

# **Monitoring Your Data Center**

This section describes how to use Prime Central to monitor your data center. It contains the following topics:

• Introduction, on page 1

# Introduction

From Prime Central's Data Center page, you can monitor the health and performance of your data center. The components that make up your data center include compute service resources (such as bare metal blade servers and virtual machines), managed VPNs, and storage devices. To access the Data Center page, choose Assure > Services > Data Center.

At the top of the Data Center page, you will find four tabs:

- Overview
- Compute
- Network
- Storage

The information displayed on the Data Center page will vary, depending on which of these tabs you select. A good amount of this information is gathered from Prime Performance Manager. Keep the following in mind when viewing this page:

- After Prime Performance Manager integration with Prime Central completes:
  - It will take anywhere from one hour to a few hours for Prime Performance Manager chart data to be generated and displayed.
  - All of the necessary Prime Performance Manager reports will be enabled with the correct report settings configured. For more information, see Default Prime Performance Manager Reports, on page 2.
- After the Prime Central server starts, it might take a few hours for the charts for certain Data Center objects to become visible.

# **Default Prime Performance Manager Reports**

Take note of the reports listed in the following table. After you integrate Prime Performance Manager with Prime Central, all of these reports should be enabled within Prime Performance Manager and configured to report data for one of the four default reporting intervals (the past 15 minutes, the past hour, the past week, and the past month). We recommend that you do not make any changes to these settings because Prime Central will not display Prime Performance Manager data properly if you do so.

Report Name	Path	Corresponding Prime Performance Manager Dashboard Path (if applicable)	
SNMP/Hypervisor Ping	Reports > Availability	_	
Interfaces			
Interface Status			
Interface Status Aggregate			
CPU	<b>Reports</b> > <b>Resources</b>		
Memory			
Interface	<b>Reports</b> > <b>Transport Statistics</b>		
Host Per Datastore	Reports > Compute > VMWare >	Dashboards > Compute Dashboards >	
Host Total CPU	VMWare Cluster	Cluster Stats	
Host Total Memory			
vCenter Host Total CPU	Reports > Compute > VMWare > vCenter	Dashboards > Compute Dashboards > VMWare Dashboards > vCenter Host	
vCenter Host Per Network		51415	
vCenter Host Per Datastore			
vCenter Host Total Memory			

Report Name	Path	Corresponding Prime Performance Manager Dashboard Path (if applicable)	
vCenter VM Per Network	Reports > Compute > VMWare > vCenter	Dashboards > Compute Dashboards > VMWare Dashboards > vCenter VM Stats	
vCenter VM Total Memory			
vCenter VM Total CPU	_		
vCenter VM Per Datastore			
vCenter Host Per Datastore	Reports > Compute > VMWare > vCenter	Dashboards > Compute Dashboards > VMWare Dashboards > vCenter Host Datastore Stats	
vCenter VM Per Datastore	Reports > Compute > VMWare > vCenter	Dashboards > Compute Dashboards > VMWare Dashboards > vCenter VM Datastore Stats	
СРИ	Reports > Resources	Dashboards > Resource Dashboards >	
Memory	_	CPU/Memory/Disk/Net Stats	
Disk	_		
Interface	<b>Reports</b> > <b>Transport Statistics</b>	_	
CPU	Reports > Resources	Dashboards > Server Health	
Memory	-	Dashboards > Server CPU/Mem/Disk/Net	
Disk	_		
Interface	<b>Reports</b> > <b>Transport Statistics</b>		
L3 General VPN	<b>Reports &gt; Transport Statistics &gt; L3VP</b>	N Dashboards > Transport Dashboards > L3VPN Stats	

## **Overview Window**

When monitoring your data center, begin by viewing the Overview window (see the following figure). The six portlets displayed here paint a high-level picture of your data center's performance and status, providing data such as:

- An alarm count (broken down by group)
- A chart that visualizes the compute service resources that are currently running
- Tables that list the top virtual machines by four key benchmarks: memory utilization, CPU utilization, alarm count, and I/O latency

With this information, you can identify any area within your data center that needs further attention.

