrap around the bottom of the slide bar; otherwise, expansion and contraction of the slide bar might be hindered when the server is extended from the rack and returned to the rack.

**Figure 6.15 CMA With Cables Installed**

3. Ensure that the secured cables do not extend above the top or below the bottom of the server to which they are attached; otherwise, the cables might snag on other equipment installed in the rack when the server is extended from the rack or returned to the rack.

**Note**

If necessary, bundle the cables with additional Velcro straps to ensure that they stay clear of other equipment. If you need to install additional Velcro straps, wrap the straps around the cables only, not around any of the CMA components; otherwise, expansion and contraction of the CMA slide bars might be hindered when the server is extended from the rack and returned to the rack.

4. Verify the operation of the CMA with all cables installed.



**Note**

Oracle recommends that two people do this step. One person to move the server in and out of the rack, and another person to observe the cable and CMA operation.

- a. Slowly pull the server out of the rack until the slide rails reach their stop.
  - b. Inspect the attached cables for any binding or kinks.
  - c. Verify that the CMA extends fully from the slide rails.
5. Push the server back into the rack.
- a. Simultaneously pull and hold the two green release tabs (one on each side of the server) toward the front of the server while you push the server into the rack. See [Figure 6.13](#).



**Note**

To pull the green release tabs, place your finger in the center of each tab, not on the end, and apply pressure as you pull the tab toward the front of the server.

- b. Verify that the CMA retracts without binding.
6. Repeat the previous steps for each additional server that you add to the rack.

The Oracle Virtual Compute Appliance monitoring software detects that one or more new compute nodes are present in the rack. It automatically powers on the new hardware and executes the provisioning procedure. The expansion compute nodes are incorporated seamlessly into the active system. This requires no further interventions by an administrator.

## 6.5.6 Replace the Rack Doors

Perform the following procedure to replace the rack front and rear doors:

1. Retrieve the doors, and place them carefully on the door hinges. See [Figure 6.1](#).
2. Connect the front and rear door grounding strap to the frame. See [Figure 6.1](#).
3. Close the doors.
4. (Optional) Lock the doors.



---

# Appendix A Default IP Addresses

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This appendix lists the default IP addresses assigned to the Oracle Virtual Compute Appliance X3-2 components during manufacturing.

## A.1 Default **NET0** IP Addresses

**NET0** is the host Ethernet port 0 IP address for every compute node and storage server head.

[Table A.1](#) lists the default **NET0** IP addresses assigned to compute nodes and other hardware components in an Oracle Virtual Compute Appliance X3-2.

**Table A.1 Default **NET0** IP Addresses for Oracle Virtual Compute Appliance X3-2**

Unit Number	Rack Component (Front View)	<b>NET0</b> IP Address Assigned During Manufacturing
42	Compute Node	Not applicable
41	Compute Node	Not applicable
40	Compute Node	Not applicable
39	Compute Node	Not applicable
38	Compute Node	Not applicable
37	Compute Node	Not applicable
36	Compute Node	Not applicable
35	Compute Node	Not applicable
34	Compute Node	Not applicable
33	Compute Node	Not applicable
32	Compute Node	Not applicable
31	Compute Node	Not applicable
30	Compute Node	Not applicable
29	Compute Node	Not applicable
28	Compute Node	Not applicable
27	Compute Node	Not applicable
26	Compute Node	Not applicable
25	Oracle Fabric Interconnect F1-15 Director	Not applicable
24	Switch	
23		
22		

