Cisco Prime Central 1.2 User Guide

July 26, 2013

Cisco Systems, Inc.
www.cisco.com

Cisco has more than 200 offices worldwide.
Addresses, phone numbers, and fax numbers
are listed on the Cisco website at
www.cisco.com/go/offices.

Text Part Number: OL-28574-01

Preface

This guide describes the structure and features of Cisco Prime Central and how to use it.

This preface contains the following sections:

Audience

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
- Red Hat Enterprise Linux administration
- Oracle database administration
- Telecommunication Management Network (TMN) architecture model

Related Documentation

See the *Cisco Prime Central 1.2 Documentation Overview* for a list of Prime Central guides.

See also the documentation for the following applications:

- Cisco Prime Network
- Cisco Prime Optical
- Cisco Prime Performance Manager
- Cisco Prime Provisioning

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 *What's New in Cisco Product Documentation* at: http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html.

Subscribe to *What's New in Cisco Product Documentation*, which lists all new and revised Cisco technical documentation, as an RSS feed and deliver content directly to your desktop using a reader application. The RSS feeds are a free service.

Working with the Prime Central Portal

The following topics will help you get started with the Prime Central portal:

Overview of the Prime Central Portal

Cisco Prime Carrier Management provides end-to-end management, from access to the core, helping enable carrier-class delivery of next-generation voice, mobile, cloud, and managed services. With the modular architecture, you have the flexibility to deploy the entire integrated suite or do it incrementally as you grow your business, depending on your needs.

The Prime Central portal is the main console for operator workflows across multiple applications. The applications listed in the following table are accessible through the Prime Central portal.

Table 1-1 Components of Cisco Prime Carrier Management

Application	Description
Prime Network	Provides management of packet networks, including access, aggregation, edge, MPLS core, and Evolved Packet Core (EPC). Formerly *Cisco Active Network Abstraction*.
Prime Optical	Provides efficient and productive optical infrastructure management for fault, configuration, performance, and security. Formerly *Cisco Transport Manager*.

Table 1-1 Components of Cisco Prime Carrier Management (continued)

Application	Description
Prime Performance Manager	Provides performance statistics and reports for service provider and large enterprise networks, including access, edge, distribution, core, mobile backhaul, Carrier Ethernet, MPLS core, and EPC networks.
Prime Provisioning	Provides automated resource management and rapid profile-based provisioning capabilities for Carrier Ethernet, Radio Access Network (RAN) backhaul, Multiprotocol Label Switching (MPLS), and Packet Transport technologies. Formerly *Cisco IP Solution Center* and *Cisco Prime Fulfillment Provisioning*.

See the *Cisco Prime Central 1.2 Release Notes* for the latest application versions that are compatible with Prime Central 1.2.

Key Features

The Prime Central portal plays the role of the presentation tier for the entire suite. The portal provides:

- A single point of access (single sign-on) to Prime Central and the individual applications.
- Support for LDAP, TACACS+, and RADIUS authentication plugins.
- Common customer management and user management with role-based access control (RBAC).
- Security settings you can configure for all users in your network, such as:
  - Maximum login attempts.
  - Maximum active user sessions.
  - User inactivity period before deactivation.
- Customizable login advisory messages.
- Bulk import of users specified in an Excel spreadsheet.
- Bulk reporting of user logins.
- Database and application monitoring.
- Common physical inventory management:
  - Detailed physical inventory and Device 360° views.
  - Filter and search capabilities.
  - Seamless drill-down to individual applications.
  - Support for multiple instances of Prime Network and Prime Optical.
- Common cross-domain alarm management:
  - Aggregation, correlation, and deduplication of alarms.
  - Portlets with customized views and filters.
  - Seamless cross-launch of the source application.
  - Seamless access from alarms to common inventory.
  - Pregenerated reports for active and historical alarms.
  - SNMPv1, v2c, and v3 forwarding (OSS integration).

