



SIZING GUIDE



Cisco Prime Carrier Management April 2014 Sizing Guide

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1 Preface

This guide lists the baseline system requirements for all components in the Cisco Prime Carrier Management April 2014 suite. 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
- Linux administration
- Oracle database administration
- Telecommunication Management Network (TMN) architecture model

Related Documentation

See the [Cisco Prime Carrier Management April 2014 Documentation Overview](#) for a list of related guides.



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2 System Requirements for the Prime Carrier Management April 2014 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 application 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 and Prime Network: 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.
- Data Center: (11% compute + 56% aggregation + 11% storage, 22% Virtual) for every 576 devices where:
 - Compute = 64 systems * (8 chassis + 2 fixed interface cards [FICs]).
 - Aggregation = 64 systems * (two Nexus 7K + Cisco Catalyst 6500 with two chassis in VSS mode + two Cisco ASR 1000s).
 - Storage = 64 storage systems.
 - Virtual = 64 systems * two Nexus 1000v.

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 270,380 PWE3 links, 815,260 interfaces, and 489,500 interfaces generating statistics.

Table 1 Deployment Sizing Matrix

Application	Maximum Number of Devices	Maximum Number 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	—
Extremely Large Network		
Prime Central	Contact your Cisco account representative.	
Prime Network		
Prime Performance Manager		
Prime Optical		

1. For Prime Central, events are the northbound interface events received from the applications.
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 who 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 application cross-launch or user management.
- A single Prime Central user can have up to ten cross-launched application windows open simultaneously. If a user tries to open an eleventh window, the user cannot proceed without first closing one of the open windows.
- If users stagger the cross-launches over a period of 3 to 5 minutes, Prime Central supports up to 30 cross-launches of Prime Network and Prime Performance Manager.
- The number of application 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 applications run.

Suite Integration – Multiple Instance Application Support

Prime Central supports multiple instances of Prime Network and Prime Optical, for a total of five instances, in any combination. For example:

- Five instances of Prime Network
- Five instances of Prime Optical
- Three instances of Prime Network, plus two instances of Prime Optical (or vice versa)
- Four instances of Prime Optical, plus one instance of Prime Network (or vice versa).

RHEL Matrix

Table 2 lists the Red Hat Enterprise Linux (RHEL) versions supported by the suite components.

Table 2 RHEL Matrix

RHEL Version	Prime Central	Prime Network	Prime Optical	Prime Performance Manager	Prime Provisioning
5.8	X	X	X	X	X
6.4	X	X	X	X	X

Virtualization Matrix

Table 3 Virtualization Matrix

Platform	Prime Central	Prime Network	Prime Performance Manager	Prime Optical	Prime Provisioning
VMware ESXi 5.0	X	X	X	X	X
VMware ESXi 5.1	X	X	X	X	X

JRE Matrix

Table 4 JRE Matrix

Platform	Prime Central	Prime Network	Prime Performance Manager	Prime Optical	Prime Provisioning
7.0	X	X	X	X	X

Hardware Matrix

Table 5 lists the supported hardware, as well as compute and storage required for each suite component.

Table 5 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^{1,2}										
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	—
Prime Network^{1,2}										
Linux	Small	Intel Xeon E5-2600 or equivalent	Any	5	5	2.66 GHz	60 GB	16 GB	32 GB	74 GB/day
	Medium			8	8	2.66 GHz	240 GB	16 GB	64 GB	265 GB/day
	Large			10	10	2.66 GHz	600 GB	16 GB	96 GB	660 GB/day
Prime Network Unit Servers^{1,2}										
Linux	Small	Intel Xeon E5-2600 or equivalent	Any	3	4	2.66 GHz	10 GB	16 GB	16 GB	—
	Medium			6	6	2.66 GHz	10 GB	16 GB	100 GB	—
	Large			10	10	2.66 GHz	10 GB	16 GB	250 GB per 5000 NEs	—
Prime Optical^{1,2,3}										
Linux	Small	Intel Xeon 5620	2	1	4	2.40 GHz	150 GB	12 GB	8 GB	101 GB
	Medium	Intel Xeon 5640	2	2	4	2.67 GHz	268 GB	24 GB	16 GB	208 GB
	Large	Intel Xeon 5640	2	8	4	2.67 GHz	478 GB	48 GB	32 GB	394 GB

