Cisco Prime for IP NGN 1.1 Sizing and Upgrade Guide

Revised: July 1, 2013, OL-27492-01

1 Preface

This guide lists the baseline system requirements for all components in the Cisco Prime Carrier Management 1.1 suite. Cisco Prime for IP Next Generation Network 1.1 (Prime for IP NGN 1.1) is an architecture supported by the Prime Carrier Management suite.

This guide also provides the high-level tasks to upgrade the Prime Carrier Management suite from 1.0 to 1.1.

The primary audience for this guide is network operations personnel and system administrators. This guide assumes that you are familiar with the following products and topics:

- Basic internetworking terminology and concepts
- Network topology and protocols
- Microsoft Windows 7 and Windows XP
- Solaris and Linux administration
- Oracle database administration
- Telecommunication Management Network (TMN) architecture model

Related Documentation

See the *Cisco Prime for IP NGN 1.1 Documentation Overview* for a list of related guides.

Note We sometimes update the documentation after original publication. Therefore, you should review the documentation on Cisco.com for any updates.

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

Subscribe to the *What's New in Cisco Product Documentation* as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service. Cisco currently supports RSS version 2.0.

2 System Requirements for the Prime Carrier Management 1.1 Suite Components

This section lists suite-level sizing guidelines for small, medium, and large networks. For extremely large or high-end networks, refer to the domain manager documentation or contact your account representative.

Deployment Sizing

Table 1 lists the typical deployment size for each suite component in small, medium, and large networks.

The deployment sizing assumes that the devices are distributed as follows:

- Prime Central, Prime Network, and Prime Provisioning—Carrier Ethernet (CE), Multiprotocol Label Switching (MPLS), or IP Radio Access Network (RAN):
  - CE: 2% provider devices, 8% network provider edge, 80% user provider edge, 10% customer edge.

  - MPLS: 5% core routers, 95% customer premises equipment.
  - IP RAN: 15% aggregation, 30% cell sites, 55% Layer 2 switches.
- Prime Optical:
  - Small network—Up to 200 devices with 100 links, 5000 circuits, and 20,000 interfaces generating statistics.
  - Medium network—Up to 500 devices with 250 links, 15,000 circuits, and 50,000 interfaces generating statistics.
  - Large network—Up to 2000 devices with 1000 links, 50,000 circuits, and 200,000 interfaces generating statistics.
- Prime Performance Manager:
  - Small network—Up to 200 devices with up to 500 PWE3 links, 5000 interfaces, and 2500 interfaces generating statistics.
  - Medium network—Up to 2000 devices with up to 10,000 PWE3 links, 100,000 interfaces, and 50,000 interfaces generating statistics.
  - Large network—Up to 5000 devices with up to 75,000 PWE3 links, 270,000 interfaces, and 815,000 interfaces generating statistics.

Table 1 Deployment Sizing Matrix

Domain Manager	Maximum No. of Devices	Maximum No. of Events per Second[1, 2]
Small Network		
Prime Central	200 devices	5
Prime Network	200 devices	20
Prime Optical	200 devices	10
Prime Performance Manager	200 devices	—
Prime Provisioning	200 devices	—
Medium Network		
Prime Central	2000 devices	10
Prime Network	2000 devices	50
Prime Optical	500 devices	30
Prime Performance Manager	2000 devices	—
Prime Provisioning	2000 devices	—
Large Network		
Prime Central	5000 devices	240
Prime Network	5000 devices	100
Prime Optical	2000 devices	120
Prime Performance Manager	5000 devices	—
Prime Provisioning	5000 devices	—

1. For Prime Central, *events* are the northbound interface events received from the domain managers.
2. Prime Performance Manager and Prime Provisioning do not process events.

Maximum Number of User Accounts Supported

Prime Central supports up to 150 simultaneous users, all of whom can see their own customized view of the Prime Central portal.

Note the following:

- In Prime Central, 30 users can perform all portal operations concurrently. The remaining 120 users can monitor data, but it is not recommended that they perform memory-intensive operations such as domain manager cross-launch or user management.

- A single Prime Central user can have up to ten cross-launched domain manager windows open simultaneously. If a user tries to open an eleventh window, the user cannot proceed without first closing one of the open windows.
- Prime Central supports up to 30 simultaneous domain manager cross-launches across multiple users.
- The number of domain manager cross-launches Prime Central supports depends on:
  - CPU and memory available on a user's machine.
  - CPU, memory, and connections available on the machines on which the domain managers run.