Unit Number	Rack Component (Front View)	NET0 IP Address Assigned During Manufacturing
21	Oracle Switch ES1-24	Not applicable
20	NM2-36P Sun Datacenter InfiniBand Expansion Switch	Not applicable
19	NM2-36P Sun Datacenter InfiniBand Expansion Switch	Not applicable
18	Oracle Fabric Interconnect F1-15 Director Switch	Not applicable
17		
16		
15		
14	Compute Node	Not applicable
13	Compute Node	Not applicable
12	Compute Node	Not applicable
11	Compute Node	Not applicable
10	Compute Node	Not applicable
9	Compute Node	Not applicable
8	Compute Node	Not applicable
7	Compute Node	Not applicable
6	Management Node	192.168.4.4
5	Management Node	192.168.4.3
4	Sun ZFS Storage 7320 appliance	Not applicable
3		
2	Server Head for Sun ZFS Storage 7320 appliance	192.168.4.2
1	Server Head for Sun ZFS Storage 7320 appliance	192.168.4.1
	PDU-A	Not applicable
	PDU-B	Not applicable

## A.2 Default Management IP Addresses



### Caution

For hardware management, Oracle Virtual Compute Appliance X3-2 uses a network internal to the appliance. It is not recommended to connect the management ports or the management network switches to the data center network infrastructure. Servers are connected to the internal hardware management network through their [NET0](#) interface. The [NETMGT](#) interface is not cabled.

[Table A.2](#) lists the default management IP addresses assigned to compute nodes and other hardware components in an Oracle Virtual Compute Appliance X3-2 base configuration rack.



**Table A.2 Default Management IP Addresses for Oracle Virtual Compute Appliance X3-2**

Unit Number	Rack Component (Front View)	Management IP Address Assigned During Manufacturing
42	Compute Node	Not applicable
41	Compute Node	Not applicable
40	Compute Node	Not applicable
39	Compute Node	Not applicable
38	Compute Node	Not applicable
37	Compute Node	Not applicable
36	Compute Node	Not applicable
35	Compute Node	Not applicable
34	Compute Node	Not applicable
33	Compute Node	Not applicable
32	Compute Node	Not applicable
31	Compute Node	Not applicable
30	Compute Node	Not applicable
29	Compute Node	Not applicable
28	Compute Node	Not applicable
27	Compute Node	Not applicable
26	Compute Node	Not applicable
25	Oracle Fabric Interconnect F1-15 Director	192.168.4.205
24	Switch	
23		
22		
21	Oracle Switch ES1-24	192.168.4.200 and 192.168.4.201
20	NM2-36P Sun Datacenter InfiniBand Expansion Switch	192.168.4.203
19	NM2-36P Sun Datacenter InfiniBand Expansion Switch	192.168.4.202
18	Oracle Fabric Interconnect F1-15 Director	192.168.4.204
17	Switch	
16		
15		
14	Compute Node	Not applicable
13	Compute Node	Not applicable
12	Compute Node	Not applicable
11	Compute Node	Not applicable
10	Compute Node	Not applicable
9	Compute Node	Not applicable
8	Compute Node	Not applicable

Unit Number	Rack Component (Front View)	Management IP Address Assigned During Manufacturing
7	Compute Node	Not applicable
6	Management Node	192.168.4.104
5	Management Node	192.168.4.103
4	Sun ZFS Storage 7320 appliance	Not applicable
3		
2	Server Head for Sun ZFS Storage 7320 appliance	192.168.4.102
1	Server Head for Sun ZFS Storage 7320 appliance	192.168.4.101
	PDU-A	192.168.4.210
	PDU-B	192.168.4.211

## A.3 Default InfiniBand Bonded IP Addresses



### Caution

The InfiniBand network is internal to the Oracle Virtual Compute Appliance X3-2. You should not create additional connections to this network.

InfiniBand bonded interfaces are the default channel of communication among compute nodes and storage server heads. If you are connecting Oracle Virtual Compute Appliance X3-2 to existing or additional storage machines on the same InfiniBand fabric, the interface enables communication between Oracle Virtual Compute Appliance X3-2 and the storage machines.

Table A.3 lists the default InfiniBand Bonded IP addresses assigned to compute nodes and other hardware components in Oracle Virtual Compute Appliance X3-2.