Figure 1: Overview Window

cisco mine			Home	Design 🔻 Fu	lifill 🔻 Assure 🔻	Analyze 🔻	Inventory •
ta Center							
Overview Cor	mpute Netwo	ork Storage					
arms Count Su	mmary						Resources Sum
Groups			H	lighest Severity	Alarm Count		Compute Services
Regions					0		
Devices				V	71		Bare Metal
Compute Service	ces			V	18		
Network Servic	es				0		
Storage					0		
				V	50		
User-Defined St	tatic						
<ul> <li>User-Defined S</li> <li>User-Defined D</li> </ul>	ynamic				0	_	
<ul> <li>User-Defined S</li> <li>User-Defined D</li> <li>013-07-18 17:35:</li> </ul>	ooo GMT				0		
<ul> <li>User-Defined S</li> <li>User-Defined D</li> <li>013-07-18 17:35:</li> <li>op N (5): VMs w</li> </ul>	atic ynamic 000 GMT ith Highest Mem	ory Utilization			0		Top N (5): VMs
<ul> <li>User-Defined S</li> <li>User-Defined D</li> <li>013-07-18 17:35:</li> <li>op N (5): VMs w</li> <li>VM Name</li> <li>Prime-R12-8GR-</li> </ul>	000 GMT ith Highest Mem Host Name	ory Utilization VM Manager	Min	Max Avg	0		Top N (5): VMs VM Name Prime-R3-24GB-
User-Defined S User-Defined D User-Defined D O13-07-18 17:35: Top N (5): VMs w VM Name Prime-R12-8GB- RHEL	atic ynamic 000 GMT /th Highest Mem Host Name sjo-i6-svr- 7	ory Utilization VM Manager i6-vcenter-2	Min 5	Max Avg 28 12	0		Top N (5): VMs VM Name Prime-R3-24GB- RHEL

Note the following regarding the Overview window:

- You cannot remove any of the default portlets displayed here.
- Any additional portlets you choose to add are automatically placed at the top of the window.
- You cannot customize the window's layout.

### **Compute Window**

From the Compute window you can view information about the compute service resources that are managed within your data center. These resources include bare metal blade servers and virtual machines, hypervisors, and device clusters. At the top of the window, you will find the following tabs:

- Compute Service
- Hypervisor
- Clusters

To view information for a particular compute service resource type, click the corresponding tab.

#### Figure 2: Compute Window

Data	Center			
Ov	erview Compute Network Storag	9		
	Compute Service Hypervisor Clu	ster		
	Suschranita - Ph Add to Crown			
~	Synchronize and to Group			
	Name	▲ Status	Alarm	Total Alarm Count
	prime-esxi1	Connected		0
	▶ 🗔 prime-esxi2	Connected	V	9
	prime-esxi3	Connected		0
	prime-esxi4	Connected		0
	prime-esxi5	Connected		0
	prime-esxi6	Connected		0
	prime-esxi7	Connected		0

### **Compute Service Pane**

From the Compute Service pane, you can view information about the bare metal blade servers and virtual machines associated with your data center.

The following table describes the information provided in the Compute Service pane.

Column	Description
Name	Name of a compute service resource.
Status	Current status of a compute service resource.
Alarm	Indicates the highest severity of any alarms generated for the compute service resource.
Total Alarm Count	Total number of alarms generated for the compute service resource.
Server	Server associated with the compute service resource.
Customer	Customer associated with the compute service resource.
IP Address	IP address configured for the compute service resource.
Туре	Indicates whether the compute service resource is a bare metal blade or virtual machine.

Column	Description
Hypervisor Type	Type of hypervisor configured for the selected virtual machine.
Lifecycle	Current lifecycle state for the compute service resource: Development, Production, or Staging.
	For more information, see Setting the Lifecycle State and Priority for a Compute Service Resource, on page 13.
Priority	Priority assigned to the compute service resource.
	For more information, see Setting the Lifecycle State and Priority for a Compute Service Resource, on page 13.

### **Hypervisor Pane**

From the Hypervisor pane, you can view information about the hypervisors associated with your data center and determine if the number of alarms for any of these hypervisors is higher than normal.