Operating System Matrix

Table 2 lists the supported operating system (OS) for each suite component. Support is provided across the suite for:

- Red Hat Enterprise Linux 5.5 (RHEL 5.5)
- Solaris 10 (except for Prime Central)

Table 2 OS Matrix

OS	OS Version	Prime Central	Prime Network	Prime Optical	Prime Performance Manager	Prime Provisioning
Solaris	10	—	X	X	X	X
	11	—	—	—	X	—
Linux	5.3	—	X	—	X	X
	5.4	—	X	—	—	—
	5.5	X	X	X	X	X
	5.6	—	X	X	—	X
	5.7	—	X	—	X	—
	6.2	—	—	—	X	—

Hardware Matrix

Table 3 lists the supported hardware for each suite component in a single-server configuration.

Table 3 Hardware Matrix

OS	Network Size	CPU Type	No. of CPUs	No. of Virtual CPUs (for VMware Deployments)	No. of CPU Cores	Core Frequency	Disk Space	Swap Space	RAM	Backup Disk Space
Prime Central										
Linux	Small	Intel Xeon E5540	2	8	4	2.53 GHz	144 GB	24 GB	24 GB	—
	Medium	Intel Xeon E7-2830	2	24	8	2.13 GHz	350 GB	48 GB	48 GB	—
	Large	Intel Xeon E7-2830	2	32	8	2.13 GHz	650 GB	64 GB	64 GB	—

Table 3 Hardware Matrix (continued)

OS	Network Size	CPU Type	No. of CPUs	No. of Virtual CPUs (for VMware Deployments)	No. of CPU Cores	Core Frequency	Disk Space	Swap Space	RAM	Backup Disk Space
Prime Network Gateway										
Solaris	Small	Oracle UltraSPARC T2	1	—	—	—	300 GB	32 GB	16 GB	70 GB/day
	Medium	Oracle UltraSPARC T2	1	—	—	—	750 GB	64 GB	32 GB	160 GB/day
	Large	Oracle UltraSPARC T2	1	—	—	—	1500 GB	128 GB	64 GB	320 GB/day
Linux	Small	Intel Xeon X5550	1	8 or 12	4 or 6	2.66 GHz	300 GB	10 GB	16 GB	70 GB/day
	Medium	Intel Xeon X5550	2	8 or 12	4 or 6	2.66 GHz	750 GB	10 GB	32 GB	160 GB/day
	Large	Intel Xeon X5670	2	24	12	3.0 GHz	1500 GB	10 GB	64 GB	320 GB/day
Prime Network Unit Servers										
Solaris	Small	Oracle UltraSPARC T2	1	—	—	—	73 GB	32 GB	16 GB	—
	Medium	Oracle UltraSPARC T2	1	—	—	—	73 GB	64 GB	32 GB	—
	Large	Oracle UltraSPARC T2	2	—	—	—	73 GB	128 GB	64 GB per 5000 NEs	—
Linux	Small	Intel Xeon X5550	1	8 or 12	4 or 6	2.66 GHz	10 GB	10 GB	16 GB	—
	Medium	Intel Xeon X5550	2	8 or 12	4 or 6	2.66 GHz	10 GB	10 GB	32 GB	—
	Large	Intel Xeon X5670	2	24	12	3.0 GHz	10 GB	10 GB	64 GB per 5000 NEs	—
Prime Optical[1]										
Solaris	Small	Oracle SPARC T3	1	16	4	1.415 GHz	131 GB	12 GB	8 GB	101 GB
	Medium	Oracle SPARC T3	1	32	4	1.415 GHz	236 GB	24 GB	16 GB	208 GB
	Large	Oracle SPARC T3	1	64	4	1.415 GHz	420 GB	48 GB	32 GB	394 GB

Table 3 Hardware Matrix (continued)