**Table A.3 Default InfiniBand Bonded IP Addresses for Oracle Virtual Compute Appliance X3-2**

Unit Number	Rack Component (Front View)	InfiniBand Bonded IP Address Assigned During Manufacturing
42	Compute Node	Not applicable
41	Compute Node	Not applicable
40	Compute Node	Not applicable
39	Compute Node	Not applicable
38	Compute Node	Not applicable
37	Compute Node	Not applicable
36	Compute Node	Not applicable
35	Compute Node	Not applicable
34	Compute Node	Not applicable
33	Compute Node	Not applicable
32	Compute Node	Not applicable
31	Compute Node	Not applicable
30	Compute Node	Not applicable

Default InfiniBand Bonded IP Addresses

Unit Number	Rack Component (Front View)	InfiniBand Bonded IP Address Assigned During Manufacturing
29	Compute Node	Not applicable
28	Compute Node	Not applicable
27	Compute Node	Not applicable
26	Compute Node	Not applicable
25	Oracle Fabric Interconnect F1-15 Director	Not applicable
24	Switch	
23		
22		
21	Oracle Switch ES1-24	Not applicable
20	NM2-36P Sun Datacenter InfiniBand Expansion Switch	Not applicable
19	NM2-36P Sun Datacenter InfiniBand Expansion Switch	Not applicable
18	Oracle Fabric Interconnect F1-15 Director	Not applicable
17	Switch	
16		
15		
14	Compute Node	Not applicable
13	Compute Node	Not applicable
12	Compute Node	Not applicable
11	Compute Node	Not applicable
10	Compute Node	Not applicable
9	Compute Node	Not applicable
8	Compute Node	Not applicable
7	Compute Node	Not applicable
6	Management Node	192.168.40.4
5	Management Node	192.168.40.3
4	Sun ZFS Storage 7320 appliance	Not applicable
3		
2	Server Head for Sun ZFS Storage 7320 appliance	192.168.40.2
1	Server Head for Sun ZFS Storage 7320 appliance	192.168.40.1
	PDU-A	Not applicable
	PDU-B	Not applicable



# Appendix B Cabling Reference

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This appendix provides cabling reference tables for Oracle Virtual Compute Appliance X3-2.

## B.1 Oracle Switch ES1-24 Ethernet Connections

This section contains cabling connections for Oracle Switch ES1-24.

**Table B.1 Cabling Connections for Oracle Switch ES1-24**

From	Port	To	Port	Color	Notes
U42	NET0	U21-A	19	Blue	
U41	NET0	U21-A	18	Blue	
U40	NET0	U21-A	17	Blue	
U39	NET0	U21-A	16	Blue	
U38	NET0	U21-A	15	Blue	
U37	NET0	U21-A	14	Blue	
U36	NET0	U21-A	13	Blue	
U35	NET0	U21-A	12	Blue	
U34	NET0	U21-A	11	Blue	
U33	NET0	U21-B	18	Blue	
U32	NET0	U21-B	17	Blue	
U31	NET0	U21-B	16	Blue	
U30	NET0	U21-B	15	Blue	
U29	NET0	U21-B	14	Blue	
U28	NET0	U21-B	13	Blue	
U27	NET0	U21-B	12	Blue	
U26	NET0	U21-B	11	Blue	
U22		U21-A	9	Black	F1-15 Director Switch
U20		U21-B	10	Black	NM2-36P InfiniBand Switch
U21-A	24	Customer network		Transceiver	
U21-B	24	Customer network		Transceiver	

