Oracle Public Cloud Machine

Customer Deployment Guide

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Oracle Public Cloud Machine Customer Deployment Guide, 17.1.2

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Preface

This guide describes the site, network, and database requirements to deploy an Oracle Public Cloud Machine on a customer data center.

Audience

This document is intended for customer's data center and infrastructure engineers looking at deploying Oracle Public Cloud Machine.

Revision History

- E65770-01, April 2016: First version of the document.
- E65770-02, May 2016: Added details about the ZS3 storage appliance for Database Cloud Services.
- E65770-03, June 2016: Minor fixes to information about OPCM models.
- E65770-04, August 2016: Added information about new available cloud services, external storage requirements, and external customer database exceptions.
- E65770-05, September 2016: Fixed information in the OPCM ZS3 space requirements table.

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Conventions

The following text conventions are used in this document:

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

1

Site Requirements

Learn about the site requirements for Oracle Public Cloud Machine.

Topics

1.1 Space

Learn about the space and maintenance access requirements for Oracle Public Cloud Machine (OPCM).

All OPCM models use the same rack, and have the same space and maintenance access requirements.

The space and maintenance requirements are as follows:

Table 1-1 OPCM Space Requirements

Description	Millimeters (mm)	Inches (")
Height	1998 mm	78.66″
Minimum ceiling height for the cabinet (measured from true or raised floor)	2300 mm + 914 mm (for top clearance)	90″ + 36″
Width	600 mm with side panels	23.62″
Required space to remove the side panels	675. 64 mm	26.6″
Depth from front door handle to rear door handle	1200 mm	47.24″
Depth with doors removed	1112 mm	43.78″

Table 1-1 (Cont.) OPCM Space Requirements

Description	Millimeters (mm)	Inches (")
Top, front, and rear maintenance access requirement	914 mm	36"

Note: 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.

If deploying the ZS3 Storage Expansion rack, the space and maintenance requirements are as follows:

Table 1-2 OPCM ZS3 Storage Expansion Rack Space Requirements

Description	Millimeters (mm)	Inches (")
Height	1998 mm	78.66"
Minimum ceiling height for the cabinet (measured from true or raised floor)	2300 mm + 914 mm (for top clearance)	90" + 36"
Width	600 mm with side panels	23.62"
Required space to remove the side panels	675. 64 mm	26.6"
Depth from front door handle to rear door handle	1200 mm	47.24"
Depth with doors removed	1112 mm	43.78"
Top, front, and rear maintenance access requirement	914 mm	36"

Note: 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.

Additional Space Requirements

Oracle Advanced Support Gateway appliance is also required to deploy OPCM. The appliance requires the space of one rack unit to be mounted. See Oracle Advanced Support Gateway Documentation for more information.

1.2 Receiving

Review the shipping details and access route requirements for OPCM.

Shipping Specifications

Before your Oracle Public Cloud Machine (OPCM) arrives, make sure that the receiving area is large enough for the package.

The following are the package dimensions and weight for OPCM and ZS3 Storage Expansion racks:

Table 1-3 OPCM Shipping Specifications

Description	Millimeters	Inches
Shipping height	2159 mm	85 inches
Shipping width	1219 mm	48 inches
Shipping depth	1575 mm	62 inches
Shipping weight	1150 kg	2535 lbs

If your loading dock meets the height and ramp requirements for a standard freight carrier truck, then a pallet jack will be used 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.

Access Route Requirements

Note: The OPCM rack should only be unpacked and moved by Oracle Field Services and the delivery team.

Consider the following to allow the delivery team to unpack and move the OPCM system effectively:

- Use a conditioned space to remove the packaging material to reduce particles before entering the data center.
- Make sure that the entire access route to the installation site is free of raised-pattern flooring that can cause vibration.
- Allow enough space for unpacking it from its shipping cartons.
- Make sure that there is enough clearance and clear pathways for moving the OPCM system from the unpacking location to the installation location.

The following table lists the access route requirements for OPCM:

Table 1-4 OPCM 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

Table 1-4 (Cont.) OPCM Access Route Requirements

Access Route Item	With Shipping Pallet	Without Shipping Pallet
Minimum elevator, pallet jack, and floor loading capacity	1134 kg (2500 lbs)	1134 kg (2500 lbs)

Note: The shipping specifications and access route requirements are similar for the optional OPCM ZS3 Storage Expansion Rack.

1.3 Flooring

Learn about the flooring requirements for OPCM and the optional ZS3 storage expansion rack.