OS	Network Size	CPU Type	No. of CPUs	No. of Virtual CPUs (for VMware Deployments)	No. of CPU Cores	Core Frequency	Disk Space	Swap Space	RAM	Backup Disk Space
Linux	Small	Intel Xeon 5620	2	1	4	2.40 GHz	131 GB	12 GB	24 GB	101 GB
	Medium	Intel Xeon 5640	2	2	4	2.67 GHz	236 GB	24 GB	24 GB	208 GB
	Large	Intel Xeon 5640	2	8	4	2.67 GHz	420 GB	48 GB	48 GB	394 GB
Prime Performance Manager[2]										
Solaris	Small	Oracle UltraSPARC T2	1	8	8	1.4 GHz	1 146-GB SAS 10K RPM drive	8 GB	8 GB	1 146-GB SAS 10K RPM drive
	Medium	Oracle SPARC T3	1	16	16	1.65 GHz	1 300-GB SAS 10K RPM drive for OS 2 300-GB SAS 10K RPM drives for database using ZFS pool	12 GB	24 GB	1 300-GB SAS 10K RPM drive
	Large	Oracle SPARC T3	1	16	16	1.65 GHz	1 300-GB SAS 10K RPM drive for OS 4 300-GB SAS 10K RPM drives for database using ZFS RAID	32 GB	64 GB	2 300-GB SAS 10K RPM drives using ZFS pool
Linux	Small	Intel Xeon 5600 or E5-2400	1	4 or more	4 or more	3.0 GHz	1 146-GB SAS 15K RPM drive	8 GB	8 GB	1 146-GB SAS 15K RPM drive
	Medium	Intel Xeon 5600 or E5-2400	1	4 or more	4 or more	3.0 GHz	1 146-GB SAS 15K RPM drive for OS 1 146-GB SAS 15K RPM drive for database	12 GB	24 GB	1 146-GB SAS 10K RPM drive
	Large	Intel Xeon 5600 or E5-2600	2	6 or more	6 or more	3.0 GHz	1 146-GB SAS 15K RPM drive for OS 2 146-GB SAS 10K RPM drives for CSV reports and database using RAID0	32 GB	64 GB	2 146-GB SAS 10K RPM drives for backups using RAID0 (requires use of LSI MegaRAID controllers)

Table 3 Hardware Matrix (continued)

OS	Network Size	CPU Type	No. of CPUs	No. of Virtual CPUs (for VMware Deployments)	No. of CPU Cores	Core Frequency	Disk Space	Swap Space	RAM	Backup Disk Space
Prime Provisioning[3]										
Solaris	Small	Oracle UltraSPARC T2	1	2 per core	4	1.2 GHz	73 GB	8 GB	8 GB	—
	Medium	Oracle UltraSPARC T2	1	2 per core	4	1.2 GHz	73 GB	8 GB	16 GB	—
	Large	Oracle SPARC64 VI	2	2 per core	2	2.15 GHz	146 GB	32 GB	16 GB	—
Linux	Small	Intel Xeon X5550	1	2 per core	4	2.66 GHz	73 GB	8 GB	8 GB	—
	Medium	Intel Xeon X5550	2	2 per core	4	2.66 GHz	73 GB	16 GB	16 GB	—
	Large	Intel Xeon X5670	2	2 per core	6	2.93 GHz	146 GB	32 GB	16 GB	—

1. For Prime Optical, total disk space assumes performance monitoring (PM) data collection is enabled, with 30 days of data saved. The total disk space includes the /ctm_backup partition reserved for database backups. If the database is installed on a separate server, the disk requirements are different; see "Disk Space and Partition Requirements for the Prime Optical Server when Installing the Prime Optical Server and Oracle on Separate Workstations" in the *Cisco Prime Optical 9.6 Installation Guide*.
2. For Prime Performance Manager, the backup disk space values are for the default report selection. If you customize the report selection and enable additional reports, the backup disk space increases.
3. For Prime Provisioning, there are no formal disk requirements for backup space allocation. The disk space required is based on the backup policy that your workstation administrators implement. Factors that affect sizing include frequency of complete versus partial backups, and the length of time to retain backups. For maximum performance, allocate swap space to a separate disk.

Thick Client Matrix

Table 4 lists the supported thick client hardware for Prime Network and Prime Optical.

Table 4 Thick Client Matrix

Suite Component	Platform/Hardware	Total RAM	Total CPU	Disk Space
Prime Network	Windows PC	2 GB	Pentium IV, 2.66-GHz or better processor	200 MB
Prime Optical	Solaris workstation	512 MB	—	750 MB
	Linux workstation	512 MB	—	750 MB
	Windows PC	512 MB	—	750 MB

Thin Client Matrix

Table 5 lists the thin client browser support for Prime Central, Prime Optical (online help and the NE Audit tool only), Prime Network Change and Configuration Management, Prime Performance Manager, and Prime Provisioning.

All suite components support Internet Explorer 8.0. Individual components support additional browser versions.