From	Port	To	Port	Color	Notes
U21-A	22	U21-B	22	SFP+	Switch-to-switch connection within rack
U19		U21-A	10	Black	NM2-36P InfiniBand Switch
U15		U21-B	9	Black	F1-15 Director Switch
U14	NET0	U21-A	8	Blue	
U13	NET0	U21-A	7	Blue	
U12	NET0	U21-A	6	Blue	
U11	NET0	U21-A	5	Blue	
U10	NET0	U21-A	4	Blue	
U9	NET0	U21-A	3	Blue	
U8	NET0	U21-A	2	Blue	
U7	NET0	U21-A	1	Blue	
U6	NET0	U21-B	8	Blue	
U5	NET0	U21-B	7	Blue	
U2	NET2	U21-B	6	Blue	
U2	NET1	U21-B	5	Blue	
U2	NET0	U21-B	4	Blue	
U1	NET2	U21-B	3	Blue	
U1	NET1	U21-B	2	Blue	
U1	NET0	U21-B (Left switch)	1	Blue	
PDU-A	NETMGT	U21-A	20	White	
PDU-B	NETMGT	U21-B	20	White	

## B.2 Storage Head Cluster Interconnects

This section contains cabling connections for the storage head cluster.

**Table B.2 Cabling Connections for Storage Head Cluster**

From	Port	To	Port	Length	Color	Part Number and Notes
U1	PCIe-1 P0	U2	PCIe-1 P2	2.13m	Yellow	530-4527-01
U1	PCIe-1 P1	U2	PCIe-1 P1	2.13m	Black	530-4436-01
U1	PCIe-1 P2	U2	PCIe-1 P0	2.13m	Green	530-4526-01
U2	PCIe-2 P1	U3	IOM1 (top) SAS Port 1	2m	Black	2m SAS
U1	PCIe-2 P1	U3	IOM1 SAS Port 0	2m	Black	2m SAS
U2	PCIe-2 P0	U3	IOM0 (bottom) SAS Port 1	2m	Black	2m SAS
U1	PCIe-2 P0	U3	IOM0 SAS Port 0	2m	Black	2m SAS

## B.3 NM2-36P InfiniBand Switch to F1-15 Director Switch Connections

This section contains in-rack cabling connections for the NM2-36P InfiniBand (IB) switch to the F1-15 Director switch.

**Table B.3 Cabling Connections for NM2-36P IB Switch to F1-15 Director Switch**

From	Name	Port	To	Name	Port	NM2 to F1 Interconnect
U19	NM2-36P IB	9B	U22	F1-15	8	Bottom NM2-36P IB to top F1-15 (Red Velcro)
	NM2-36P IB	10B	U22	F1-15	9	Bottom NM2-36P IB to top F1-15 (Red Velcro)
	NM2-36P IB	11B	U15	F1-15	10	Bottom NM2-36P IB to top F1-15 (Red Velcro)
	NM2-36P IB	9A	U15	F1-15	8	Bottom NM2-36P IB to bottom F1-15 (Red Velcro)
	NM2-36P IB	10A	U15	F1-15	9	Bottom NM2-36P IB to bottom F1-15 (Red Velcro)
	NM2-36P IB	11A	U22	F1-15	10	Bottom NM2-36P IB to bottom F1-15 (Red Velcro)
U20	NM2-36P IB	9B	U15	F1-15	18	Top NM2-36P IB to top F1-15 (Blue Velcro)
	NM2-36P IB	10B	U15	F1-15	19	Top NM2-36P IB to top F1-15 (Blue Velcro)
	NM2-36P IB	11B	U22	F1-15	20	Top NM2-36P IB to top F1-15 (Blue Velcro)
	NM2-36P IB	9A	U22	F1-15	18	Top NM2-36P IB to bottom F1-15 (Blue Velcro)
	NM2-36P IB	10A	U22	F1-15	19	Top NM2-36P IB to bottom F1-15 (Blue Velcro)
	NM2-36P IB	11A	U15	F1-15	20	Top NM2-36P IB to bottom F1-15 (Blue Velcro)

## B.4 NM2-36P InfiniBand Switches to X3-2 Compute Nodes Connections

This section contains in-rack cabling connections for the NM2-36P InfiniBand switches to the X3-2 compute nodes.

### B.4.1 NM2-36P (U19) InfiniBand Switch to X3-2 Compute Nodes Connections

The following table contains cabling connections for the NM2-36P (U19) InfiniBand switch to X3-2 compute nodes.