Oracle recommends that the Oracle Public Cloud Machine be installed on raised flooring. The site floor and the raised flooring must be able to support the total weight of OPCM and the optional ZS3 Storage Expansion rack.

OPCM Weight Specifications

The following table lists the floor load requirements for OPCM:

Table 1-5 OPCM Flooring Requirements

Maximum Allowable Weight	Model 288	Model 576	Model 1080
Installed rack equipment weight	630 kg, 1389 lbs	810 kg, 1786 lbs	1100 kg, 2425 lbs
Shipping weight	680 Kg, 1499 lbs	860 kg, 1896 lbs	1150 kg, 2535 lbs

Note:

Open tiles are required for electrical access.

OPCM ZS3 Storage Expansion Rack Weight Specifications

If you are deploying the ZS3 storage expansion rack, review weight specifications on the following table:

Table 1-6 OPCM ZS3 Storage Expansion Rack Flooring Requirements

Maximum Allowable Weight	Model 268	Model 536
Installed rack equipment weight	418 kg, 921 lbs	645 kg, 1421 lbs

1.4 Electrical Power

Learn about the electrical power specifications and requirements for OPCM and the optional ZS3 storage expansion rack.

Power Consumption

The following table describes the typical and maximum power consumption for OPCM:

Table 1-7 OPCM Power Consumption

Power Consumption	Model 288	Model 576	Model 1080
Maximum	7.732 kW, 7.887 kVA	13.444 kW, 13.713 kVA	23.520 kW, 23.990 kVA
Typical	5.412 kW, 5.521 kVA	9.411 kW, 9.599 kVA	16.464 kW, 16.793 kVA

The following table describes the typical and maximum power consumption for the optional OPCM ZS3 storage expansion rack:

Table 1-8 OPCM ZS3 Storage Expansion Rack Power Consumption

Power Consumption	Model 268	Model 536
Maximum	6.671kW	13.342 kW
Typical	3.177 kW	6.354 kW

Power Distribution Units

Oracle Public Cloud Machine (OPCM) can operate effectively over a wide range of voltages and frequencies. However, it must have a reliable power source. Damage may occur if the ranges are exceeded. Electrical disturbances such as the following may damage an OPCM:

- 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 the system, dedicated power distribution system and power-conditioning equipment should be used. Lightning arresters or power cables should be used to protect from electrical storms.

Each rack has two pre-installed Power Distribution Units (PDUs). The PDUs accept different power sources. You must select the type of PDU that meets the requirements for your data center.

The following table lists the available PDUs for OPCM and OPCM ZS3 Storage Expansion depending on the model and your region:

Table 1-9 Available PDUs by Region and Model

OPCM Model	Region	Available PDUs
288 and 576	Americas, Japan, and Taiwan	• Single-Phase x 15kVA Low Voltage • Three-Phase x 15kVA Low Voltage • Single-Phase x 22kVA Low Voltage • Three-Phase x 24kVA Low Voltage
1080	Americas, Japan, and Taiwan	• Three-Phase x 24kVA Low Voltage
ZS3 Storage Expansion 268 and 536	Americas, Japan, and Taiwan	• Single-Phase x 15kVA Low Voltage • Three-Phase x 15kVA Low Voltage • Single-Phase x 22kVA Low Voltage • Three-Phase x 24kVA Low Voltage
288 and 576	EMEA and rest of APAC	• Three-Phase x 15kVA High Voltage • Single-Phase x 22kVA High Voltage • Three-Phase x 24kVA High Voltage
1080	EMEA and rest of APAC	• Three-Phase x 24kVA High Voltage
ZS3 Storage Expansion 268 and 536	EMEA and rest of APAC	• Three-Phase x 15kVA High Voltage • Single-Phase x 22kVA High Voltage • Three-Phase x 24kVA High Voltage

The following table lists the PDU low voltage specifications:

Table 1-10 PDU Low Voltage Requirements

Specification	15 kVA, 1 phase	15 kVA, 3 phase	22 kVA, 1 phase	24 kVA, 3 phase
Phase	1 ph	3 ph	1 ph	3 ph
Market Part Number	6442A	6440A	7100873	XSR-24K-IEC309-4P