- Security audit information, which can be viewed in the Audit Log portlet.
- Virtualization on VMware configurations.
- Operational redundancy:
  - You can install Prime Central and an embedded Oracle database in a local redundancy, high availability (HA) configuration that uses the Red Hat Cluster Suite (RHCS). Other operational redundancy deployments are not supported. The HA configuration uses dual-node clusters to provide automatic failover for local hardware and software faults, ensuring minimum disruption to the end user by allowing clusters to maintain their floating-point IP addresses.

    The HA option must be purchased and installed separately from Prime Central 1.2.
- Cross-launch to Cisco InTracer, a high-performance, subscriber troubleshooting and monitoring solution.

Security

Prime Central security features include:

- HTTPS support for transporting user credentials.
- SSL encryption of all single sign-on (SSO) traffic.
- URL-based SSL traffic encryption available upon configuration.
- Configurable session timeout with a default value.
- Role-based, password-protected access for multiple users.
- Password enforcement policies, such as aging, minimum length, and lockouts.
- Audit trails of all user actions and all access through the web interface.
- Cleanup of session states and expiration of cookies upon session timeout.
- Cross-site scripting and SQL injection guard.
- Mutual authentication between SSO and all SSO participating applications: Prime Network, Prime Optical, Prime Performance Manager, and Prime Provisioning.

Note For HTTPS communication, only Secure Sockets Layer version 3 (SSLv3) and Transport Layer Security version 1 (TLSv1) are allowed. The highest exportable SSL ciphers for encryption communication are used.

Logging Into the Prime Central Portal

Prime Central features single sign-on (SSO), meaning that when you log into the Prime Central portal, you do not have to log in separately to each application within your domain.

Using an open-source product called Central Authentication Service (CAS), the SSO solution offers a central authoritative source that is shared by the Prime Central portal and applications.

With an SSO CAS solution, different applications can authenticate to one authoritative source of trust. You then log into that single source; you do not have to log into each application separately. Any authentication provider (such as RADIUS, TACACS+, or LDAP) can use the eXtensible Management Platform (XMP) login mechanism within the CAS authentication handler. CAS SSO applies to all web applications that are running under the same browser session.

To log into the Prime Central portal:

Step 1 Open a Prime Central-supported web browser and enter **https://***server-hostname***:***https-port-number*, where:

- *server-hostname* is the hostname of the Prime Central portal.
- *https-port-number* is the SSL port number that was configured during installation. The default SSL port is 8443.

Note Use a Prime Central-supported browser as your default web browser with caching and cookies enabled. If you log into Prime Central with a web browser that is not your default browser:

- You might need to log in again when you cross-launch from one application to another.
- A cross-launched application might remain open even after you log out of Prime Central.

The login window (Figure 1-1) opens.

Step 2 Enter your username and password.

If you are an administrator logging in for the first time, enter the username *centraladmin* and the password that you configured during installation.

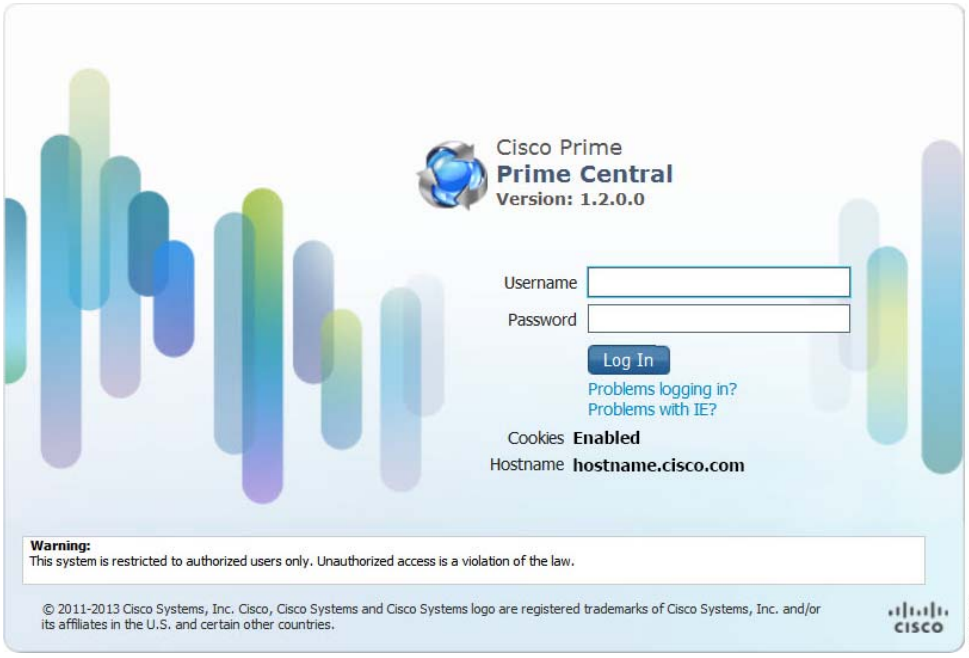
Step 3 Click **Log In**.