**Table B.4 Cabling Connections for NM2-36P (U19) IB Switch to X3-2 Compute Nodes**

From	Name	Port	To	Name	Port
U19	NM2-36P IB	0A	U42	X3-2	PCIe-2 P2

From	Name	Port	To	Name	Port
	NM2-36P IB	0B	U41	X3-2	PCIe-2 P2
	NM2-36P IB	1A	U40	X3-2	PCIe-2 P2
	NM2-36P IB	1B	U39	X3-2	PCIe-2 P2
	NM2-36P IB	2A	U38	X3-2	PCIe-2 P2
	NM2-36P IB	2B	U37	X3-2	PCIe-2 P2
	NM2-36P IB	3A	U36	X3-2	PCIe-2 P2
	NM2-36P IB	3B	U35	X3-2	PCIe-2 P2
	NM2-36P IB	4A	U34	X3-2	PCIe-2 P2
	NM2-36P IB	4B	U33	X3-2	PCIe-2 P2
	NM2-36P IB	5A	U32	X3-2	PCIe-2 P2
	NM2-36P IB	5B	U31	X3-2	PCIe-2 P2
	NM2-36P IB	6A	U30	X3-2	PCIe-2 P2
	NM2-36P IB	6B	U29	X3-2	PCIe-2 P2
	NM2-36P IB	7A	U28	X3-2	PCIe-2 P1
	NM2-36P IB	7B	U27	X3-2	PCIe-2 P1
	NM2-36P IB	8A	U26	X3-2	PCIe-2 P1
	NM2-36P IB	12A	U14	X3-2	PCIe-2 P1
	NM2-36P IB	12B	U13	X3-2	PCIe-2 P1
	NM2-36P IB	13A	U12	X3-2	PCIe-2 P1
	NM2-36P IB	13B	U11	X3-2	PCIe-2 P1
	NM2-36P IB	14A	U10	X3-2	PCIe-2 P1
	NM2-36P IB	14B	U9	X3-2	PCIe-2 P1
	NM2-36P IB	15A	U8	X3-2	PCIe-2 P1
	NM2-36P IB	15B	U7	X3-2	PCIe-2 P1
	NM2-36P IB	16A	U6	X3-2	PCIe-2 P1
	NM2-36P IB	16B	U5	X3-2	PCIe-2 P1
	NM2-36P IB	17A	U2	X3-2	PCIe-0 P1
	NM2-36P IB	17B	U1	X3-2	PCIe-0 P1

## B.4.2 NM2-36P (U20) InfiniBand Switch to X3-2 Compute Nodes Connections

The following table contains cabling connections for the NM2-36P (U20) InfiniBand switch to X3-2 compute nodes.

**Table B.5 Cabling Connections for NM2-36P (U20) IB Switch to X3-2 Compute Nodes**

From	Name	Port	To	Name	Port
U20	NM2-36P IB	0A	U42	X3-2	PCIe-2 P1
	NM2-36P IB	0B	U41	X3-2	PCIe-2 P1
	NM2-36P IB	1A	U40	X3-2	PCIe-2 P1
	NM2-36P IB	1B	U39	X3-2	PCIe-2 P1



