Cisco Prime Carrier Management Sizing and Upgrade Guide

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Preface

This guide lists the baseline system requirements for all components in the Cisco Prime Carrier Management January 2017 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 or Microsoft Windows 10
- Linux administration
- Oracle database administration
- Telecommunication Management Network (TMN) architecture model

Related Documentation

See the Cisco Prime Carrier Management January 2017 Documentation Overview for a list of related guides.

![note icon] **Note** We sometimes update the documentation after original publication. Therefore, you should review the documentation on Cisco.com for any updates.

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System Requirements for the Prime Carrier Management 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 3 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 and Mobility: (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

The following table lists the number of Devices, Links, Circuits, and Interfaces generating statistics supported for Prime Optical for small, medium and large networks.

Table 1   Devices, Links, Circuits, and Interfaces Generating Statistics

Prime Optical	Devices	PWE3 Links	Circuits	Interface Generating Statistics
Small Network	200	100	5000	20000
Medium Network	500	250	15000	50000
Large Network	2000	1000	50000	200000

Prime Performance Manager

The following table lists the number of Devices, Links, Circuits, and Interfaces generating statistics supported for Prime Performance Manager for small, medium and large networks.

Table 2   Devices, Links, Circuits, and Interfaces Generating Statistics

Prime Performance Manager	Devices	PWE3 Links	Circuits	Interface Generating Statistics
Small Network	200	12400	37600	20900
Medium Network	2000	124000	376000	209000
Large Network	5000	270380	815260	489500

Table 3   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	200
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 Provisioning		
Prime Optical		

1.1,2For Prime Central, events are the northbound interface events received from the applications.

2.2Prime Performance Manager and Prime Provisioning do not process events.

Maximum Number of User Accounts Supported

There is no limit on the number of user accounts that can be created in Prime Central, but Prime Central supports up to 200 simultaneous users, all of who can see their own customized view of the Prime Central.

Note the following:

- In Prime Central, 60 users can perform all portal operations concurrently. The remaining 140 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 six instances, in any combination. For example:

- Six instances of Prime Network

- Five instances of Prime Optical

- Four instances of Prime Network plus two instances of Prime Optical (or vice versa).

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

RHEL Matrix

The following table lists the Red Hat Enterprise Linux (RHEL) versions supported by the suite components.

Table 4   ***RHEL Matrix- Prime Carrier Management Suite***

RHEL Version	Prime Central	Prime Network	Prime Optical	Prime Performance Manager	Prime Provisioning
5.8		X		X	X
6.5	X	X	X	X	X
6.6			X	X	X
6.7	X	X	X	X	X
7.0				X	
7.1			X	X	
7.2			X	X	

✎

Note   Prime Performance Manager does not support local HA configuration for RHEL 6.x and above versions.

Virtualization Matrix

The following table lists the VMware ESXi versions supported by the suite components.

Table 5   ***Vmware ESXi Matrix: Prime Carrier Management Suite***

Platform	Prime Central	Prime Network	Prime Optical	Prime Performance Manager	Prime Provisioning
VMware ESXi 5.1	X	X		X	X
VMware ESXi 5.5	X	X	X	X	X
VMware ESXi 6.0	X	X	X	X	X

Citrix Matrix

The following table lists the Citrix version supported by the suite components.

Table 6   ***Citrix Matrix: Prime Carrier Management Suite***

Platform	Prime Central	Prime Network	Prime Optical	Prime Performance Manager	Prime Provisioning
Citrix 6.0	X	X			

KVM Matrix

The following table lists the KVM version supported by the suite components.

Table 7   KVM Matrix: Prime Carrier Management Suite

Platform	Prime Central	Prime Network	Prime Optical	Prime Performance Manager	Prime Provisioning
KVM 2.6.3.2	X	X		X	
KVM 2.x				X	

JRE Matrix

The following table lists the Java Runtime Environment versions supported by Prime Carrier Management suite components.

Table 8   JRE Matrix: Prime Carrier Management Suite

Platform	Prime Central	Prime Network	Prime Optical	Prime Performance Manager	Prime Provisioning
JRE 1.7 update 25				X	X
JRE 1.7 update 45			X		
JRE 1.7 update 51			X		
JRE 1.7 update 65	X		X	X	
JRE 1.8. update 60	X	X	X		X

✎

Note The above JRE version is required to be installed on the client Windows machine.

Hardware Matrix

The following table lists the supported hardware, as well as compute and storage required for each suite component.

