



CHAPTER 1

Cisco Prime Performance 1.2 Installation Requirements

The following topics provide the hardware and software requirements for installing Cisco Prime Performance Manager 1.2:

- [Server Requirements, page 1-1](#)
- [Client Requirements, page 1-21](#)
- [Network Device Configuration, page 1-21](#)
- [Prime Performance Manager Ports, page 1-22](#)

Server Requirements

You can install Prime Performance Manager gateway and unit servers on the operating systems listed in [Table 1-1](#):

Table 1-1 *Supported Operating Systems*

Operating System	Version
Solaris	Oracle Solaris 10 ¹
	Oracle Solaris 11 ¹
Linux ²	Red Hat Enterprise Linux 5.0 Advanced Platform Update 3, Update 5, Update 7, or Update 8 ³⁴
	Red Hat Enterprise Linux 6.0, Update 2 ²

1. With the latest recommended patches from Oracle, Inc. See [Oracle Solaris Update Requirements, page 1-16](#) for the required Oracle Solaris updates.)
2. Only 64-bit Linux images are supported; 32-bit Linux images are not supported.
3. RHEL 5.8 requires the Prime Performance Manager 1.2.1 patch release.
4. See [Linux Update Requirements, page 1-16](#) for the required Linux updates.)



Note

VMWare environments are supported as long as the virtual machines meet the requirements provided in the following sections. VMWare deployments are not recommended for high-scale environments. High-scale environments should always use physical servers with direct disk access.

The Prime Performance Manager gateway and unit(s) can be installed on the same server (single deployment) or on separate servers (distributed deployments). Server and operating system requirements depend on the network size. Network sizes are based on the maximum number of:

- Devices
- Layer 3 pseudowires (PWE3s)
- Interfaces—The number of device interface table entries. This number is usually higher than number of physical ports because it includes pseudowires, virtual circuits, VLANs, and other virtual interfaces.

Table 1-2 shows the maximums used for the Prime Performance Manager server requirements for single and distributed deployments.

Table 1-2 Network Sizes for Planning Prime Performance Manager Server Requirements

Maximum Number	Single Deployment				Distributed Deployment		
	POC	Medium	Large	Very Large	Very Large	Extremely Large	Super Large
Devices	100	2,000	5,000	10,000	10,000	15,000	30,000
PWE3 links	500	10,000	270,000	540,000	540,000	860,000	1,622,280
Interfaces	5,000	100,000	815,000	1,630,000	1,630,000	2,470,000	4,891,560
Interfaces generating statistics	2,500	50,000	489,000	815,000	815,000	1,125,000	2,927,000

Server Requirements for Single Deployments

In a single Prime Performance Manager deployment, the gateway and unit are installed on the same server. Server requirements are based on the following criteria:

- Set of reports—CPU, memory, interface, and PWE3s.
- Report aging—You can change the aging for both statistics and CSV report files. The statistics and CSV report defaults are:
 - 15-minute—3 Days
 - Hourly—7 Days
 - Daily—31 Days
 - Weekly—365 Days
 - Monthly—1825 Days

Increasing retention time requires additional disk space. Smaller networks can easily increase the time retention in most cases. Larger networks require capacity planning for disk space usage needs.

For single-server deployments, the following additional disk space is required for every 1000 devices averaging 300 interfaces or PWE3s that can generate statistics for each additional day of retention for 15-minute and hourly reports:

- 3.2 GB for the database and reports
- 7.0 GB for backups



Note Adding retention days to daily, weekly, and monthly reports do not impact disk space as significantly as adding retention days to 15-minute and hourly reports.

- Hardware or ZFS RAID is recommended for production systems for partitions, storing the database, reports, and backups.
- For high-scale environments, increasing the gateway and unit server JVM heap size to 8-12 GB is recommended. You can change the JVM heap size with the ppm setsvrjvmsize command.

The following topics provide single deployment server requirements:

- [Proof of Concept Single Deployment Installation Requirements, page 1-3](#)
- [Medium Network Single Deployment Server Requirements, page 1-4](#)
- [Large Network Single Deployment Server Requirements, page 1-6](#)
- [Very Large Network Distributed Deployment Server Requirements, page 1-10](#)

Proof of Concept Single Deployment Installation Requirements

[Table 1-3](#) shows the single deployment proof of concept Oracle Solaris server requirements. (See [Table 1-2](#) for network size details.)

Table 1-3 Proof of Concept Network Single Deployment Oracle Solaris Server Requirements

Item	Specifications
Hardware	<ul style="list-style-type: none"> • Sparc T3-1 or equivalent for non-NEBs-compliant systems • Sparc T5120 or equivalent for non-NEBs-compliant systems • Sparc Netra T5220 or equivalent for NEBs-compliant systems • Sparc Netra T3-1 or equivalent for NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Oracle Solaris versions.
CPU Type	One of the following: <ul style="list-style-type: none"> • 4-core (T5220) • 8-core (T512x) • 16-core (T3-1)
CPU Number	One
CPU Speed	One of the following: <ul style="list-style-type: none"> • 1.4 GHz (T5120) • 1.2 GHz (T5220) • 1.65 GHz (T3-1)
Memory (RAM)	8 GB or greater
Swap Space	8 GB or greater
Storage	One 300 GB SAS 10K RPM drive

[Table 1-4](#) lists the proof of concept network single deployment Linux server requirements. (See [Table 1-2](#) for network size details.)