Table 5 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 Performance Manager^{1,2,4}										
Linux	Small	Intel Xeon E5-2609/2609v2	1 or more	4 or more	4 or more	2.4/2.5/2.7 GHz	80 GB for all	8 GB	8 GB	150 GB
	Medium	Intel Xeon E5-2640/2680	1 or more	6 or more	6 or more	2.5 GHz	<ul style="list-style-type: none"> • 15 GB for PPM Installation • 50 GB for export reports • 140 GB for database 	12 GB	24 GB	480 GB
	Large	Intel Xeon E5-2680	1 or more	8 or more	8 or more	2.7 GHz	<ul style="list-style-type: none"> • 20 GB for PPM installation • 80 GB for export reports • 250 GB for database 	32 GB	64 GB	800 GB
Prime Provisioning^{1,2,5}										
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	24 GB	—

1. Oversubscription of vCPU for any given suite application will have a negative impact in terms of performance.
2. The Prime Carrier Management Suite is also deployable onto a single small server.
3. 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 10.0 Installation Guide](#).
4. 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.
5. 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.

Prime Network Reporting Requirements

Table 6 includes the memory needed for the Reporting engine: Pentaho. The storage sizes represent 180 days of retained data. The local disk size required on the gateway and unit is required to process records before they are uploaded to the database (both on the gateway and each unit).

Table 6 Prime Network Reporting Requirements

Platform/OS	Network Size	Gateway additional RAM (both Infobright and Pentaho)	Unit Additional RAM (for Infobright upload)	Total Data Disk Space on Storage (With Backup)	Additional Processing Disk Space on Prime Network Unit and Gateway
Linux	Small	16 GB	1 GB	66 GB	10 GB
	Medium	32 GB	3 GB	264 GB	16 GB
	Large	32 GB	7 GB	660 GB	20 GB

Small Deployment Single Server Requirements

Table 7 lists the resources needed to support 200 devices within a Carrier Ethernet or Data Center deployment. The deployment sizing assumes that the devices are distributed as follows: 70% access devices, 10% aggregation devices, 15% distribution devices, and 5% core devices.

Table 7 Single Small Server Requirements

Suite Component	Virtual CPUs	RAM	Disk Space
Prime Central	8	32 GB	144 GB
Prime Network	8	16 GB	300 GB
Prime Network Unit	8	16 GB	10 GB
Prime Performance Manager	4	8 GB	146 GB
Prime Provisioning	2	8 GB	73 GB

Small Deployment Single Server Hardware Platform Requirements

Table 8 Single Small Server Hardware Platform Requirements

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 CPU E5-2650	2	32	16	1,999 GHz	150 GB	—	96 GB	1800 GB

Mobility - EPC Deployment

The following baseline deployment is valid for up to 75 active Cisco ASR 5000 and 5500 devices.

Table 9 Single Small Server Hardware Platform Requirements

OS	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									
Linux gateway and unit	Intel Xeon E5-2600 or equivalent	Any	8	8-10	2.66 GHz	300 GB	16 GB	48-64 GB	—
Prime Performance Manager									
Linux gateway	Intel Xeon E5-2680	2	N/A	8	2.7 GHz	<ul style="list-style-type: none"> One 146 GB SAS 15K RPM drive for OS Two 146 GB SAS 10K RPM drives for database Two 146 GB SAS 10K RPM drive for backups 	32GB	32 GB	—
Linux unit	Intel Xeon E5-2680	2	N/A	8	2.7 GHz	<ul style="list-style-type: none"> One 146 GB SAS 15K RPM drive for OS Two 146 GB SAS 15K RPM drives for database Two 146 GB SAS 10K RPM drive for backups Three 300 GB SAS 15K RPM drives for Bulkstat CSV 	32 GB	96 GB	—
Prime Central									
Linux	Intel Xeon E7-2830	2	24	8	2.13 GHz	350 GB	48 GB	48 GB	—

Thick Client Matrix

Table 10 lists the supported thick client hardware for Prime Network and Prime Optical.

Table 10 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	Linux workstation	512 MB	—	750 MB
	Windows PC	512 MB	—	750 MB

Thin Client Matrix

Table 11 lists the thin client browser support for the Suite: Prime Central, Prime Optical (online help and the NE Audit tool only), Prime Network Change and Configuration Management, Prime Performance Manager, and Prime Provisioning. Each component may support more versions. Please refer to the suite application documentation for details on broader browser support.

Table 11 Thin Client Matrix

Browser	Windows XP	Windows 7
Firefox 24	X	X
Firefox 24 ESR	X	X
Internet Explorer 9.0	X	X

For older Firefox browsers, please see: <http://download.cdn.mozilla.net/pub/firefox/releases>.

Database Matrix

Table 12 lists the database requirements for the suite components. The sizing is the same for both external and embedded Oracle databases.