NM2-36P (U20) InfiniBand Switch to X3-2 Compute Nodes Connections

<b>From</b>	<b>Name</b>	<b>Port</b>	<b>To</b>	<b>Name</b>	<b>Port</b>
	NM2-36P IB	2A	U38	X3-2	PCle-2 P1
	NM2-36P IB	2B	U37	X3-2	PCle-2 P1
	NM2-36P IB	3A	U36	X3-2	PCle-2 P1
	NM2-36P IB	3B	U35	X3-2	PCle-2 P1
	NM2-36P IB	4A	U34	X3-2	PCle-2 P1
	NM2-36P IB	4B	U33	X3-2	PCle-2 P1
	NM2-36P IB	5A	U32	X3-2	PCle-2 P1
	NM2-36P IB	5B	U31	X3-2	PCle-2 P1
	NM2-36P IB	6A	U30	X3-2	PCle-2 P1
	NM2-36P IB	6B	U29	X3-2	PCle-2 P1
	NM2-36P IB	7A	U28	X3-2	PCle-2 P2
	NM2-36P IB	7B	U27	X3-2	PCle-2 P2
	NM2-36P IB	8A	U26	X3-2	PCle-2 P2
	NM2-36P IB	12A	U14	X3-2	PCle-2 P2
	NM2-36P IB	12B	U13	X3-2	PCle-2 P2
	NM2-36P IB	13A	U12	X3-2	PCle-2 P2
	NM2-36P IB	13B	U11	X3-2	PCle-2 P2
	NM2-36P IB	14A	U10	X3-2	PCle-2 P2
	NM2-36P IB	14B	U9	X3-2	PCle-2 P2
	NM2-36P IB	15A	U8	X3-2	PCle-2 P2
	NM2-36P IB	15B	U7	X3-2	PCle-2 P2
	NM2-36P IB	16A	U6	X3-2	PCle-2 P2
	NM2-36P IB	16B	U5	X3-2	PCle-2 P2
	NM2-36P IB	17A	U2	X3-2	PCle-0 P2
	NM2-36P IB	17B	U1	X3-2	PCle-0 P2



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# Appendix C Site Checklists

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This appendix contains site checklists to help you ensure that your site is prepared for installing Oracle Virtual Compute Appliance X3-2.

## C.1 System Components Checklist

Complete the following checklist to ensure that the systems component considerations have been addressed.

**Table C.1 System Component Checklist**

System Components Considerations	Yes	No	N/A	Comment
Will more than one base rack be installed?				
Is the rack installation a new system or an addition to an existing system?				
Will the base rack be connected to an expansion rack?				
Are all machine racks adjacent to each other?				
If the connecting racks are not within the specified proximity, then have the following been done:				
				<ul style="list-style-type: none"><li>• Purchased approved longer InfiniBand cables from an approved third-party vendor?</li><li>• Asked Oracle Support Services to provide and schedule the custom multi-rack cabling service with the installation?</li></ul>

## C.2 Data Center Room Checklist

Complete the following checklist to ensure that the data center room requirements are met. For information about the data center requirements, see [Section 2.2, "Flooring Requirements"](#).

**Table C.2 Data Center Room Checklist**

<b>Data Center Room Considerations</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Comment</b>
Has the Oracle Virtual Compute Appliance X3-2 location been allocated?				
Is there a vacant location for the new equipment?				
Does the floor layout meet the equipment maintenance access requirements?				
Is there adequate space available for maintenance?				
Will the equipment be positioned so that the exhaust air of one rack does not enter the air inlet of another rack?				
Have cabinet stabilization measures been considered?				
Does the raised floor satisfy the weight requirements for the new hardware?				
Can floor tiles be removed without permission to accommodate service?				
Are there cable routing channels or cutouts?				
Are you providing any additional hardware?				
Is the hardware you are providing fully compatible with the Oracle Virtual Compute Appliance X3-2?				
Will the new hardware location require any non-standard cable lengths?				
Is the floor to ceiling height a minimum of 3214 mm or 3.2 m (10.5 feet)?				
Is the depth of the raised floor a minimum of 46 cm (18 inches)?				

### C.3 Data Center Environmental Checklist

Complete the following checklist to ensure that the data center environment requirements are met. For information, see [Section 2.5, "Ventilation and Cooling Requirements"](#).

**Table C.3 Data Center Environmental Checklist**

<b>Data Center Environmental Considerations</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Comment</b>
Does the computer room air handling meet temperature and humidity requirements?				
Does the installation floor layout satisfy the ventilation requirements?				
Will the equipment be positioned so the exhaust air of one rack does not enter the air intake of another rack?				
Are the perforated floor tiles each rated at 400 CFM or greater?				
Do the data center air conditioners provide sufficient front to back airflow?				
Is airflow adequate to prevent hot spots?				
Can the data center continuously satisfy environmental requirements?				
Can more vented floor tiles be obtained if required?				