Table 1-4 Proof of Concept Network Single Deployment Linux Server Requirements

Item	Specifications
Hardware	<ul style="list-style-type: none"> • Cisco Unified Computing System (UCS) C200M2 for non-NEBs-compliant systems • Oracle Sun Netra X4250 or equivalent for NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Linux server versions.
CPU Type	One of the following: <ul style="list-style-type: none"> • 4-core (X4250) • 6-core (Cisco UCS C200M2 or Cisco UCS C210M2)
CPU Number	One
CPU Speed	2.13 GHz (minimum); 3.0 GHz (recommended)
Memory (RAM)	8 GB or greater
Swap Space	8 GB or greater
Storage	One 146 GB SAS 15K RPM drive

Medium Network Single Deployment Server Requirements

[Table 1-5](#) lists the medium network single deployment Linux server requirements. (See [Table 1-2](#) for network size details.)

Table 1-5 Medium Network Single Deployment Linux Server Requirements

Item	Specifications
Hardware	<ul style="list-style-type: none"> • Cisco Unified Computing System (UCS) C200M2 or Cisco UCS C210M2 for non-NEBs-compliant systems • Sun Netra X4250 or equivalent for NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Linux versions.
CPU Type	One of the following: <ul style="list-style-type: none"> • 4-core (X4250) • 6-core (Cisco UCS C200M2 or Cisco UCS C210M2)
CPU Number	Two
CPU Speed	2.13 GHz (minimum); 3.0 GHz (recommended)
Memory (RAM)	24 GB or greater

Table 1-5 Medium Network Single Deployment Linux Server Requirements (continued)

Item	Specifications
Swap Space	12 GB or greater
Storage	<ul style="list-style-type: none"> • Cisco UCS C210M2—Expansion, Performance, and Reliability Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID10: Four 146 GB SAS 15K RPM drives – For backups using RAID10: Four 146 GB SAS 15K RPM drives – Requires usage Of LSI MegaRAID controllers – Dual PowerSupply • Cisco UCS C200M2—Expansion and Performance Option <ul style="list-style-type: none"> – For OS One 146 GB SAS 15K RPM drive – For database using RAID0: Two 300 GB SAS 15K RPM drives – For backups: One 300 GB SAS 15K RPM drive – Uses LSI Mezzanine RAID controller • Cisco UCS C200M2—Performance Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID0: Two 146 GB SAS 15K RPM drives – For backups: One 300 GB SAS 15K RPM drive – Uses LSI Mezzanine RAID controller • Cisco UCS C200M2—Basic Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database: One 146 GB SAS 15K RPM drives – For backups: One 300 GB SAS 15K RPM drive • Oracle Netra X4250—Basic Option <ul style="list-style-type: none"> – For OS: One 300 GB SAS 10K RPM drive – For database using RAID0: Two 300 GB SAS 10K RPM drives – For backups: One 300 GB SAS 10K RPM drive

Table 1-6 shows the single deployment medium network Oracle Solaris server requirements. (See Table 1-2 for network size details.)

Table 1-6 Medium Network Single Deployment Oracle Solaris Server Requirements

Item	Specifications
Hardware	<ul style="list-style-type: none"> • Sparc T3-1 or equivalent for non-NEBs-compliant systems • Sparc T5120 or equivalent for non-NEBs-compliant systems • Sparc Netra T5220 or equivalent for NEBs-compliant systems • Sparc Netra T3-1 or equivalent for NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Oracle Solaris versions.

Table 1-6 Medium Network Single Deployment Oracle Solaris Server Requirements (continued)

Item	Specifications
CPU Type	One of the following: <ul style="list-style-type: none"> • 4-core (T5220) • 8-core (T512x) • 16-core (T3-1)
CPU Number	One
CPU Speed	One of the following: <ul style="list-style-type: none"> • 1.4 GHz (T5120) • 1.2 GHz (T5220) • 1.65 GHz (T3-1)
Memory (RAM)	12 GB or greater
Swap Space	12 GB or greater
Storage	<ul style="list-style-type: none"> • Oracle Sparc—Expansion and Performance Option <ul style="list-style-type: none"> – For OS: One 300 GB SAS 10K RPM drive – For database using ZFS RAID: Four 300 GB SAS 10K RPM drives – For backups using ZFS pool: Two 300 GB SAS 10K RPM drives • Oracle Sparc—Basic Option <ul style="list-style-type: none"> – For OS: One 300 GB SAS 10K RPM drive – For database using ZFS pool: Two 300 GB SAS 10K RPM drives – For backups: One 300 GB SAS 10K RPM drives

Large Network Single Deployment Server Requirements

[Table 1-7](#) shows the large network Linux server requirements. (See [Table 1-2](#) for network size details.)