Hardware Matrix - Prime Carrier Management suite

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	Total Disk Space
Prime Central[1,1]											
Linux	Small	Intel Xeon	2	8	4	2.53 GHz	200 GB	24 GB	32 GB	231GB/day	455 GB
	Medium	Intel Xeon	2	24	8	2.13 GHz	350 GB	48 GB	48 GB	375 GB/day	773 GB
	Large	Intel Xeon	2	32	8	2.13 GHz	650 GB	64 GB	64 GB	650 GB/day	1364 GB
Prime Network Gateway[2,2.]											
Linux	Small	Intel Xeon E5-2600 or Equivalent	Any	5	5	2.66 GHz	60 GB	16 GB	32 GB	74 GB/day (Memory	150 GB GB
	Medium			8	8	2.66 GHz	240 GB	16 GB	64 GB	265 GB/day	521 GB
	Large			10	10	2.66 GHz	600 GB	16 GB	96 GB	660 GB/day	1276 GB
Prime Network Unit Servers[111]											
Linux	Small	Intel Xeon E5-2600 or Equivalent	Any	3	4	2.66 GHz	10 GB	16 GB	16 GB	16 GB	42 GB
	Medium			6	6	2.66 GHz	10 GB	16 GB	100 GB	100 GB	126 GB
	Large			10	10	2.66 GHz	10 GB	16 GB	250 GBper 5000NEs	250 GB per 5000 NE	276 GB
Prime Optical [3,3]											
Linux	Small	Intel Xeon	2	1	4	2.40 GHz	150 GB	12 GB	8 GB	101 GB	263 GB
	Medium	Intel Xeon	2	2	4	2.67 GHz	268 GB	24 GB	16 GB	208 GB	308 GB
	Large	Intel Xeon	2	8	4	2.67 GHz	478 GB	48 GB	32 GB	394 GB	920 GB
Prime Performance Manager[444,4]											

Linux	Small	Intel Xeon E5-2609/2609v2	1 or more	4 or more	4 or more	2.4/2.5/2.7 GHz	80GB for PPM installation, export reports and database	8 GB	8 GB	150 GB	238 GB
	Medium	Intel Xeon E5-2640/2680	1 or more	6 or more	6 or more	2.5 GHz	• 15 GB for PPM Installation • 55GB for export reports • 120 GB for database	12 GB	24 GB	450 GB	477 GB
	Large	Intel Xeon E5-2680	1 or more	8 or more	8 or more	2.7 GHz	• 20 GB for PPM installation • 118 GB for export reports • 250 GB for database	32 GB	64 GB	895 GB	947 GB
Prime Provisioning[5,5]											
Linux	Small	Intel Xeon	1	2 per core	4	2.66 GHz	73 GB	8 GB	8 GB	—	81 GB
	Medium	Intel Xeon X5550	2	2 per core	4	2.66 GHz	73 GB	16 GB	16 GB	—	89 GB
	Large	Intel Xeon X5670	2	2 per core	6	2.93 GHz	146 GB	32 GB	24 GB	—	178 GB

1. Over subscription of vCPU for any given suite application will have a negative impact in terms of performance. The Prime Carrier Management Suite is also deployable onto a single small server.

2. The above specified PN requirements is without considering reporting engine requirements. Prime Network Gateway includes Embedded database.

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 10.6 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

The following table 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 9　　　　　*Single Small Server 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

The following table 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 10　　　　　*Single Small Server Requirements*

Suite Component	Virtual CPUs	RAM	Disc Space	Swap Space
Prime Central	8	32 GB	144 GB	24 GB
Prime Network Gateway without Reporting Engine	8	16 GB	300 GB	8 GB
Prime Network Unit	8	16 GB	10 GB	8 GB
Prime Performance Manager	4	8 GB	146 GB	8 GB
Prime Provisioning	2	8 GB	73 GB	8 GB

Mobility - EPC Deployment

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

> **Note** The following configuration is only for Prime Central, Prime Network, and Prime Performance Manager.

Table 12 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	• 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	• 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	—

Client Matrix

Thick Client Matrix and Thin Client Matrix

The following table lists the supported thick client hardware for Prime Network and Prime Optical.

Table 11   *Thick Client Matrix*

Suite Components	Platform/Hardware	Total RAM	Total CPU	Disk Space	JRE Version
Prime Network	Windows PC	8 GB	Intel (R Core TM) i5 4300 CPUPentium IV, 2.566-GHz or better processor	238 GB	1.8
Prime Optical	Linux workstation	2 GB	—	20 GB	1.7 update 45 onwards and 1.8 update 60
	Windows PC	2 GB	—	20 GB	

The following table 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 12   *Thin Client Matrix*

Browser	Windows 7	Windows 10
Firefox 24, Firefox 24 ESR (Extended Support Release)	X	X
Firefox 30	X	X
Internet Explorer 9, 10,11	X	X

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

Database Matrix

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

Database Matrix

Version	Platform/OS	Network Size	RAM	Swap Space	Disk Space	Backup Disk Space	Total Disk Space
Prime Central—External and Embedded Oracle							