Step 4 In the Terms of Use window, click **Agree**.

Step 5 Accept the self-signed, untrusted security certificates.

- In Firefox, if you accept the security certificates, they do not reappear upon subsequent logins.
- In Internet Explorer, if you accept the security certificates without placing them in the trusted certificate store, they reappear upon subsequent logins. If you place the certificates in the trusted store, they do not reappear upon subsequent logins. See Placing Certificates in the Internet Explorer Trusted Store, page 1-22.

Figure 1-1 Prime Central Login Window



Customizing Login Advisory Messages

Advisory messages are shown both before and after a user logs into Prime Central. By default, these messages read as follows:

- Pre-login message—Warning: This system is restricted to authorized users only. Unauthorized access is a violation of the law.
- Post-login terms-of-use message—Warning: You are accessing a private network. Unauthorized access is a violation of the law.

Customizing the Pre-Login Advisory Message

Step 1 Log into the Prime Central portal as the primeusr user.

Step 2 In a text editor, open the $XMP_HOME/tomcat-7.0.23/webapps/ROOT/html/xmp/xwt/nls/en-us/sso_login.js file.

Step 3 Update the login_disclosure variable with the desired text changes.

Step 4 Save your changes to the sso_login.js file.

Step 5 Restart the Prime Central portal.

Step 6 Log out of the Prime Central portal, clear your browser cache, and log back in.

Customizing the Terms-of-Use Message That Appears After Login

Step 1 Log into the Prime Central portal as a user with administrator-level privileges.

Step 2 From the Prime Central menu, choose **Administration > System > Global Settings**.

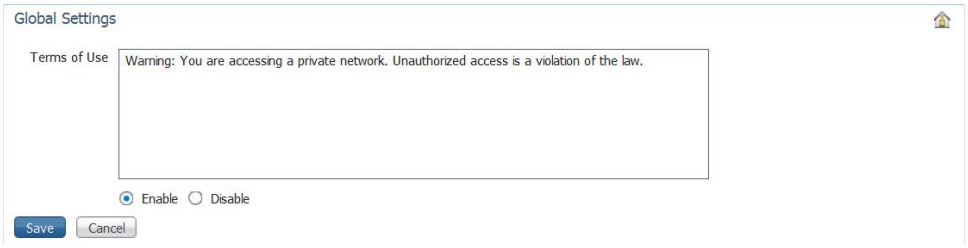
Step 3 In the Global Settings portlet (Figure 1-2), modify the terms-of-use text as desired.

Step 4 To configure when users see the terms-of-use message, click one of the following radio buttons:

- **Enable**—The terms-of-use message appears every time a user logs into Prime Central.
- **Disable**—The terms-of-use message appears only the first time a user logs into Prime Central.

Step 5 Click **Save**.

Figure 1-2 Global Settings Portlet



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 application cross-launch or user management.
- A single 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.
- Prime Central supports up to 30 simultaneous application cross-launches across multiple users.
- 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 individual applications run.