Column	Description
Name	Name of a hypervisor.
Status	Current status of the hypervisor.
Alarm	Indicates the highest severity of any alarms generated for the hypervisor.
Total Alarm Count	Total number of alarms generated for the hypervisor.
IP Address	IP address configured for the hypervisor.
VMs Count	Number of VMs associated with the hypervisor.
Active VMs	Number of VMs associated with the hypervisor that are currently active.
Suspended VMs	Number of VMs associated with the hypervisor that are currently suspended.

The following table describes the information provided in the Hypervisor pane.

### **Cluster Pane**

From the Cluster pane, you can view information about the device clusters associated with your data center and determine if the number of alarms for any of these clusters is higher than normal.

The following table describes the information provided in the Cluster pane.

Column	Description
Name	Name of a device cluster.
Host Count	Number of host associated with the device cluster.
Alarm	Indicates the highest severity of any alarms generated for the device cluster.
Total Alarm Count	Total number of alarms generated for the device cluster.

Column	Description
vMotion Events	Number of vMotion events that have occurred on the devices associated with a particular cluster.
	A vMotion event is triggered each time a managed virtual machine is moved from one host to another host.

## **Network Window**

From the Network window you can view information for the VPNs managed within your data center and identify any VPNs that need to be looked at more closely (as indicated by a high alarm count). The list of VPNs provided here is gathered from Prime Network.



**Note** When Virtual Routing and Forwarding (VRF) is deleted from the network, the corresponding VPN is deleted automatically after 10 days.

ïgure 3: Network Window				
cisco Prime Cisco Prime Central	A Home	Design ▼ Fulfill ▼	Assure <b>*</b> Analyze <b>*</b>	Inventory 🔻
Data Center				
Overview Compute Network Storage				
VPN (MPLS)				
Service Name	Alarm	+ Total Alarm Count	Site Count	Customer
🗆 🕨 🛥 management		0	1	
🗆 🕨 🛥 TuePMG		0	0	
🗆 🕨 🛥 NICOLA		0	2	
MPLS-SP-DAY		0	2	
MPLS-SP-AXPO-Day1		0	2	
VPNX2		0	0	
Voice_Services		0	1	
🗆 🕨 🛥 O2L3VPN		0	0	
PMGPMG	$\leq$	0	2	
Belgacom2		0	3	
V176:HelloWorld1	~	0	1	

The following table describes the information provided in the VPN (MPLS) pane.

Column	Description
Service Name	Name of the VPN.

Column	Description
Alarm	Indicates the highest severity of any alarms generated for the VPN.
Total Alarm Count	Number of alarms generated for the VPN.
Site Count	Number of sites the VPN is associated with.
Customer	Indicates the customer associated with the VPN. Note that only one customer can be associated with a VPN at any given time.

# **Storage Window**

From the Storage window you can view information for the storage devices associated with your data center and quickly determine if you need to free up space on any of these devices. The list of devices displayed here is gathered from Prime Network.