Table 1-10 (Cont.) PDU Low Voltage Requirements

Specification	15 kVA, 1 phase	15 kVA, 3 phase	22 kVA, 1 phase	24 kVA, 3 phase
Manufacturing Part Number	597-0566-01	597-0564-01	7018123	594-5596-01
Voltage	200-240 VAC 1ph	200-240 VAC 3ph	200-240 VAC 1ph	200-240 VAC 3ph
Amps Per PDU	72A (3 × 24A)	69A (3 × 23A)	110.4 (3x36.8A)	120A (6 × 20A)
Outlets	42 C13, 6 C19	42 C13, 6 C19	42 C13, 6 C19	42 C13, 6 C19
Number of Inputs	3x30A, 1 ph	1x60A, 3 ph	3 x50A 1 ph	2x60A, 3 ph
Current	24A max. per input	40A max. per phase	36.8A per input	34.6A max. per phase
Data Center Receptacle	NEMA L6-30R	IEC309-3P4W-IP67 (60A, 250V, AC, 3 ph) IEC309 60A 3ph 4 Wire Hubbell HBL460R/C9W or equivalent.	Hubbell CS8265C	IEC309-3P4W-IP67 (60A, 250V, AC, 3 ph) IEC309 60A 3ph 4 Wire Hubbell HBL460R/C9W or equivalent.
Number of Outlets Per Rack	6	2	6	4

The following table lists the PDU high voltage specifications:

Table 1-11 PDU High Voltage Requirements

Specification	15 kVA, 3 phase	22 kVA, 1 phase	24 kVA, 3 phase
Phase	3 ph	1 ph	3 ph
Market Part Number	6441A	7100874	XSR-24K-IEC309-5P
Manufacturing Part Number	597-0565-01	7018124	594-5600-01
Voltage	220/380-240/415 VAC 3ph	200-240 VAC 1ph	220/380-240/415 VAC 3ph
Amps Per PDU	62.7 A (3 × 20.9A)	96A (3x32A)	109A (6 × 18.1A)
Outlets	42 C13, 6 C19	42 C13, 6 C19	42 C13, 6 C19
Number of Inputs	1x25A, 3 ph	3 x 32A 1 ph	2x25A, 3 ph
Current	24A max. per input	32 A per input	18 A max. per input

Table 1-11 (Cont.) PDU High Voltage Requirements

Specification	15 kVA, 3 phase	22 kVA, 1 phase	24 kVA, 3 phase
Data Center Receptacle	IEC 309-4P5W-IP44 (32A, 400V, AC, 3ph) IEC309 32A 3ph 5 Wire Hubbell HBL532R/C9W or equivalent.	IEC 309-2P3W-IP44 (32A, 250V, AC, 3ph) IEC309 32A 1ph 3 Wire Hubbell HBL332R/C9W or equivalent	IEC 309-4P5W-IP44(32A, 400V, AC, 3ph) IEC309 32A 3ph 5 Wire Hubbell HBL532R/C9W or equivalent.
Number of Outlets Per Rack	2	6	4

1.5 Facility Power

Review the facility electrical power requirements for OPCM.

Review the following 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). Dedicated AC breaker panels are required for all power circuits that supply power to the PDUs.
- 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 m (13.12 feet) long, and 1 to 1.5 m (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 m (6.6 feet) of the rack.
- 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.
- The cabinets for the Oracle Public Cloud Machine 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.
- Make sure that the facility administrator or qualified electrical engineer verifies the grounding method for the building, and performs the grounding work.

1.6 Temperature and Humidity

Review the temperature and humidity requirements for OPCM.

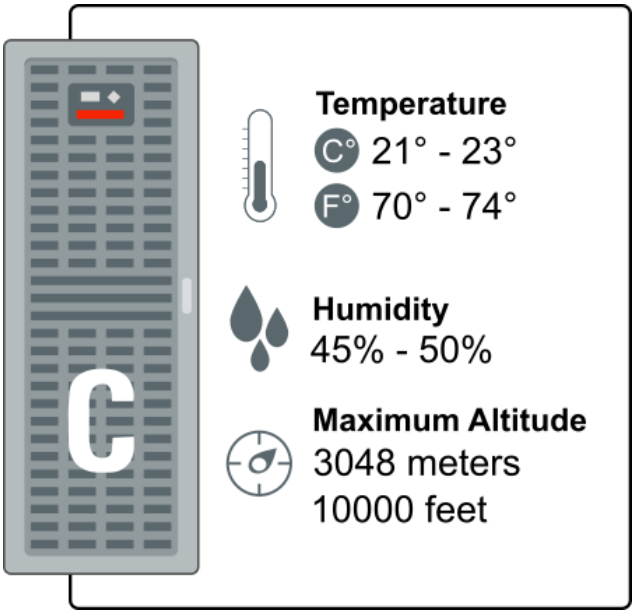
Set conditions to the optimal temperature and humidity ranges to minimize the chance of downtime. Operating the system for extended periods near the operating or non-operating range limits could significantly increase hardware component failure.