Customizing the Prime Central Portal

When you log into Prime Central, the portlets that you see on the home page depend on your user privileges and which applications are installed and available. Figure 1-3 shows the Prime Central home page with the Alarm Browser portlet partially visible.

Figure 1-3 Prime Central Home Page

1	Content area, with content that depends on your portlet selections	**9**	Refresh Current Page icon
2	Menu bar, with main menu choices	**10**	Help icon
3	Home menu and icon	**11**	Remove icon
4	*Logged-in user* link	**12**	Maximize icon
5	Log Out link	**13**	Minimize icon
6	About link	**14**	Message Center
7	Add Portlets icon	**15**	Alarm Summary
8	Change Layout icon	—	—

Adding a Portlet

Note the following about portlet management:

- By default, administrators can see all available portlets.
- Administrators can assign different portlets and layouts for each user role. The portlets are added automatically to a user's Prime Central home page.

- At first login, the user sees a set of portlets in a particular layout based on the logged-in user's role. The user can then customize the portlet selection and layout.

To add a portlet:

Step 1 On the Prime Central home page, click the **Add Portlets** icon.

Step 2 In the Add Portlets dialog box, click **Cisco Prime**.

Step 3 Select the desired portlet and click **Add**. Alternatively, drag and drop the portlet to the desired location on the home page.

You cannot add multiple instances of the same portlet to the home page.

Step 4 Click the Close (**X**) icon to close the Add Portlets dialog box.

Maximizing or Minimizing a Portlet

Step 1 Click the **Maximize** or **Minimize** icon in the top-right corner of the portlet.

Step 2 To exit the view, do one of the following:

- In a maximized view, click the **Return to Home** icon in the top-right corner.
- In a minimized view, click the **Restore** icon in the top-right corner. (The Minimize and Restore icons are toggle buttons.)

Removing a Portlet

Step 1 In the top-right corner of the portlet, click the **Remove** icon.

Step 2 At the confirmation prompt, click **OK**.

Adding or Removing Columns in a Portlet

Step 1 In the top-right corner of the portlet, click the **Settings** icon.

Note Although the Alarm Browser and Alarm Report portlets do not have a Settings icon, you can customize their display. See Changing the Alarm Information Displayed, page 6-12 and Specifying the Report Order, page 6-25.

Step 2 Click **Columns**. A list of all available columns in that portlet is displayed. Columns with a check mark are shown in the portlet; columns without a check mark are not shown in the portlet.

Step 3 Uncheck the columns that you do not want displayed in the portlet. Check the columns that you want displayed.

Step 4 Click **Close**.

Changing the Layout of the Home Page

Note the following layout constraints:

- Large portlets—such as User Management and Common Inventory—cannot be positioned together in a single row.
- Portlets are not rearranged automatically, unless you choose one of the following options:
  - Free (free-form)
  - 1 col (1 column)
- When a window is minimized or maximized, you cannot drag and drop portlets to rearrange them.
- If you choose the Free layout option, portlets are not aligned automatically; instead, you must rearrange them manually. In contrast with other layouts, the Free layout takes up the entire browser window instead of only the content area.

To change the layout of the home page:

Step 1 On the Prime Central home page, click the **Change Layout** icon.

Step 2 Click the radio button that corresponds to the desired layout (one column, 50/50, and so on).

Step 3 Click **Save**.

Changing the Time Zone

Prime Central stores events in the database in Coordinated Universal Time (UTC). The Prime Central portal converts events to the time zone that is configured on the client's workstation.

You can use the User Preferences portlet to change the default time zone used for time stamp displays.

Step 1 From the Prime Central menu, choose **Administration > System > User Preferences**.

Step 2 In the User Preferences portlet, select a time zone from the Time Zone drop-down list.

Time zone options are shown as offsets from UTC. The offset range is –11 to +14 hours from UTC.

Note The Language drop-down list is display only. U.S. English is the only language supported in Prime Central 1.2.