Table 1-7 Large Network Single Deployment Linux Server Requirements

Item	Specifications
Hardware	Cisco UCS C210M2 for non-NEBs-compliant Systems
Software	See Table 1-1 on page 1-1 for supported Linux server versions.
CPU Type	6-core (Cisco UCS C210M2)
CPU Number	Two
CPU Speed	3.0 GHz
Memory (RAM)	64 GB or greater

Table 1-7 Large Network Single Deployment Linux Server Requirements (continued)

Item	Specifications
Swap Space	32 GB or greater
Storage	<ul style="list-style-type: none"> • Cisco UCS C210M2—Expansion, Performance, and Reliability Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID10: Six 146 GB SAS 15K RPM drives – For backups using RAID10: Four 146 GB SAS 10K RPM drives – Requires usage Of LSI MegaRAID controllers – Dual PowerSupply • Cisco UCS C210M2—Performance Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For CSV reports and database using RAID10: Two 146 GB SAS 15K RPM drives – For backups: Two 146 GB SAS 10K RPM drives – Requires Usage Of LSI MegaRAID controllers • Cisco UCS C210M2—Basic Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For CSV reports and database using RAID10: Two 146 GB SAS 10K RPM drives – For backups using RAID10: Two 146 GB SAS 10K RPM drive – Uses LSI Mezzanine RAID controller

Table 1-8 shows the large network Oracle Solaris server requirements.

Table 1-8 Large Network Single Deployment Oracle Solaris Server Requirements

Item	Specifications
Hardware	<ul style="list-style-type: none"> • Sparc T3-1 or equivalent for non-NEBs-compliant systems • Sparc Netra T3-1 or equivalent for NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Oracle Solaris versions.
CPU Type	16-core (T3-1)
CPU Number	One
CPU Speed	1.65 GHz (T3-1)
Memory (RAM)	64 GB or greater

Table 1-8 Large Network Single Deployment Oracle Solaris Server Requirements (continued)

Item	Specifications
Swap Space	32 GB or greater
Storage	<ul style="list-style-type: none"> • Oracle Sparc—Expansion and Performance Option <ul style="list-style-type: none"> – For OS: One 300 GB SAS 10K RPM drive – For database using ZFS RAID: Six 300 GB SAS 10K RPM drives – For backups using ZFS Pool: Two 300 GB SAS 10K RPM drives • Oracle Sparc—Basic Option <ul style="list-style-type: none"> – For OS: One 300 GB SAS 10K RPM drive – For database using ZFS RAID: Four 300 GB SAS 10K RPM drives – For backups using ZFS Pool: Two 300 GB SAS 10K RPM drives

Very Large Network Single Deployment Server Requirements

Table 1-9 shows the very large network Linux server requirements. (See Table 1-2 for network size details.)

Table 1-9 Very Large Network Single Deployment Linux Server Requirements

Item	Specifications
Hardware	Cisco UCS C210M2 for non-NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Linux server versions.
CPU Type	6-core (Cisco UCS C210M2)
CPU Number	Two
CPU Speed	3.0 GHz (minimum)
Memory (RAM)	96 GB or greater
Swap Space	32 GB or greater
Storage	<ul style="list-style-type: none"> • Cisco UCS C210M2—Performance and Reliability Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID10: Eight 146 GB SAS 15K RPM drives – For backups using RAID10: Six 146 GB SAS 10K RPM drives – Requires usage of LSI MegaRAID controllers – Dual Power Supply • Cisco UCS C210M2—Basic Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For CSV reports and database using RAID10: Four 146 GB SAS 10K RPM drives – For backups using RAID0: Four 146 GB SAS 10K RPM drives – Requires usage of LSI MegaRAID controllers

Server Requirements for Distributed Deployment Installations

In a Prime Performance Manager distributed deployment, the gateway and units are installed on different servers. Server requirements are based on the following criteria:

- Reports:
 - Availability—interfaces, pseudowires, and SNMP Ping.
 - Resources—CPU and memory
 - Transport statistics—interface and pseudowire.
- Report aging—You can change the aging for both statistics and CSV report files. The statistics and CSV report defaults are:
 - 15-minute—3 Days
 - Hourly—7 Days
 - Daily—31 Days
 - Weekly—365 Days
 - Monthly—1825 Days

For distributed deployments, the following additional disk space is required for every 1000 devices averaging 300 interfaces or PWE3s that can generate statistics, for each additional day of retention for 15-minute and hourly reports:

For gateways:

- 1.2 GB for database and reports
- 2.4 GB for backups

For units:

- 2.4 GB for database and reports
- 4.8 GB for backups

**Note**

Adding retention days to daily, weekly, and monthly reports does not impact disk space as significantly as adding retention days to 15-minute and hourly reports.