#### Figure 4: Storage Window

Crisco       Prime Central       Design ▼       Fulfill ▼       Assure ▼       Analyze ▼       Inventory ▼       Administration ▼         Data Center       Overview       Compute       Network       Storage       Storage       Storage         DataStore       Synchronize       Add to Group       Free Space GB (%)       Capacity GB         Name       Type       Free Space GB (%)       Capacity GB         Sign-16-ds2-lung@i6-vcenter-2:-:sjo-i6       VMFS       1989.71 (97%)       2047.75         Sign-16-ds2-lung@i6-vcenter-2:-:sjo-i6       VMFS       1947.41 (95%)       2047.75	
Data Center           Overview         Compute         Network         Storage           DataStore	
Overview         Compute         Network         Storage           DataStore	
Name         Type         Free Space GB (%)         Capacity GB                sjo-i6-ds2-lun9@i6-vcenter-2:-:sjo-i6             VMFS             1958.74 (96%)             2047.75                sjo-i6-ds2-lun9@i6-vcenter-2:-:sjo-i6             VMFS             1989.71 (97%)             2047.75                sjo-i6-ds2-lun7@i6-vcenter-2:-:sjo-i6             VMFS             1989.71 (97%)             2047.75	
Name         Type         Free Space GB (%)         Capacity GB           Sjo-i6-ds2-lun9@i6-vcenter-2:-i5jo-i6         VMFS         1958.74 (96%)         2047.75           Sjo-i6-ds2-lun8@i6-vcenter-2:-i5jo-i6         VMFS         1989.71 (97%)         2047.75           Sjo-i6-ds2-lun7@i6-vcenter-2:-i5jo-i6         VMFS         1989.71 (97%)         2047.75	_
Name         Type         Free Space GB (%)         Capacity GB           is jo-i6-ds2-lun9@i6-vcenter-2:-isjo-i6         VMFS         1958.74 (96%)         2047.75           is jo-i6-ds2-lun8@i6-vcenter-2:-isjo-i6         VMFS         1989.71 (97%)         2047.75           is jo-i6-ds2-lun7@i6-vcenter-2:-isjo-i6         VMFS         1989.71 (97%)         2047.75           is jo-i6-ds2-lun7@i6-vcenter-2:-isjo-i6         VMFS         1947.41 (95%)         2047.75	
Name         Type         Free Space GB (%)         Capacity GB           is jo-i6-ds2-lun9@i6-vcenter-2:-sjo-i6         VMFS         1958.74 (96%)         2047.75           is jo-i6-ds2-lun8@i6-vcenter-2:-sjo-i6         VMFS         1989.71 (97%)         2047.75           is jo-i6-ds2-lun7@i6-vcenter-2:-sjo-i6         VMFS         1989.71 (97%)         2047.75	
Name         Type         Free Space GB (%)         Capacity GB           is jo-i6-ds2-lun9@i6-vcenter-2:-sjo-i6         VMFS         1958.74 (96%)         2047.75           is jo-i6-ds2-lun8@i6-vcenter-2:-sjo-i6         VMFS         1989.71 (97%)         2047.75           is jo-i6-ds2-lun7@i6-vcenter-2:-sjo-i6         VMFS         1947.41 (95%)         2047.75	
Name         Type         Free Space GB (%)         Capacity GB           isigo-i6-ds2-lun9@i6-vcenter-2:-sigo-i6         VMFS         1958.74 (96%)         2047.75           isigo-i6-ds2-lun8@i6-vcenter-2:-sigo-i6         VMFS         1989.71 (97%)         2047.75           isigo-i6-ds2-lun7@i6-vcenter-2:-sigo-i6         VMFS         1947.41 (95%)         2047.75	
Image: Sign-16-ds2-lun9@i6-vcenter-2:::Sj0-16         VMFS         1958.74 (96%)         2047.75           Image: Sign-16-ds2-lun8@i6-vcenter-2:::Sj0-16         VMFS         1989.71 (97%)         2047.75           Image: Sign-16-ds2-lun7@i6-vcenter-2:::Sj0-16         VMFS         1947.41 (95%)         2047.75	
Image: sign-i6-ds2-lun8@i6-vcenter-2::sj0-i6         VMFS         1989./1 (9/%)         2047./5           Image: sign-i6-ds2-lun7@i6-vcenter-2::sj0-i6         VMFS         1947.41 (95%)         2047.75	
L 🖾 sjo-i6-ds2-lun7@i6-vcenter-2:-:sjo-i6 VMFS 1947.41 (95%) 2047.75	
✓         jo-i6-ds2-lun6@i6-vcenter-2:-sjo-i6         VMFS         2003.27 (98%)         2047.75	
C sjo-i6-ds2-lun5@i6-vcenter-2:-sjo-i6 VMFS 1709.18 (83%) 2047.75	
Construction of the second sec	
Image: Sign-16-ds2-lun3@i6-vcenter-2:-:sign-16         VMFS         1914.55 (93%)         2047.75	
Image: Sign-i6-ds2-lun2@i6-vcenter-2:-:Sign-i6         VMFS         1908.73 (93%)         2047.75	
Image: Sign-i6-ds2-lun1@i6-vcenter-2:-:sjo-i6         VMFS         1914.74 (94%)         2047.75	
Image: Sign-i6-ds2-lun14@i6-vcenter-2:-:sign-i6         VMFS         967.99 (85%)         1135.0	
Image: Signed-ds2-lun13@i6-vcenter-2:-:signed         VMFS         1914.74 (94%)         2047.75	
Image: Signed-Gds2-lun12@i6-vcenter-2:-:sjo-i6         VMFS         1932.47 (94%)         2047.75	
□ 🛅 sjo-i6-ds2-lun11@i6-vcenter-2:-:sjo-i6 VMFS 1996.33 (97%) 2047.75	
□ 💼 sjo-i6-ds2-lun10@i6-vcenter-2:-:sjo-i6 VMFS 1918.77 (94%) 2047.75	
□ 🔄 sjo-i6-ds2-lun0@i6-vcenter-2:-:sjo-i6 VMFS 1033.89 (50%) 2047.75	
Image: State of the second state of the sec	
□ 🔄 datastore1@vCenter:-:DCDEV VMFS 23.37 (4%) 🔟 552.0	
□ 🔂 datastore1@/6-vcenter-2:-:sjo-/6 VMFS 86.3 (99%) 87.25	
□ 🖾 datastore1 (3)@/6-vcenter-2:-:50-/6 VMFS 86.3 (99%) 87.25	