Step 3 Click **Save**.

Step 4 On the Prime Central home page, click the **Refresh Current Page** icon to see the time zone change.

Changing the Prime Central Session Timeout

By default, the Prime Central session times out after 60 minutes of inactivity. You are prompted to extend the session 10 minutes before it times out. If you do not extend the session before the timeout, you are logged out automatically from Prime Central and from any applications.

When a session times out, the login window appears. When you log back in, you return to the Prime Central home page. It is recommended that you clear your browser cache and delete cookies before logging in again.

To change the default user session timeout, see Configuring User Security Settings, page 2-11.

Changing the Fault Management Session Timeout

By default, the Prime Central Fault Management session times out after 24 hours of inactivity. If you set the portal timeout to longer than 24 hours, you must change the Fault Management timeout to align with the portal timeout.

To change the Prime Central Fault Management session timeout:

Step 1 Log out of the Prime Central portal.

Step 2 As the primeusr user, log into the Prime Central Fault Management server.

Step 3 Enter the following command to stop the server:

```
$NCHOME/fmctl stop
```

Step 4 Open the $NCHOME/tipv2/profiles/TIPProfile/config/cells/TIPCell/security.xml file and locate the following section:

```
<authMechanisms xmi:type="security:LTPA" xmi:id="LTPA_1" OID="oid:1.3.18.0.2.30.2"
authContextImplClass="com.ibm.ISecurityLocalObjectTokenBaseImpl.
WSSecurityContextLTPAImpl" authConfig="system.LTPA" simpleAuthConfig="system.LTPA"
authValidationConfig="system.LTPA" timeout="1440" keySetGroup="KeySetGroup_TIPNode_1">
```

Step 5 Change the value of the timeout attribute as necessary. The default is 1440 minutes (24 hours).

Step 6 Save and close the security.xml file.

Step 7 Enter the following command to start the Prime Central Fault Management server:

```
$NCHOME/fmctl start
```

Step 8 Log into the Prime Central portal.

Menu Structure

When you log into Prime Central, the menu structure that you can access depends on your user privileges and which applications are installed and available. The following menus are visible to users with administrator-level privileges:

- Home Menu, page 1-11
- Design Menu, page 1-11
- Fulfill Menu, page 1-12

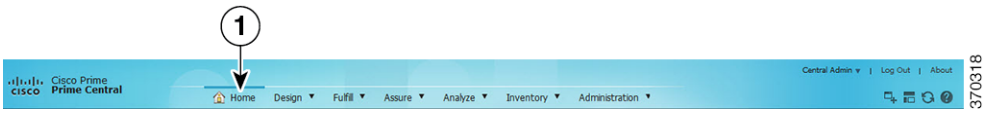
- Assure Menu, page 1-12
- Analyze Menu, page 1-13
- Inventory Menu, page 1-14
- Administration Menu, page 1-14

Note Although some browsers allow you to open multiple tabs within a single browser instance, you should not try to access the Prime Central portlets across multiple tabs within the same browser instance. You can, however, cross-launch to an application in a new browser tab.

Home Menu

The Home menu (Figure 1-4) takes you to the Prime Central home page. When a portlet is maximized, the Return to Home icon returns you to the home page.

Figure 1-4 Home Menu



Design Menu

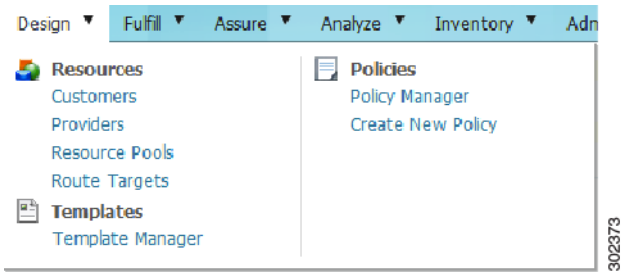
From the Design menu (Figure 1-5), network designers can define the resources needed to build service profiles. Operators can then use these service profiles to fulfill service requests, provision, and activate the service.