## C.4 Access Route Checklist

Complete the following checklist to ensure that the access route requirements are met. For information about preparing your data center access route, see [Section 4.2, “Prepare to Install Oracle Virtual Compute Appliance X3-2”](#).

**Table C.4 Access Route Checklist**

<b>Access Route Considerations</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Comment</b>
Has the access route been checked for clearances of the packaged equipment?				
Do all the doors and entry ways conform to the width and height requirements for transportation, including the width of the unpacked unit?				
Do all the doors meet the height requirement of minimum 218 cm (86 inches) for packaged delivery?				
Does the access route provide sufficient space for transport of the packed devices?				
Are there any ramps or thresholds that are of concern? If yes, then provide details.				

Access Route Checklist

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Access Route Considerations	Yes	No	N/A	Comment
Are there any stairs or ramps in the path when moving the new hardware?				
Have you confirmed that all route incline angles are within the permitted range?				
Have you confirmed that the access route is free of any obstacles that would expose the device to shock?				
Are all the surfaces acceptable for rolling the new unpacked and packed equipment?				
<p>If a pallet jack is to be use, then have you confirmed the following:</p> <ul style="list-style-type: none"> <li>• The pallet jack supports the device weight?</li> <li>• The pallet jack tines are compatible with the shipping pallet?</li> </ul>				
If there are stairs, then is a loading elevator accessible for the equipment?				
<p>If an elevator is to be used, then have you confirmed the following:</p> <ul style="list-style-type: none"> <li>• The elevator car is wide enough for the device to be carried into it?</li> <li>• The elevator car is high enough for the device to be carried into it?</li> <li>• The load limit of the elevator is greater than the device weight?</li> <li>• Are elevators available to handle up to 996 kg (2197 lbs) fully-loaded rack capacity?</li> <li>• The elevator door meets the minimum height requirement of 218 cm (86 inches) for packaged rack delivery?</li> </ul>				
Does the path from the receiving location to the designated data center area support the weight of the unpacked equipment?				
Is the path onto the raised floor rated for dynamic loading of the				

Access Route Considerations	Yes	No	N/A	Comment
server? Refer to <a href="#">Section 2.2</a> , "Flooring Requirements".				

## C.5 Facility Power Checklist

Complete the following checklist to ensure that the facility power requirements are met. For information about power requirements, see [Section 2.3](#), "Electrical Power Requirements".

**Table C.5 Facility Power Checklist**

Facility Power Considerations	Yes	No	N/A	Comment
Do you know the required operating voltage and electric current level of the device and peripherals?				
Will you be using single-phase (low-voltage or high-voltage) or 3-phase (low-voltage or high-voltage) power?				
Are enough power outlets provided within 2 meters (6.5 feet) for each rack?				
Do the power outlets have appropriate socket receptacles for the PDU option ordered? Options are low voltage or high voltage, single-phase or 3-phase.				
Will optional ground cables be attached to the rack?				
Are the circuit breakers for the equipment suitable in terms of voltage and current-carrying capacities?				
Does the power frequency meet the equipment specifications?				
Are power outlets available for the new equipment at the designated location?				
Will system power be delivered from two separate grids?				
Is there a UPS to power the equipment?				
Do you have the minimum required power sources to support the power load for the new hardware? Use kilowatt (kW) /kilovolt (kVA) to express power load.				

## C.6 Safety Checklist

Complete the following checklist to ensure that the safety requirements are met. For information about safety, see [Section 1.6, “Operational Procedures for Oracle Virtual Compute Appliance X3-2”](#) and [Section 2.5, “Ventilation and Cooling Requirements”](#).