Table 5 Thin Client Matrix

Suite Component	Browser	Windows XP	Windows 7
Prime Central	Firefox 8.0	X	X
	Firefox 9.0	X	X
	Internet Explorer 8.0	X	X
	Internet Explorer 9.0	—	X
Prime Network (applicable only to Prime Network Change and Configuration Management)	Firefox 7.0	X	X
	Internet Explorer 8.0	—	X
Prime Optical (applicable only to the online help and the NE Audit tool)	Firefox 8.0	X	X
	Firefox 9.0	X	X
	Internet Explorer 8.0	X	X
	Internet Explorer 9.0	X	X
Prime Performance Manager	Firefox 7.0	X	X
	Internet Explorer 8.0	X	X
	Internet Explorer 9.0	X	X
Prime Provisioning	Firefox 8.0	X	X
	Firefox 9.0	X	X
	Internet Explorer 8.0	X	X
	Internet Explorer 9.0	X	X

Database Matrix

Table 6 lists the database requirements for the suite components. The sizing is the same for both external and embedded Oracle databases.

Table 6 Database Matrix

Version	Platform/OS	Network Size	RAM	Swap Space	Total Disk Space	Backup Disk Space
Prime Central—External and Embedded Oracle						
Oracle 11gR2	Linux	Small	12 GB	12 GB	140 GB	—
		Medium	16 GB	16 GB	250 GB	—
		Large	32 GB	24 GB	433 GB	—

Table 6 Database Matrix (continued)

Version	Platform/OS	Network Size	RAM	Swap Space	Total Disk Space	Backup Disk Space
Prime Network—External and Embedded Oracle						
Oracle 11g R2	Solaris	Small	24 GB	12 GB	1302 GB	510 GB
		Medium	24 GB	24 GB	3054 GB	1163 GB
		Large	48 GB	48 GB	5934 GB	2226 GB
	Linux	Small	24 GB	12 GB	1302 GB	510 GB
		Medium	24 GB	24 GB	3054 GB	1163 GB
		Large	48 GB	48 GB	5934 GB	2226 GB
Prime Optical—External and Embedded Oracle (with PM Data Collection Enabled)						
Oracle 11g R2	Solaris	Small	8 GB	12 GB	133 GB	101 GB
		Medium	16 GB	24 GB	250 GB	208 GB
		Large	32 GB	48 GB	458 GB	394 GB
	Linux	Small	24 GB	12 GB	133 GB	101 GB
		Medium	24 GB	24 GB	250 GB	208 GB
		Large	48 GB	48 GB	458 GB	394 GB
Prime Performance Manager						
Prime Performance Manager embeds a distributed database that is part of the installation and is not accessible by any other external process.						
Prime Provisioning—External Oracle						
Oracle 11g R2	Solaris	Small	8 GB	12 GB	133 GB	101 GB
		Medium	16 GB	24 GB	250 GB	208 GB
		Large	32 GB	48 GB	458 GB	394 GB
	Linux	Small	24 GB	12 GB	133 GB	101 GB
		Medium	24 GB	24 GB	250 GB	208 GB
		Large	48 GB	48 GB	458 GB	394 GB

Certified Platforms

Table 7 lists the platforms that were used for certification during Prime Carrier Management 1.1 suite testing. You can use other comparable platforms, provided that you meet the minimum requirements for CPU, RAM, and so on.

Table 7 Platforms Used for Certification

Network Size	Platforms Tested
Prime Central	
Small	• Cisco UCS B-Series Blade Server • Cisco UCS C-Series Rack Server • HP ProLiant DL580 Server
Medium	• Cisco UCS B-Series Blade Server • Cisco UCS C-Series Rack Server • HP ProLiant DL580 Server

Table 7 Platforms Used for Certification (continued)