The Design menu cross-launches Prime Provisioning, where you can perform the following functions:

- Customers—Create and manage customers. A customer is typically an enterprise or large corporation that receives network services from a service provider.
- Providers—Create and manage provider accounts. A provider is typically a “service provider” or large corporation that provides network services to a customer.
- Resource Pools—Create and manage pools for IP address, multicast address, route distinguisher, site of origin, virtual circuit ID (VC ID), and VLAN.
- Route Targets—Create and manage route targets. A VPN can be organized into subsets called route targets, which describe how the customer edge (CE) router in a virtual private network (VPN) communicate with each other.
- Template Manager—Create and manage templates and associated data. Templates provide a means to deploy commands and configurations not normally supported by Prime Provisioning to a device. Templates are written in the Velocity Template Language (VTL) and are generally comprised of IOS and IOS XR device CLI configurations.
- Policy Manager—Create and manage policies for licensed services. Policies are used to define common tunnel attributes such as bandwidth pools, hold and setup priority, and affinity bits.
- Create New Policy—Create a new service policy, which can be applied to multiple provider edge (PE)-CE links in a single service request. A network operator defines service policies. A service operator uses a service policy to create service requests.

For details about using Prime Provisioning to provision your network, see the *Cisco Prime Provisioning 6.5 User Guide*.

Figure 1-5 Design Menu



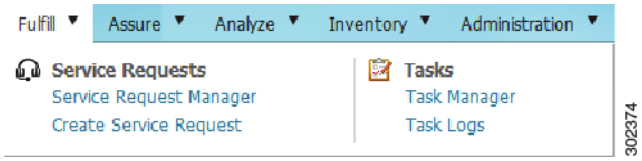
Fulfill Menu

The Fulfill menu (Figure 1-6) cross-launches Prime Provisioning, where you can perform the following functions:

- Service Request Manager—Manage Prime Provisioning service requests.
- Create Service Request—Create a new Prime Provisioning service request.
- Task Manager—View pertinent information about current and expired tasks of all types, create and schedule new tasks, delete specified tasks, and delete the active and expired tasks.
- Task Logs—View task logs, which can be used to understand the status of a task, know whether it completed successfully, and troubleshoot why a task failed.

For details about Prime Provisioning service requests and tasks, see the *Cisco Prime Provisioning 6.5 User Guide*.

Figure 1-6 Fulfill Menu



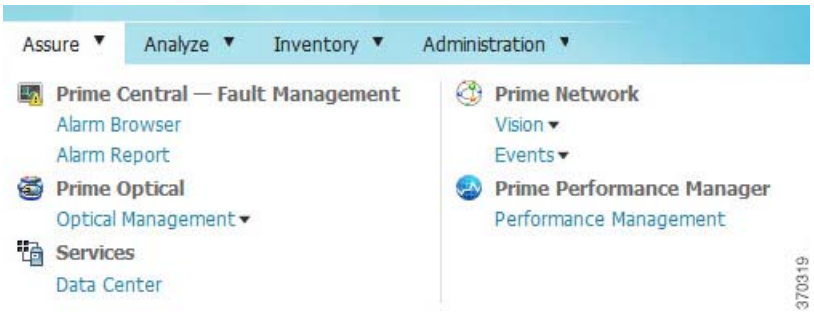
Assure Menu

The Assure menu (Figure 1-7) contains the following menu options:

- Prime Central Fault Management—Cross-launches the following portlets that let you locate, diagnose, and report network problems:
  - Alarm Browser—See Monitoring Affected Services and Customers, page 6-4.
  - Alarm Report—See Analyzing Fault Data, page 6-20.
- Prime Optical > Optical Management—Cross-launches Prime Optical. If your network includes multiple instances of Prime Optical, you can choose which instance to launch. For details about using Prime Optical to manage your optical network, see the *Cisco Prime Optical 9.8 User Guide*.