Table 12 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	—
Prime Network—External and Embedded Oracle						
Oracle 11gR2	Linux	Small	12 GB	12 GB	590 GB	672 GB
		Medium	18 GB	18 GB	2360 GB	2640 GB
		Large	32 GB	32 GB	5900 GB	6576 GB
Prime Optical—External and Embedded Oracle (with PM Data Collection Enabled)						
Oracle 11g R2	Linux	Small	8 or 16 GB	12 GB	150 GB	101 GB
		Medium	16 GB	24 GB	268 GB	208 GB
		Large	32 GB	48 GB	478 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	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 13 lists the platforms that were used for certification during Prime Carrier Management April 2014 suite testing. You can use other comparable platforms, provided that you meet the minimum requirements for CPU, RAM, and so on.

Table 13 *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
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
	Cisco UCS C-Series Rack Server
Medium	Cisco UCS B-Series Blade Server
	Cisco UCS C-Series Rack Server
Large	Cisco UCS B-Series Blade Server
	Cisco UCS C-Series Rack Server
Prime Optical	
Small	Cisco UCS B-Series Blade Server
	Cisco UCS C-Series Rack Server
Medium	Cisco UCS B-Series Blade Server
	Cisco UCS C-Series Rack Server
Large	Cisco UCS B-Series Blade Server
	Cisco UCS C-Series Rack Server
Prime Performance Manager	
Small	Cisco UCS C22M3/C220M3/C200M2/B200M3
Medium	Cisco UCS C240M3/C22M3/C200M2/B200M2
Large	Cisco UCS C240M3/C220M3/B200M3
Prime Provisioning	
Small	Cisco UCS B-Series Blade Server
	Cisco UCS C-Series Rack Server
Medium	Cisco UCS B-Series Blade Server
	Cisco UCS C-Series Rack Server
Large	Cisco UCS B-Series Blade Server
	Cisco UCS C-Series Rack Server

3 Upgrading to the Prime Carrier Management April 2014 Suite

This section explains how to upgrade to the Prime Carrier Management April 2014 suite.

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 application database.



Caution

During the upgrade, do not unregister any of the applications from Prime Central.

Suite Upgrade Matrix

Table 14 lists the high-level tasks to upgrade Prime Central and the suite components.

Table 14 Suite Upgrade Matrix

Step Number	High-Level Task	For More Information, See...
1	Upgrade to Prime Central 1.3. Cisco might have released a Prime Central 1.3 patch after this document was last published online. Contact your Cisco account representative for the latest patch.	See “Upgrading Prime Central” in the Cisco Prime Central 1.3 Quick Start Guide .
2	Upgrade to Prime Central Fault Management 1.3.	See “Upgrading to Prime Central Fault Management 1.3” in the Cisco Prime Central 1.3 Quick Start Guide .
3	(Prime Optical only) Make a copy of the <i>Prime-Optical-installation-directory/prime_integrator/dmid.xml</i> file.	—
4	Upgrade the application to the required component version: <ul style="list-style-type: none">• Cisco Prime Network 4.1• Cisco Prime Optical 10.0• Cisco Prime Performance Manager 1.5• Cisco Prime Provisioning 6.6 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 1.3.	<ul style="list-style-type: none">• Cisco Prime Network 4.1 Installation Guide to upgrade to Prime Network 4.1 from an earlier release.• Cisco Prime Optical 10.0 Installation Guide to upgrade to Prime Optical 10.0 from an earlier release. During the Prime Optical upgrade, be sure to install Prime Optical in standalone mode, not suite mode. <ul style="list-style-type: none">• Cisco Prime Performance Manager 1.5 Quick Start Guide to upgrade from Prime Performance Manager 1.4 to 1.5.• Cisco Prime Provisioning 6.6 Installation Guide to upgrade to Prime Provisioning 6.6 from an earlier release. If you install Prime Provisioning in standalone mode rather than suite mode during the upgrade, be sure to complete Step 7.

Table 14 Suite Upgrade Matrix (continued)

Step Number	High-Level Task	For More Information, See...
5	(Prime Optical only) Restore the copied dmid.xml file in the <i>Prime-Optical-installation-directory/prime_integrator/</i> directory.	—
6	(Prime Optical or Prime Provisioning only) Restart the integration layer.	See “Starting and Stopping the Prime Central Components” in the Cisco Prime Central 1.3 Quick Start Guide .
7	(Prime Provisioning installed in standalone mode only) Run the DMIntegrator.sh script on Prime Provisioning.	See “Integrating Prime Provisioning with Prime Central” in the Cisco Prime Central 1.3 Quick Start Guide .
8	Verify that the suite upgrade succeeded.	See “Verifying the Upgrade” in the Cisco Prime Central 1.3 Quick Start Guide .
9	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.	See “Manually Registering Fault Management to Retrieve Alarm Data” in the Cisco Prime Central 1.3 Quick Start Guide .