**Table C.6 Safety Checklist**

Safety Checklist Considerations	Yes	No	N/A	Comment
Is there an emergency power shut off?				
Is there a fire protection system in the data center room?				
Is the computer room adequately equipped to extinguish a fire?				
Is antistatic flooring installed?				
Is the floor below the raised floor free of obstacles and blockages?				

## C.7 Logistics Checklist

Complete the following checklist to ensure that the logistics requirements are met. For information about unpacking and space requirements, see [Section 2.1, “Space Requirements”](#).

**Table C.7 Logistics Checklist**

Logistics Checklist Considerations	Yes	No	N/A	Comment
Do you have contact information for the data center personnel?				
Is there security or access control for the data center?				
Are there any security background checks or security clearances required for vendor personnel to access the data center? If yes, then do you have a recommended agency?				
How many days in advance must background checks be completed?				
Are there any additional security access issues?				
Is computer room access available for installation personnel?				
Are laptops, cell phones, and cameras allowed in the data center?				
Does the building have a delivery dock?				
Is there a delivery/unpacking/staging area?				



Logistics Checklist

<b>Logistics Checklist Considerations</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Comment</b>
Is the delivery inside?				
If the delivery is not inside, then is the site prepared for uncrating?				
Is the unpacking/staging area protected from the elements?				
Does the building have adequate receiving space?				
Is the unpacking area air-conditioned to avoid thermal shock for various hardware components?				
Will sufficient moving personnel be available to install the hardware?				
Is union labor required for any part of the delivery or installation?				
Are you prepared for uncrating and trash removal?				
Is uncrating of cabinet and cabinet trash removal required?				
Are there any restrictions on delivery truck length, width, or height?				
Does the customer allow cardboard boxes and other packing material in the computer room? If no, then do ground level deliveries require a truck with a side rail lift?				
Is there a time constraint on dock access? If yes, then provide time constraints.				
Is tail lift required on delivery carrier to unload the equipment at the delivery dock?				
Will any of the following be required to place equipment in computer room?				
<ul style="list-style-type: none"> <li>• Stair walkers</li> <li>• Lifters</li> <li>• Ramps</li> <li>• Steel plates</li> <li>• Floor covers</li> </ul>				
Does the delivery carrier require any special equipment, such as non-				

Logistics Checklist Considerations	Yes	No	N/A	Comment
floor damaging rollers, transport dollies, pallet jacks, or fork lifts?				

## C.8 Network Specification Checklist

Complete the following checklist to ensure that the network specification requirements are met. For information about IP addresses, see [Chapter 3, Network Requirements](#) and [Appendix A, Default IP Addresses](#).



**Note**

By default, there is one default InfiniBand partition at the Oracle Virtual Compute Appliance X3-2 level. All compute nodes in the system are members of the default InfiniBand partition. The most common model for application isolation involves multiple IP subnetting, in which the most mission-critical applications are assigned their own IP subnets layered about the default IPoIB link. In this model, some subnets may also contain applications that have less stringent or otherwise different resource requirements.

**Table C.8 Network Specification Checklist**

Network Specification Considerations	Yes	No	N/A	Comment
Did you complete the networking worksheet, which is included in <a href="#">Section 3.2, “General Network Configuration”</a> ?				
Have you received the site-specific installation template from your Oracle technical representative?				
Did you review the installation template and consult with your Oracle technical representative regarding any site-specific changes, if any?				
Did you verify that IP addresses in the installation template are currently not in use?				
Have you performed the required configuration within your network infrastructure to allow Oracle Virtual Compute Appliance X3-2 to use the IP addresses specified in the template?				
Have you registered IP addresses in the installation template with DNS?				
Did you run the required network cables from your network equipment to the location where Oracle Virtual				

Network Specification Checklist

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<b>Network Specification Considerations</b>	<b>Yes</b>	<b>No</b>	<b>N/A</b>	<b>Comment</b>
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Compute Appliance X3-2 will be installed?

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Did you label the network cables that will connect to Oracle Virtual Compute Appliance X3-2?

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