- Services > Data Center—Opens the Data Center portlet, where you can view information about data center compute services, network, and storage devices.
- Prime Network > Vision or Events—Cross-launches the selected Prime Network application. If your network includes multiple instances of Prime Network, you can choose which instance to launch. For details about using Prime Network to discover and manage your packet network, see the *Cisco Prime Network 4.0 User Guide*.
- Prime Performance Manager > Performance Management—Cross-launches Prime Performance Manager. For details about using Prime Performance Manager to view the performance statistics and reports for a network, see the *Cisco Prime Performance Manager 1.4 User Guide*.

Figure 1-7 Assure Menu



Analyze Menu

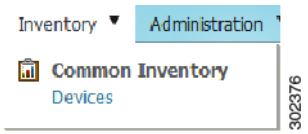
The Analyze menu (Figure 1-8) cross-launches Cisco InTracer, a high-performance, subscriber troubleshooting and monitoring solution. It performs call tracing, control data acquisition, processing, and analysis of both active and historical subscriber sessions. Cisco InTracer provides a framework for operators to analyze and investigate call flows and call events for subscriber sessions in near-real time. For more information about InTracer, see the *Cisco InTracer Installation and Administration Guide, 14.0*.

Figure 1-8 Analyze Menu

Inventory Menu

The Inventory menu (Figure 1-9) lets you view detailed inventory information for all devices in your network.

Figure 1-9 Inventory Menu

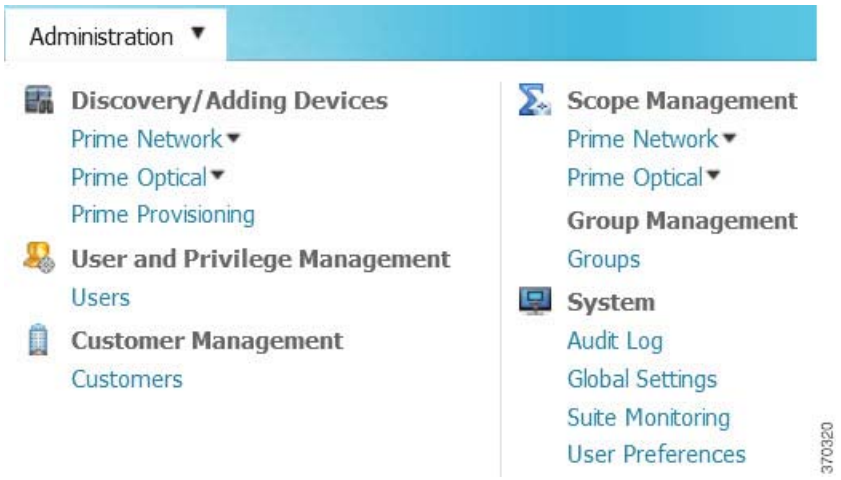


Administration Menu

The Administration menu (Figure 1-10) contains the following menu options:

- Discovery/Adding Devices—Cross-launches Prime Network, Prime Optical, or Prime Provisioning. If your network includes multiple instances of Prime Network or Prime Optical, you can choose which instance to launch.
- User and Privilege Management > Users—Lets you perform user management operations, including defining users and passwords and configuring RBAC.
- Customer Management > Customers—Lets you add, edit, and delete customers; associate customers with network resources; disable and enable customer accounts; and export customer data.
- Scope Management—Lets you assign device scopes (in Prime Network) or network elements (in Prime Optical) to Prime Central users. If your network includes multiple instances of Prime Network or Prime Optical, you can choose which instance to launch.
- Group Management > Groups—Lets you logically group network devices and services.
- System:
  - Audit Log—Lets you view user activity in Prime Central.
  - Global Settings—Lets you customize the terms-of-use message and configure when users see it.
  - Suite Monitoring—Lets you monitor Prime Central and the individual applications.
  - User Preferences—Lets you change the default time zone used for time stamp displays.