The following table describes the information provided in the Storage window.

Column	Description
Name	Device name.
Туре	Device type.

Column	Description		
Free Space GB (%)	Percentage of available free space on a device.		
Capacity GB	Total storage capacity of a device.		

## **Data Center Dashboards**

When monitoring your data center, you can view dashboards that provide a higher level of detail for the selected compute service resource or VPN (see the following figure). In addition to information that is specific to the type of resource you selected (such as the number of active virtual machines running on a hypervisor or the status of physical interfaces on a VPN), these dashboards provide alarm information and performance metric charts.



Note

The Data Center dashboard for Prime Optical devices does not include performance metric charts.

#### Figure 5: Data Center Dashboard

Cisco Prime Cisco Prime Central	A Home	Design ▼ Fulfill ▼	Assure  Analyze	e ▼ Inventory ▼ A
Overview Compute Network	k Storage			
🗹 🔻 🛃 prime-esxi2		Connected	V	9
prime-esxi2				
▼ Performance Metrics CPU Utilization (%)	Memory Utiliz	ation (%)	Disk Utilization (%)	
<b>4</b> 8 4	29 ♀ 0 11 6h~	29 29 6h▼	30 0 0 30%	6h~
	Propertie	15		
▼ General Nam Descriptio O CPU Memor Serve	e prime-esxi2 on VMware ESXi S ESXi 5.0.0 Js 6 @ 2.66 GHz ry er <b>Server 1: N20-B6625-2</b>			▼ Virtualizatio
▼ Alarms	Outstanding Alarms	<b>♥</b> 9 <u>∧</u> 0 �0		▼ VMs
Severity Status	Description	Location		VMs
V	Virtual machine memory usage	crossed t VirtualDataO	enterName=DCDEV/Hc	prime-dc     prime-sting

To access these dashboards:

#### Procedure

- **Step 1** From the Prime Central menu, choose Assure > Services > Data Center.
- **Step 2** Do one of the following:
  - Click the **Compute** tab and proceed to Step 3.
  - Click the Network tab and skip ahead to Step 4.
- **Step 3** Click the **Compute Service**, **Hypervisor**, or **Cluster** tab.

**Step 4** To the left of the compute service resource or VPN name, click the **Expand** icon to open the corresponding dashboard.

When viewing a VPN dashboard, you can cross-launch the application that manages the selected VPN or a VRF instance configured on that VPN and retrieve even more detailed information for it by clicking the appropriate source icon. Note the following:

- There are two sets of source icons. The icons in the top-right corner of the dashboard apply to the selected VPN, and the icons in the Properties table apply to the VRF selected in the VPN table.
- If multiple instances of Prime Network and Prime Optical are running and you click an icon, the instance with the highest priority associated with the VPN or VRF is launched.

In the dashboard for a bare metal server or a hypervisor, the CPUs field shows the number of CPU cores at a given CPU speed. Bare metal servers can have multiple CPU listings that might appear to be identical, but are unique per CPU.

### **Data Center 360° View**

To quickly view additional information for a compute service resource, VPN, or storage device, open its 360° view. To do so, place your cursor over the resource's table entry and then click the radio button in one of the following columns:

- Name column (Compute Service pane, Hypervisor pane, Clusters pane, and Storage window)
- Service Name column (Network window)
- Hypervisor Type (when launching a hypervisor's 360° view in the Compute Service pane)

The information displayed will vary (depending on the resource type you select), but typically the 360° view provides alarm information and performance metric charts. You can cross-launch the application that manages the resource and retrieve even more detailed information for it by clicking the appropriate source icon.