- Hardware or ZFS RAID is recommended for production systems for partitions, storing the database, reports, and backups.
- For high-scale environments, increasing the gateway and unit server JVM heap size to 8-12 GB is recommended. You can change the JVM heap size with the ppm setsvrjvmsize command.

The following topics provide the distributed network server requirements:

- [Very Large Network Distributed Deployment Server Requirements, page 1-10](#)
- [Extremely Large Network Distributed Deployment Server Requirements, page 1-11](#)

Very Large Network Distributed Deployment Server Requirements

Table 1-10 shows the very large network gateway server requirements.

Table 1-10 *Very Large Network Gateway and Unit With 5,000 Devices Requirements*

Item	Specifications
Hardware	Cisco UCS C210 for non-NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Linux versions.
CPU Type	6-core (Cisco UCS C210)
CPU Number	Two
CPU Speed	3.0 GHz minimum
Memory (RAM)	64 GB or greater
Swap Space	32 GB or greater
Storage	<ul style="list-style-type: none"> • Cisco UCS C210M2—Performance and Reliability Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For CSV Reports and database using RAID10: Eight 146GB SAS 15K RPM drives – For backups using RAID10: Six 146GB SAS 15K RPM drives – Requires usage of LSI MegaRAID controllers – Dual PowerSupply • Cisco UCS C210—Performance Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For CSV Reports and database using RAID0: Six 146GB SAS 15K RPM drives – For backups using RAID0: Four 146 GB SAS 15K RPM drive – Uses LSI Mezzanine RAID controller • Cisco UCS C210M2—Basic Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For CSV Reports and database using RAID0: Two 146GB SAS 15K RPM drives – For backups: Two 146 GB SAS 15K RPM drive

Table 1-11 shows the very large network server requirements for a unit with 5,000 devices.

Table 1-11 *Very Large Network Server Requirements for a Unit with 5,000 Devices*

Item	Specifications
Hardware	Cisco UCS C210M2 for non-NEBs-compliant Systems
Software	See Table 1-1 on page 1-1 for supported Linux versions.
CPU Type	6-core (UCS C210M2)
CPU Number	Two

Table 1-11 Very Large Network Server Requirements for a Unit with 5,000 Devices (continued)

Item	Specifications
CPU Speed	3.0 GHz minimum
Memory (RAM)	48 GB or greater
Swap Space	32 GB or greater
Storage	<ul style="list-style-type: none"> • Cisco UCS C210M2—Expansion, Performance and Reliability Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID10: Six 146 GB SAS 15K RPM drives – For backups using RAID10: Four 146 GB SAS 10K RPM drives – Requires usage of LSI MegaRAID controllers – Dual PowerSupply • Cisco UCS C210M2—Performance Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID10: Four 146 GB SAS 15K RPM drives – For backups using RAID10: Two 146 GB SAS 10K RPM drives – Requires usage of LSI MegaRAID controllers • Cisco UCS C210M2—Basic Option <ul style="list-style-type: none"> – For OS: One 146GB SAS 15K RPM drive – For database using RAID10: Two 146 GB SAS 10K RPM drives – For backups using RAID0: Two 146 GB SAS 10K RPM drives – Requires usage of LSI MegaRAID controllers

Extremely Large Network Distributed Deployment Server Requirements

Table 1-12 shows the extremely large network gateway server requirements.

Table 1-12 Extremely Large Network Gateway Server Requirements

Item	Specifications
Hardware	Cisco UCS C210 for non-NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Linux versions.
CPU Type	6-core (Cisco UCS C210)
CPU Number	Two
CPU Speed	3.0 GHz minimum
Memory (RAM)	64 GB or greater
Swap Space	32 GB or greater

Table 1-12 *Extremely Large Network Gateway Server Requirements (continued)*

Item	Specifications
Storage	<ul style="list-style-type: none"> • Cisco UCS C210M2—Performance and Reliability Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database: One 146 GB SAS 15K RPM drives – For CSV Reports using RAID10: Six 146 GB SAS 15K RPM drives – For backups using RAID10: Six 146 GB SAS 15K RPM drives – Requires usage of LSI MegaRAID controllers – Dual PowerSupply • Cisco UCS C200M2—Basic Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database: One 146 GB SAS 15K RPM drives – For CSV Reports: Four 146GB SAS 15K RPM drives – For backups: Two 146 GB SAS 15K RPM drive

Table 1-13 shows the extremely large network server requirements for a unit with 10,000 devices:

Table 1-13 *Extremely Large Network Server Requirements for a Unit with 10,000 Devices*

Item	Specifications
Hardware	Cisco UCS C210M2 for non-NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Linux versions.
CPU Type	6-core (Cisco UCS C210M2)
CPU Number	Two
CPU Speed	3.0 GHz minimum
Memory (RAM)	64 GB or greater
Swap Space	32 GB or greater
Storage	<ul style="list-style-type: none"> • Cisco UCS C210M2—Expansion, Performance, and Reliability Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID10: Eight 146 GB SAS 15K RPM drives – For backups using RAID10: Six 146 GB SAS 10K RPM drives – Requires usage of LSI MegaRAID controllers – Dual PowerSupply • Cisco UCS C210M2—Basic Option With Additional Performance <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID0: Four 146 GB SAS 10K RPM drives – For backups: Two 146 GB SAS 10K RPM drive – Uses LSI Mezzanine RAID controller

Table 1-14 shows the extremely large network server requirements for a unit with 5,000 devices.