Oracle 12c as well for external data base	Linux	Small	12 GB	12 GB	154 GB	231 GB	397 GB
		Medium	16 GB	16 GB	250 GB	375 GB	641 GB
		Large	32 GB	24 GB	433 GB	650 GB	1107 GB
Prime Network—External and Embedded Oracle							
Oracle 12c Enterprise Edition Release 12.1.0	Linux	Small	12 GB	12 GB	590 GB	672 GB	1274GB
		Medium	18 GB	18 GB	2360 GB	2640 GB	5018 GB
		Large	32 GB	32 GB	5900 GB	6576 GB	12505 GB
Prime Optical—External and Embedded Oracle (with PM Data Collection Enabled)							
Oracle 12c Enterprise Edition 12.1.0	Linux	Small	8 or 16 GB	12 GB	150 GB	101 GB	263 GB
		Medium	16 GB	24 GB	268 GB	208 GB	500 GB
		Large	32 GB	48 GB	478 GB	394 GB	920 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	246 GB
Oracle 12c Enterprise Edition 12.1.0		Medium	24 GB	24 GB	250 GB	208 GB	482 GB
		Large	48 GB	48 GB	458 GB	394 GB	900 GB

Certified Platforms

The platforms that were used for certification during Prime Carrier Management 2017 suite testing are listed in the below table. You can use other comparable platforms, provided that you meet the minimum requirements for CPU, RAM, and so on.

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	Validated on Cisco UCS B230 M2 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	Validated on Cisco UCS B230M2
	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 C22M3/C220M3/C200M2/B200 M3
	Cisco UCS C-Series Rack Server	
Medium	Cisco UCS B-Series Blade Server	Cisco UCS C240M3/C22M3/C200M2/B200 M2
	Cisco UCS C-Series Rack Server	
Large	Cisco UCS B-Series Blade Server	Cisco UCS C240M3/C220M3/B200M3
	Cisco UCS C-Series Rack Server	
Prime Performance Manager		
Small	Cisco UCS C-Series Rack Server	Cisco UCS C22M3/C220M3/C200M2/B200 M3
	Cisco UCS B-Series Blade Server	
Medium	Cisco UCS C-Series Rack Server	Cisco UCS C240M3/C22M3/C200M2/B200 M2
	Cisco UCS B-Series Blade Server	
Large	Cisco UCS C-Series Rack Server	Cisco UCS C240M3/C220M3/B200M3
	Cisco UCS B-Series Blade Server	
Prime Provisioning		
Small	Cisco UCS B-Series Rack Server	Validated on Cisco UCS C200 / C210 chassis
	Cisco UCS C-Series Blade Server	

Medium	Cisco UCS B-Series Rack Server	
	Cisco UCS C-Series Blade Server	
Large	Cisco UCS B-Series Rack Server	
	Cisco UCS C-Series Blade Server	

Upgrading to the Prime Carrier Management Suite

This section explains how to upgrade to the Prime Carrier Management January 2017 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 you back it up manually before upgrading.

- Back up your application database.

- If you are upgrading to Redhat 6.7 version, back up the entire application. For more information see, Cisco Prime Central 1.5.2 Quick Start Guide, Cisco Prime Network 4.3.1 Installation Guide, Cisco Prime Optical 10.6 Installation Guide, Cisco Prime Performance Manager 1.7 Quick Start Guide, and Cisco Prime Provisioning10.6 Installation Guide.

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

Suite Upgrade Matrix

The following table lists the high-level tasks to upgrade Prime Central and the suite components.

✎
Note   If there is a patch for any suite component, apply it before upgrading the component.

Table 13   Suite Upgrade Matrix

Step Number	High-Level Tasks	For More Information, See...
1	Upgrade to Prime Central 1.5.2[1,1]	"Upgrading Prime Central" in the Cisco Prime Central 1.5.2 Quick Start Guide.
2	Upgrade to Prime Central Fault Management 1.5.2[2,2]	"Upgrading to Prime Central Fault Management 1.5.2" in the Cisco Prime Central 1.5.2 Quick Start Guide.
3	Upgrade the application to the required component version: Cisco Prime Network 4.3.1[3,3] Cisco Prime Performance Manager 1.7 Cisco Prime Provisioning 6.8.1	• Cisco Prime Network 4.3.1 Installation Guide to upgrade to Prime Network 4.3.1 from an earlier release. • Cisco Prime Performance Manager 1.7 Quick Start Guide to upgrade to Prime Performance Manager 1.7 from an earlier release. • Cisco Prime Provisioning 6.8 Installation Guide to upgrade to Prime Provisioning 6.8 from an earlier release.
4	Verify that the suite upgrade succeeded.	• For Verifying PC upgrade, see "Verifying the Upgrade" section in the Cisco Prime Central 1.5.2 Quick Start Guide. • For verifying the remaining suite components upgrade, Login to Prime Central and refer to 'About' window. • For verifying the individual suite component versions refer to 'Suite Monitoring' Portlet.

1. *Multiple upgrade path might be required

2. *Multiple upgrade path might be required

3. *Multiple upgrade path might be required