Note

- If multiple Prime Network or Prime Optical instances are running, the instance with the highest priority will be launched.
- The 360° view for Prime Optical devices does not include performance metric charts.

Figure 6: Data Center 360° View



# **Synchronizing Scopes and Inventory Data**

Administrators can perform an on-demand, manual synchronization of user device scopes and inventory. When you first add a vCenter to Prime Network, you must manually synchronize the data center logical inventory to see the updates immediately in Prime Central. Alternately, you can wait for the automatic inventory synchronization, which occurs every two days. (Manual synchronization is not required when you add a virtual machine or ESX server to a vCenter that is already present in Prime Central.)

To synchronize scopes and inventory data:

#### Procedure

**Step 1** From the Prime Central menu, choose **Assure** > **Services** > **Data Center**. The Data Center page opens.

- Step 2 Click the Compute, Network, or Storage tab.
- Step 3 Click the Synchronize icon.
  - **Note** Only administrators can see the Synchronize icon, which is hidden for all other users.
- **Step 4** In the Synchronize dialog box, do the following:
  - a) Click the appropriate radio button:
    - Scopes—Lets you synchronize device scopes for all Prime Central users.
    - Scope and Logical Inventory-Lets you synchronize all device scope and logical inventory data.
      - **Note** When an application goes down, its inventory data can get out of sync with the data center. To ensure that you are viewing the latest inventory data, we recommended that you perform an on-demand synchronization with this radio button selected. We also recommend that you do this after completing the upgrade to Prime Central 1.5.2.
    - Scope and Physical Inventory—Lets you synchronize only the device scope and physical inventory data that was received since the last synchronization.

The time stamp of the last synchronization is displayed for all of these options.

- b) Click Sync Now.
- **Step 5** In the top-right corner of the Data Center page, click the **Refresh** icon. The synchronized data is displayed.

### Setting the Lifecycle State and Priority for a Compute Service Resource

In the Compute Service pane, you can assign lifecycle states and priority values to resources that are associated with customers. Note that the values set for these parameters have no effect on how Prime Central manages the resources. Their purpose is to allow you to logically group resources and quickly identify the resources of a particular lifecycle state or priority when necessary. It is up to you to define what the various lifecycle states and priority values mean for your data center.

#### Procedure

Step 1From the Prime Central menu, choose Assure > Services > Data Center.Step 2From the Data Center page, click the Compute tab.Step 3In the Compute Service pane, check the check box for the appropriate resources, and then click the Set<br/>Lifecycle and Priority icon.Step 4Select the lifecycle state you want to assign to the resources.Step 5Select the priority (P1 - P6) you want to assign to the resources.Step 6Confirm that the resources you selected are listed and then click Set.

# **Performing a Contextual Cross-Launch to the Common Inventory Portlet**

While monitoring your data center, you can perform a contextual cross-launch to the Common Inventory portlet and view detailed inventory information for a particular blade server.

#### Procedure

Step 1	From the Prime Central menu, choose Assure > Services > Data Center. The Data Center Over opens.						
Step 2	Click the <b>Compute</b> tab. The Compute Service pane is displayed.						
Step 3	Do one	Do one of the following:					
	• To	view inventory information for a particular blade server, proceed to Step 4.					
	• To view inventory information for the blade server associated with a particular hypervisor, click the <b>Hypervisor</b> tab. The Hypervisor pane is displayed.						
Step 4	To the left of the appropriate blade server or hypervisor, click the <b>Expand</b> icon to open the corresponding dashboard.						
Step 5	From the General section, click the blade server's link. The Common Inventory portlet opens, displaying detailed inventory information for the selected blade server.						
	Note	This link is not displayed for a hypervisor that is not associated with a blade server.					

## **Adding Data Center Resources to Groups**

You can add a compute service resource, VPN, or storage device to any of the static groups configured in the Group Management portlet (Administration > Group Management > Groups). See Adding a Group Member.

### **Associating Data Center Resources with Customers**

Prime Central allows you to associate a compute service resource or VPN with a particular customer. See Associating Resources to Customers.