Table 1-14 *Extremely Large Network Server Requirements for a Unit with 5,000 Devices*

Item	Specifications
Hardware	Cisco UCS C210M2 for non-NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Linux versions.
CPU Type	6-core (Cisco UCS C210M2)
CPU Number	Two
CPU Speed	3.0 GHz minimum
Memory (RAM)	48 GB or greater
Swap Space	32 GB or greater
Storage	<ul style="list-style-type: none"> • Cisco UCS C210M2—Expansion, Performance, and Reliability Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID10: Six 146 GB SAS 15K RPM drives – For backups using RAID10: Four 146 GB SAS 10K RPM drives – Requires usage of LSI MegaRAID controllers – Dual power supply • Cisco UCS C210M2—Performance Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID10: Four 146 GB SAS 15K RPM drives – For backups using RAID10: Two 146 GB SAS 10K RPM drives – Requires usage of LSI MegaRAID controllers – Dual power supply • Cisco UCS C210M2—Basic Option <ul style="list-style-type: none"> – For OS: One 146GB SAS 15K RPM drive – For database using RAID10: Two 146 GB SAS 10K RPM drives – For backups using RAID0: Two 146 GB SAS 10K RPM drives – Requires usage of LSI MegaRAID controllers

Super Large Network Distributed Deployment Server Requirements

Table 1-15 shows the super large network gateway server requirements.

Table 1-15 *Super Large Network Gateway Server Requirements*

Item	Specifications
Hardware	Cisco UCS C210 or Cisco UCS C200M2 for non-NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Linux versions.
CPU Type	6-core (Cisco UCS C210)
CPU Number	Two

Table 1-15 Super Large Network Gateway Server Requirements (continued)

Item	Specifications
CPU Speed	3.0 GHz minimum
Memory (RAM)	96 GB or greater
Swap Space	32 GB or greater
Storage	<ul style="list-style-type: none"> • Cisco UCS C210M2—Performance and Reliability Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For CSV Reports using RAID10: Eight 146 GB SAS 15K RPM drives – For backups using RAID10: Six 146 GB SAS 15K RPM drives – Requires usage of LSI MegaRAID controllers – Dual PowerSupply • Cisco UCS C210M2—Basic Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For CSV Reports: Six 146 GB SAS 10K RPM drives – For backups: Two 146 GB SAS 10K RPM drive – Requires usage of LSI MegaRAID controllers

Table 1-16 shows the super large network server requirements for a unit with 10,000 devices:

Table 1-16 Super Large Network Server Requirements for a Unit with 10,000 Devices

Item	Specifications
Hardware	Cisco UCS C210M2 for non-NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Linux server versions.
CPU Type	6-core (Cisco UCS C210M2)
CPU Number	Two
CPU Speed	3.0 GHz minimum
Memory (RAM)	64 GB or greater
Swap Space	32 GB or greater

Table 1-16 Super Large Network Server Requirements for a Unit with 10,000 Devices (continued)

Item	Specifications
Storage	<ul style="list-style-type: none"> • Cisco UCS C210M2—Expansion, Performance, and Reliability Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID10: Eight 146 GB SAS 15K RPM drives – For backups using RAID10: Six 146 GB SAS 15K RPM drives – Requires usage of LSI MegaRAID controllers – Dual power supply • Cisco UCS C210M2—Basic Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID0: Four 146 GB SAS 10K RPM drives – For backups: Two 146 GB SAS 10K RPM drive – Uses LSI Mezzanine RAID controller

[Table 1-17](#) shows the super large network server requirements for a unit with 5,000 devices.

Table 1-17 Super Large Network Server Requirements for a Unit with 5,000 Devices

Item	Specifications
Hardware	Cisco UCS C210M2 for non-NEBs-compliant systems
Software	See Table 1-1 on page 1-1 for supported Linux server versions.
CPU Type	6-core (Cisco UCS C210M2)
CPU Number	Two
CPU Speed	3.0 GHz minimum
Memory (RAM)	48 GB or greater
Swap Space	32 GB or greater

Table 1-17 Super Large Network Server Requirements for a Unit with 5,000 Devices (continued)

Item	Specifications
Storage	<ul style="list-style-type: none"> • Cisco UCS C210M2—Expansion, Performance, and Reliability Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID10: Six 146 GB SAS 15K RPM drives – For backups using RAID10: Four 146 GB SAS 10K RPM drives – Requires usage of LSI MegaRAID controllers – Dual power supply • Cisco UCS C210M2—Performance Option <ul style="list-style-type: none"> – For OS: One 146 GB SAS 15K RPM drive – For database using RAID10: Four 146 GB SAS 15K RPM drives – For backups using RAID10: Two 146 GB SAS 10K RPM drives – Requires usage of LSI MegaRAID controllers • Cisco UCS C210M2—Basic Option <ul style="list-style-type: none"> – For OS: One 146GB SAS 15K RPM drive – For database using RAID10: Four 146 GB SAS 10K RPM drives – For backups using RAID0: Two 146 GB SAS 10K RPM drives – Requires usage of LSI MegaRAID controllers

Oracle Solaris Update Requirements

If you install Prime Performance Manager on Oracle Solaris, always apply the latest patches for your Solaris version.