Network Size	Platforms Tested
Large	• Cisco UCS B-Series Blade Server • Cisco UCS C-Series Rack Server • HP ProLiant DL580 Server
Prime Network	
Small	• Cisco UCS B-Series Blade Server • Oracle SPARC T-Series Server
Medium	• Cisco UCS B-Series Blade Server • Oracle SPARC T-Series Server
Large	• Cisco UCS B-Series Blade Server • Oracle SPARC T-Series Server
Prime Optical	
Small	• Cisco UCS C-Series Rack Server • Oracle UltraSPARC T2, UltraSPARC T2+, and SPARC64 (UltraSPARC-IIIi)
Medium	• Cisco UCS C-Series Rack Server • Oracle UltraSPARC T2, UltraSPARC T2+, and SPARC64 (UltraSPARC-IIIi and US-IV)
Large	• Cisco UCS C-Series Rack Server • Oracle UltraSPARC T2, UltraSPARC T2+, and SPARC64 (UltraSPARC-IIIi and US-IV)
Prime Performance Manager	
Small	• Oracle SPARC T3-1, T5120 for non-NEBs-compliant systems • Oracle SPARC Netra T5220 for NEBs-compliant systems • Cisco UCS C200M2 for non-NEBs-compliant systems • Oracle Netra X4250 for NEBs-compliant systems
Medium	• Oracle SPARC T3-1, T5120 for non-NEBs-compliant systems • Oracle SPARC Netra T3-1, T5220 for NEBs-compliant systems • Cisco UCS C200M2/C210M2 for non-NEBs-compliant systems • Oracle Netra X4250 for NEBs-compliant systems
Large	• Oracle SPARC T3-1 for non-NEBs-compliant systems • Oracle SPARC Netra T3-1 for NEBs-compliant systems • Cisco UCS C210M2 for non-NEBs-compliant systems
Prime Provisioning	
Small	• Cisco USC C200 • Oracle SPARC T5210
Medium	• Cisco UCS C200 • Oracle SPARC T5220
Large	• Cisco UCS C210 • Oracle SPARC Enterprise M4000

3 Upgrading to the Prime Carrier Management 1.1 Suite

This section explains how to upgrade the Prime Carrier Management suite from 1.0 to 1.1.

Before You Begin

- If you are using an external Prime Central database, back it up manually.
- If you are using an embedded (local or remote) Prime Central database, it is recommended (but not required) that you back it up manually before upgrading.
- Back up your domain manager database.

Caution During the upgrade, do not unregister any of the domain managers from Prime Central.

Suite Upgrade Matrix

Table 8 lists the high-level tasks to upgrade Prime Central and the suite components.

Table 8 Suite Upgrade Matrix

No.	High-Level Task	For More Information, See...
1.	Upgrade to Prime Central 1.1. **Note** Cisco might have released a Prime Central 1.1 patch after this document was last published online. Contact your Cisco account representative for the latest patch.	Upgrading Prime Central.
2.	Upgrade to Prime Central Fault Management 1.1.	Upgrading from Prime Central Fault Management 1.0 to 1.1.
3.	(Prime Provisioning only) Remove Prime Provisioning from the Suite Monitoring portlet.	Removing a Domain Manager from the Suite Monitoring Portlet.
4.	(Prime Optical only) Make a copy of the *Prime-Optical-installation-directory*/prime_integrator/dmid.xml file.	—
5.	Upgrade the domain manager to the required component version: • Cisco Prime Network 3.9 • Cisco Prime Optical 9.6 • Cisco Prime Performance Manager 1.2 • Cisco Prime Provisioning 6.3 **Note** Cisco might have released patches to the required component versions after this document was last published online. Contact your Cisco account representative for the latest component patch that is compatible with Prime Central 1.1.	• *Cisco Prime Network 3.9 Installation Guide* to upgrade to Prime Network 3.9 from an earlier release. • *Cisco Prime Optical 9.6 Installation Guide* to upgrade to Prime Optical 9.6 from an earlier release. During the Prime Optical upgrade, be sure to install Prime Optical in standalone mode, *not* suite mode. • *Cisco Prime Performance Manager 1.2 Quick Start Guide* to upgrade from Prime Performance Manager 1.1 to 1.2. • *Cisco Prime Provisioning 6.3 Installation Guide* to upgrade to Prime Provisioning 6.3 from an earlier release. If you install Prime Provisioning in standalone mode rather than suite mode during the upgrade, *be sure to complete Step 8.*

Table 8 Suite Upgrade Matrix (continued)

No.	High-Level Task	For More Information, See...
6.	(Prime Optical only) Restore the copied dmid.xml file in the *Prime-Optical-installation-directory*/prime_integrator/ directory.	—
7.	(Prime Optical or Prime Provisioning only) Restart the integration layer.	Starting and Stopping the Prime Central Components.
8.	(Prime Provisioning installed in standalone mode only) Run the DMIntegrator.sh script on Prime Provisioning.	Integrating Cisco InTracer, Prime Network, Prime Optical, or Prime Provisioning with Prime Central.
9.	Verify that the suite upgrade succeeded.	Verifying the Upgrade.
10.	If you plan to upgrade Prime Network, rerun the PrimeNetworkRegistration.sh script so that Prime Central Fault Management can retrieve fault data from Prime Network.	Manually Registering Fault Management with Prime Network and Prime Optical.