The ambient temperature range of 21 to 23 degrees Celsius (70 to 74 degrees Fahrenheit) is optimal for server reliability and operator comfort. Operating in this temperature range provides a safety buffer in the event that the air conditioning system goes down for a period of time.

Most computer equipment can operate in a range of 20 to 80 percent of relative humidity, but the range of 45 to 50 percent is recommended for the following reasons:

- Helps protect computer systems from corrosion problems associated with high humidity levels.
- Provides the greatest operating time buffer in the event of air conditioner control failure.
- Helps avoid failures or temporary malfunctions caused by intermittent interference from electrostatic discharges that may occur when relative humidity is too low (below 35 percent).

Figure 1-1 Optimal Temperature, humidity, and Altitude requirements for OPCM



The following table lists the operating, non-operating, and optimal requirements for temperature, humidity, and altitude:

Table 1-12 OPCM Temperature and Humidity Requirements

Condition	Operating Requirement	Non-operating Requirement	Optimal Requirement
Temperature	5 to 32 degrees Celsius (59 to 89.6 degrees Fahrenheit)	-40 to 70 degrees Celsius (-40 to 158 degrees Fahrenheit).	For optimal rack cooling, data center temperatures from 21 to 23 degrees Celsius (70 to 74 degrees Fahrenheit).

Table 1-12 (Cont.) OPCM Temperature and Humidity Requirements

Condition	Operating Requirement	Non-operating Requirement	Optimal Requirement
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	3048 meters (10000 feet) maximum	12000 meters (40000 feet).	Ambient temperature is reduced by 1 degree Celsius per 300 m above 900 m altitude above sea level.

Note:

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 may result in full or partial shutdown of an OPCM.

1.7 Ventilation and Cooling

Learn about the ventilation and cooling requirements for OPCM and the optional ZS3 storage expansion rack.

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 air flow requirement for the left and right sides due to front-to-back cooling.

If the rack is not completely filled with components, the empty sections will be covered with filler panels. Gaps between components can adversely affect air flow and cooling within the rack.

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 degrees Celsius (75 degrees Fahrenheit) has a relative humidity of 65 percent at a temperature of 18 degrees Celsius (64 degrees Fahrenheit). As the temperature drops, the relative humidity rises to more than 65 percent, and water droplets are formed.

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 Public Cloud Machine (OPCM) systems have been designed to function while mounted in a natural convection air flow. The following requirements must be followed to meet the environmental specification:

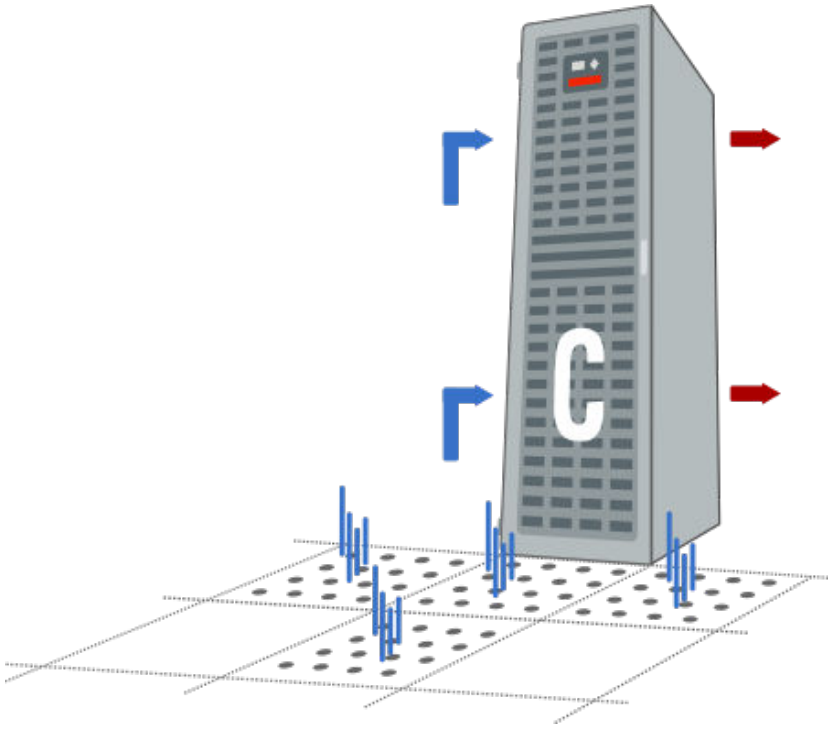
- Ensure there is adequate air flow through the server.
- Ensure the server has front-to-back cooling. The air inlet is at the front of the server, and the air is let out the rear.
- Allow a minimum clearance of 914 mm (36 inches) at the front of the server, and 914 mm (36 inches) at the rear of the server 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 air flow could result in a higher inlet temperature in the servers due to exhaust air recirculation. The following is the recommended number of floor tiles:

- Four floor tiles for OPCM model 1080.
- Three floor tiles for OPCM model 576.
- One floor tile for OPCM model 288.

The following figure shows an installation of the floor tiles for an OPCM model 1080 in a typical data center.

Figure 1-2 Typical Data Center Configuration for Perforated Floor Tiles



The following table describes the cooling and airflow maximum and typical requirements for OPCM:

Table 1-13 Cooling and airflow requirements for OPCM

Description	Model 288	Model 576	Model 1080
Maximum cooling	26397 BTU/hour, 27849 kJ/hour	45898 BTU/hour, 48422 kJ/hour	80297 BTU/hour, 84714 kJ/hour
Typical cooling	18478 BTU/hour, 19494 kJ/hour	32128 BTU/hour, 33896 kJ/hour	56208 BTU/hour, 59300 kJ/hour
Maximum airflow (front to back)	1222 CFM	2125 CFM	3717 CFM
Typical airflow (front to back)	855 CFM	1487 CFM	2602 CFM

If you are deploying the OPCM ZS3 storage expansion rack, review the following table describing cooling requirements:

Table 1-14 Cooling requirements for OPCM ZS3 Storage Expansion Rack

Description	Model 268	Model 536
Maximum cooling	22759 BTU/hour, 24012 kJ/hour	45518 BTU/hour, 48024 kJ/hour
Typical cooling	10834 BTU/hour, 11430 kJ/hour	21668 BTU/hour, 22860 kJ/hour

2

Network Requirements

This chapter describes the network requirements for Oracle Public Cloud Machine.

Topics

2.1 Network Requirements

Learn about the network requirements for OPCM.

10 GbE Network Requirements

The following table shows the minimum network requirements to install an Oracle Public Cloud Machine machine:

Table 2-1 OPCM 10 GbE Network Requirements.

Network Requirement	Description
Data center network services	• DNS entries for all physical components on `eth-admin` and control VM's `EoIB-management`. • NTP server. • Gateway.
Minimum 10 GbE uplinks to your data center	At least 2 uplinks for EoIB (Ethernet over InfiniBand) infrastructure service and client access networks.
External access service network VLANs	• `EoIB-OMS` (minimum /24, tagged VLAN). For communication between EMCC (Enterprise Manager Cloud Control) OMS and EM (Enterprise Manager) agents, Control virtual machines (VMs), and Guest VMs. • `EoIB-management` (minimum /26, tagged VLAN). For accessing IaaS API and VNC consoles of instances and for PaaS Engines. • `EoIB-public` (minimum /26, tagged VLAN). For communication with Integration Cloud Service (ICS) instances and for external routing of VMs and Virtual IPs (VIP). • `EoIB-dbaccess` (tagged VLAN). For accessing the external database for ICS. This network is required only if you subscribe to ICS. See Other Requirements for more information.

Table 2-1 (Cont.) OPCM 10 GbE Network Requirements.

Network Requirement	Description
External access client VLANs	• Minimum: 1 VLAN for tenant access (/24, tagged VLAN). • Recommendation: 1 VLAN per tenant for isolation.
Maximum 10 GbE network drops	• For OPCM model 1080: 32 • For model 576: 16 • For model 288: 16
Minimum 10 GbE network drops	• For OPCM model 1080: 4 • For model 576: 2 • For model 288: 2
Ethernet devices	10 Gb Ethernet switch, router, or NIC device that supports: SFP+ 10G-Base-SR Module, XFP 10G-Base-SR Module, or QSFP Optical Module. Connect the network drops to multiple 10GbE switches to ensure no single point of failure exists in the physical routing. The number of network connections from the gateway ports to the data center switches depend upon customer application throughput and network isolation requirements.
IP addresses	OPCM requires a large number of host names and IP addresses for the initial configuration. The number of IP addresses required for a particular network, such as the management network, depends on the type of system. In addition, all IP addresses must be statically assigned and not dynamically assigned (DHCP). Oracle technical representatives work with you to gather all the information needed for the network configuration, including host names and IP addresses used for the installation. Configure the new IP addresses in your existing networks only after you have completed to work on the configuration information with an Oracle representative.