Note

If the required patches are not installed, the Prime Performance Manager might not operate as expected.

Prime Performance Manager checks for these patches automatically, and reports any that are missing.

You can download the Oracle Solaris patches from the Oracle support site:

<https://support.oracle.com/CSP/ui/flash.html>



Note

The J2SE Patch Cluster is discontinued. Oracle recommends the Solaris Recommends Patch Cluster in its place. See the Oracle website for information.

Linux Update Requirements

Prime Performance Manager 1.2 requires Red Hat Enterprise Linux version 5.0 Advanced Platform, Update 3 or later, or CentOS equivalent and the following additional RPM packages if not already installed:

- crontabs-1.10-7

- vixie-cron-4.1-49
- bzip2-libs-1.0.3
- ksh-20080202-2
- glibc-2.5
- bc-1.06-21
- bind-utils-9.3.4-10
- time-1.7-27

If you are running Red Hat Enterprise Linux Version 6 Update 2 or later.

Prime Performance Manager 1.2 requires the following additional RPM packages, if not already installed:

- ksh-20100621-12
- glibc-2.12-1.47
- bzip2-libs-1.0.5-7.el6_0.i686

If running SELinux (Security-Enhanced Linux) and you enable Prime Performance Manager user access and SSL, you must run the following command to enable loading of the SSL shared library from Prime Performance Manager:

```
chcon -t textrel_shlib_t '/opt/CSCOppm-gw/apache/libexec/libssl.so'
```

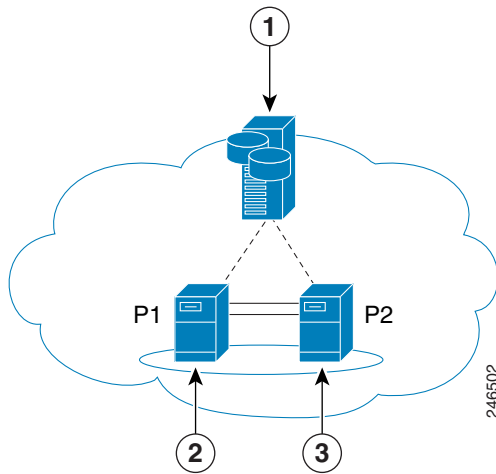
Gateway High Availability Installation Requirements

The Prime Performance Manager gateway local redundancy HA configuration has the following characteristics:

- The gateway is installed in a dual-node cluster. [Figure 1-1](#) shows a basic dual-node cluster local redundancy configuration.
- The Red Hat Cluster Suite (RHCS) must be installed on both cluster nodes. RHCS manages the local HA. (See the [Gateway High Availability Requirements, page 1-19](#) for more information.)
- RHCS requires a disk resource that is mountable from both nodes,
- The Prime Performance Manager installer places the gateway on the node where you ran the installation. After installation, you can relocate them as needed.
- The gateway is always mounted with the external shared storage. RHCS runs the services and continuously obtains the cluster status by running a set of scripts. Prime Performance Manager doesn't recognize RHCS. If a problem occurs, RHCS unmounts, then mounts the appropriate gateway and database. Therefore, every node in the RHCS gateway HA must be able to mount the storage.
- Each service has its own virtual IP address (floating IP). This means Prime Performance Manager clients treat failovers or switchovers like a local service restart.
- Only one instance of the Prime Performance Manager files exists, and this is located on the shared storage. Duplicate home directories are created on each node as place holders. If a switchover occurs, the storage unmounts on one node and mounts on the other.
- Local redundancy configuration requires a fencing hardware unit for cutting a node off from the shared storage. Fencing ensures data integrity and prevents a "split brain" scenario. When this occurs, the servers are disconnected from each other, and each assumes the other server failed. If a failure occurs, the cut off can be performed, for example, by powering off the node with a remote

power switch, disabling a switch channel, or revoking a host's SCSI 3 reservations. If any problem with cluster node occurs, RHCS invokes the fencing device with the peer and waits for the success signal.