1 GbE Network Requirements

Table 2-2 OPCM 1 GbE Network Requirements.

Network Requirement	Description
1 GbE network drops	1 network drop. If you require a redundant connection, Oracle can work with you for an additional network drop. All OPCM physical components connect to the internal Cisco switch that provides connectivity to your 1GbE management network for managing physical components and *dom0*.
1GbE management subnet	• Recommended minimum /24. • This network allows connectivity to the Ethernet management interface on OPCM physical components, such as compute nodes, storage nodes, their ILOMs, network switches, and power distribution units as well as the privileged control VMs.

2.2 Additional Requirements

Learn about additional network requirements for OPCM.

Ethernet Device Requirements

Before you begin, check that you have at least one 10 Gb Ethernet switch, router, or NIC device that supports any of the following:

- SFP+ 10G-Base-SR Module
- XFP 10G-Base-SR Module
- QSFP Optical Module

Oracle recommends connecting the network drops to multiple 10GbE switches to ensure no single point of failure exists in the physical routing.

10 GbE Network Drops

Table 2-3 Number of minimum and maximum of 10 GbE network drops.

Component/Item	Model 1080	Model 576	Model 288
Max 10 GbE network drops	32	16	16
Min 10 GbE network drops	4	2	2

1 GbE Network Drops

All OPCM physical components connect to the internal Cisco switch which intern needs to connect to customer 1GbE management network. The standard requirement is one network drop and if customer wants redundant connection, we can work with the customer for an additional network drop.

Oracle Advanced Support Gateway

Oracle Advanced Support Gateway (OASG) is the central enabling technology for OPCM to deliver cloud operations, remote monitoring, remote response and restoration, and patch deployment services.

The customer is responsible to provide permission for the internal firewall rules between the OASG and OPCM. See Firewall Rules Between the Gateway and Oracle Cloud Machine and Oracle Advanced Support Gateway Security Guide for more information.

3

Other Requirements

OPCM includes a wide range of Oracle Cloud services, such as Java Cloud Service, Database Cloud Service, Integration Cloud Service, and SOA Cloud Service with more to come. Based on the cloud services that are subscribed, there are some external dependencies for these services that customers must have.

Oracle Integration Cloud Service

If you subscribe to Integration Cloud Service (ICS), an external database is required at install time.

ICS creation and the flow of integrated services depend on the availability of an external database with the following characteristics:

- Oracle Database 11.2.0.x or later.
- Plain vanilla Real Application Clusters (RAC) database without any PDB and CDB.
- Oracle Linux 5.11 or other compatible version.
- 50 GB of available storage.
- Settings: `processes=1000, open_cursors=500, sessions=1400`
- A routable network to the database such as EoIB database access network.
- The external DB needs to be configured according to customer SLA requirements.

See Cloud Machine Documentation for more information about the Cloud Services available for OPCM.

Oracle Java Cloud Service

Oracle Java Cloud Service requires access to an existing relational database that contains the standard Oracle Fusion Middleware schemas. The schemas are required by Oracle Java Required Files (JRF).

You can use an on-premises database or a database that is deployed through Oracle Database Cloud Service running on OPCM.

The size and configuration of this database depends on the applications that are deployed on each JCS instance such as custom Java EE apps or Oracle Fusion Middleware and their own SLA.

Oracle Database Cloud Service

Deploying Database Cloud Service requires an OPCM ZS3 Storage Expansion Rack.

DBCS subscription requires to select one of the two available storage configuration options: ZS3 Model 286 or ZS3 Model 536.

The prerequisites for the ZS3 Storage expansion rack are:

- Physical space for the ZS3 rack that is adjacent to or within 50 m cable run length from the OCM X5-2 rack.
- Power and cooling based on the hardware specification.
- Additional IP addresses for Storage heads and ILOMs (4 for Model 286 or 8 for Model 536).

Oracle SOA Cloud Service

If you need to deploy Oracle SOA Cloud Service, verify the following requirements:

- Secure shell (SSH) public and private key pair.
- Access to a remote storage disk.
- Access to an existing relational database that contains the standard Oracle Fusion Middleware schemas. The schemas are required by Oracle Java Required Files (JRF).
- Access to a network through which the service instance will access the database.
- Access to a public network that will be used to access the service instance.
- Oracle Java Cloud Service.