Figure 1-1 Prime Performance Manager Gateway Dual-Node Local Redundancy Cluster



1	External storage	3	Local cluster Node 2
2	Local cluster Node 1		

RHCS Components and Functionality

RHCS is included with Red Hat Enterprise Linux 5.5 (RHEL 5.5), 5.7 (RHEL 5.7), 5.8 (RHEL 5.8 Advanced Program). (RHEL 5.8 requires the Prime Performance Manager 1.2.1 patch release.) The RHCS cluster infrastructure provides the basic functions for a group of computers (nodes) to work together as a cluster. The cluster infrastructure performs the following functions:

- Cluster management
- Lock management
- Fencing
- Cluster configuration management

RHCS has the following components:

- **Cluster infrastructure**—Provides fundamental functions for nodes to work together as a cluster: configuration-file management, membership management, lock management, and fencing.
- **High Availability Service Management**—Provides failover of services from one cluster node to another when a node becomes inoperative.
- **Cluster administration tools**—Provides configuration and management tools for setting up, configuring, and managing a Red Hat cluster including the cluster infrastructure components, the high availability and service management components, and storage.

Cluster services include a set of resources grouped together. These include Filesystem, IP address, and Script. The cluster stops, starts, relocates and monitors a service based upon its configuration. The Script resource is an SysV init script with stop(), start() and status() capabilities.

The main Red Hat cluster utilities include:

- `clustat`—Displays the cluster status.
- `clusvcadm`—Managers the cluster.

Additional RHCS information can be found at the Red Hat website: <http://www.redhat.com/>.

Supported RHCS Fencing Options

A fencing device cuts a node off from shared storage to ensure data integrity. The cut off can be performed by, for example, powering off the node with a remote power switch, disabling a switch port fibre channel, or by revoking a host's SCSI 3 reservations.

The supported fencing options are:

- `fence_ipmilan`—Intelligent Platform Management Interface (IPMI) v1.5 or higher compliant devices over a LAN.
- `fence_manual`—Assigns the manual fencing agent. This agent is temporary and should not be used in production because it does not perform automated actions. If a cluster problem occurs, you must manually disconnect the node and storage, or you must use another fencing agent to disconnect them. If you choose this option during the installation because you want to add a different Red Hat-supported fencing device, for example, `fence_vmware_soap` or `fence_ilo`, change the fencing device after installation using the RHCS GUI.



Note

The manual fencing agent option is only available in the Prime Performance Manager 1.2.1 release.



Note

To provision and manage dual-node cluster fencing devices, follow the RHCS user documentation. General information about the RHCS web GUI is provided in [Gateway High Availability Installation Requirements, page 1-17](#). However, see the Red Hat *Conga User Guide* for complete information about using the RHCS GUI.



Note

To prevent fencing loops, the cluster interconnect and power fencing (for example, `ipmilan`) should use the same network, such as `bond0`.

Gateway High Availability Requirements

[Table 1-18](#) shows the RHCS local HA core requirements.

Table 1-18 Prime Performance Manager RHCS Local Redundancy HA Gateway Requirements

Area	Requirement
Operating System	Red Hat Enterprise for Linux, 5.5, 5.7, or 5.8, x86_64 with the Red Hat Clustering Suite. (RHEL 5.8 requires the Prime Performance Manager 1.2.1 patch release.)
Hardware	RHEL 5.5, 5.7, or 5.8 certified platform with fencing capabilities. Note Hardware installation with no single point of failure is recommended. See Figure 1-2 for an example.

Table 1-18 Prime Performance Manager RHCS Local Redundancy HA Gateway Requirements

Area	Requirement
Network	<ul style="list-style-type: none"> Cluster nodes must be able to communicate with each other using multicast. Each network switch and associated networking equipment in a Red Hat cluster must be configured to enable multicast addresses and support IGMP. Without multicase and IGMP, not all nodes can participate in a cluster, causing the cluster to fail. Network timing must be configured.
Storage	RHCS requires a shared storage accessible from all cluster nodes.
File system	ext3
Disk space	5 GB under /tmp is required for installation

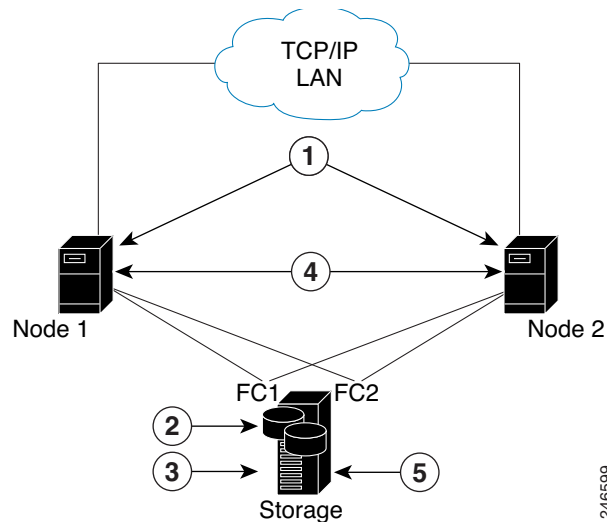
RHCS requirements include:

- The same subnet must be assigned to all nodes including all services (virtual IPs in the same subnet).
- All nodes must have RHEL 5.5, 5.7, or 5.8 installed. (RHEL 5.8 requires the Prime Performance Manager 1.2.1 patch release.)
- The gateway cannot utilize IPv6 addresses. (This is an RHCS restriction.)
- All systems must be homogeneous with the same configuration versions and packages.
- Shared storage should not be auto-mounted because RHCS performs the mounting. Use one partition for each cluster service. For a single shared disk, use a single partition for each service on the same disk. In other words, the shared storage should not appear in /etc/fstab.
- All shared storage units must be configured with a label. RHCS uses the label to mount and unmount storage.
- Virtual IP addresses must be assigned for each service. IP addresses assigned to services should not be attached to any server. RHCS will manage them, that is, add and remove them from the server running the service.
- Fencing devices must be deployed. The ipmilan fencing type is supported.
- Verify that the multicast communication is not blocked by a firewall.

Hardware installation designed to avoid a single point of failure is strongly recommended. Hardware elements designed to do this, shown in [Figure 1-2](#), include:

- Disk mirroring at the storage location.
- Redundant RAID controllers.
- Redundant storage and gateway power supplies.
- Dual NICs on both gateways.
- Separate NIC connections to switches.
- NIC bonding in active/backup mode.

Figure 1-2 Local Redundancy Hardware Installation to Avoid Single Points of Failure



1	Dual NICs on both gateways	4	NIC bonding (active/backup mode)
2	Disk mirroring	5	Each NIC connects to separate switch
3	Redundant RAID controllers		

Client Requirements

Prime Performance Manager clients do not require a separate installation. Clients can access using a web browsers. The following browsers are supported.

- Microsoft Internet Explorer 8.0 or greater (Windows)
- Firefox 7 or greater (Solaris, Linux, and Windows)
- Safari and Chrome—Not formally tested but widely used.

Other client requirements:

- The minimum screen resolution should be set to 1280 x 960.
- The hostname configured on Prime Performance Manager gateway must be resolvable to an IP address on the client machine using DNS or local hosts file.

Network Device Configuration

Network devices must have two-way IP connectivity with the Prime Performance Manager units. Each device must be accessible from the Prime Performance Manager unit. Configure devices to use SNMP community names. Prime Performance Manager requires that the names be at least read-only (RO). Read-write (RW) names can also be used. To implement these requirements, enter the following IOS commands on all Prime Performance Manager-managed devices:

```
snmp-server community snmp community string RO 1
```

In addition to SNMP, Telnet or SSH must be enabled on the device so that certain reports, such as Y.1731 and Ethernet Flow Point, which are based on PAL, can work. For more information about these commands, see <http://www.cisco.com/univercd/cc/td/doc/product/software/ios122>.

Enter the Telnet or SSH credentials in Prime Performance Manager for each device. For information, see the *Cisco Prime Performance Manager 1.2 User Guide*.

Prime Performance Manager Ports

Table 1-19 lists the default ports used by the Prime Performance Manager gateway.

Table 1-19 Ports Used by the Prime Performance Manager Gateway

Function	Port
RMI Registry	45742
Login Server	45752
Client	46173-46273 (The range depends on the number of expected units)
HTTP Web Server	4440
Data Server	45751

The Prime Performance Manager unit must know the ports that are used by the Prime Performance Manager gateway. Table 1-20 lists the default ports used by the Prime Performance Manager unit.

Table 1-20 Ports Used by the Prime Performance Manager Unit

Function	Port
Web Server	5440
RMI Registry Port	55742
Data Server Port	55751
Login Server Port	55752
Client Port	56173

Sometimes the default ports cannot be used because they are used by other system functions. If the Prime Performance Manager gateway uses ports not listed in Table 1-19, specify the ports during the Prime Performance Manager unit installation.

No additional configuration is required if a unit uses a non-default port.

During installation, Prime Performance Manager will identify port conflicts. To find available TCP ports, you can enter the following command:

```
Solaris: netstat -a -n -f inet -P tcp
Linux: netstat -a -n -t
```

If you use an alternate port, do not use Ports 1 through 1023. These are reserved for system processes. For more information about Prime Performance Manager ports, see the *Cisco Prime Performance Manager 1.2 User Guide*.

**Note**

In most cases, the default ports will be fine and you will not need to customize the ports that Prime Performance Manager uses.

Permissible IPv4 and IPv6 Addresses

Prime Performance Manager gateways and units support dual stack IP address deployments. [Table 1-21](#) lists the permissible IPv4 and IPv6 gateway and unit dual stack deployments.

Table 1-21 Permissible Dual Stack Deployments

Gateway		Unit		
IP Stack	Bind Server to:	IP Stack	Bind Server To:	Connect to Gateway
Single	IPv4	Single	IPv4	IPv4
		Dual	IPv4	IPv4
	IPv6	Single	IPv6	IPv6
		Dual	IPv6	IPv6
Dual	IPv4	Single	IPv4	IPv4
		Dual	IPv4	IPv4
			IPv6	IPv6
	IPv6	Single	IPv6	IPv6
		Dual	IPv6	IPv6
			IPv4	IPv4