Figure 1-10 Administration Menu



Filtering and Searching

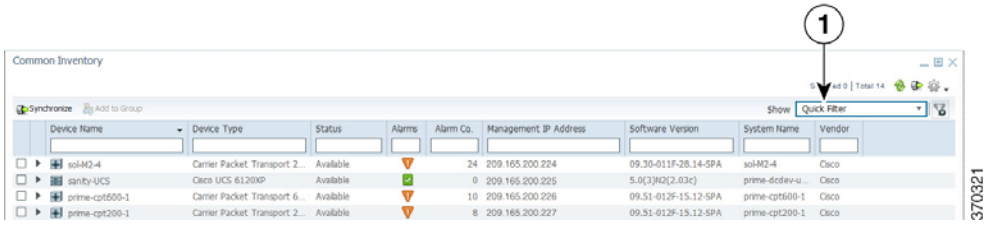
In some tables, the amount of detail can be overwhelming. In such cases, filtering helps eliminate unnecessary details, while searching helps you quickly locate data that you want to examine further.

By filtering a table's contents, you can view only those items that are of interest to you. This feature can be extremely helpful when working with tables that contain many entries.

Filtering Using the Quick Filter

Most portlets have a Show drop-down list with a Quick Filter option, as shown in Figure 1-11.

Figure 1-11 Quick Filter



To use the Quick Filter to narrow the data in a table:

Step 1 From the Show drop-down list, choose **Quick Filter** (Figure 1-11).

Step 2 In the text field for each column, enter the search criteria.

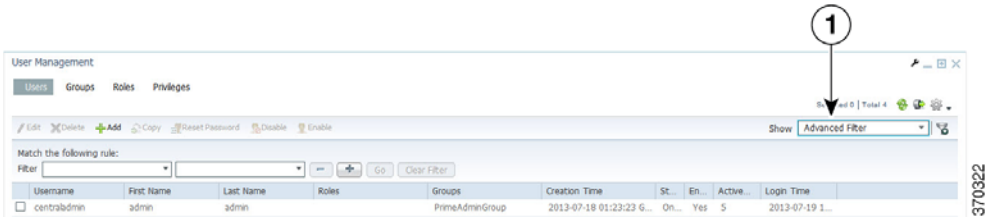
Note In the Common Inventory portlet, the Quick Filter supports a percentage character (%) as a wildcard in the Management IP Address field. Other fields in the Common Inventory portlet do not use this character as a wildcard.

To search on complete octets in the Management IP Address field, the % character is not required. Instead, enter a period; the search returns the complete octet after the period.

Filtering Using the Advanced Filter

Most portlets have a Show drop-down list with an Advanced Filter option, as shown in Figure 1-12.

Figure 1-12 Advanced Filter



To use the Advanced Filter to narrow the data in a table:

Step 1 From the Show drop-down list, choose **Advanced Filter** (Figure 1-12).

Step 2 Specify the required information for each criterion. For more information, see Configuring an Advanced Filter Criterion, page 1-17.

Step 3 Click the **+** icon to add another criterion for this filter.

Step 4 Add additional criteria as required. To remove a criterion, click the **-** icon.

Step 5 When you have specified all criteria for the filter, click **Go**.

The table data is displayed using the defined filter.

Step 6 To clear a filter, click **Clear Filter**.

The table is refreshed and all entries are displayed.

Configuring an Advanced Filter Criterion

The following table describes the actions you need to take when you configure an Advanced Filter criterion.

Table 1-2 Advanced Filter Criterion

Field	Action/Description
First drop-down list	Choose the primary match category. The drop-down list contains all columns in the current table.
Second drop-down list	Choose the rule to use for this criterion. The options are: • Contains—The attribute value is returned if it contains the string you entered. The string can be located at the start, end, or middle of the attribute for the match to succeed. For example, if the string is *cle*, the following values match it in the *contains* mode: *clean*, *nucleus*, *circle*. • Does not contain—In this mode, only those attributes that do not contain the given string match. The results are opposite to that of the *contains* mode. For example, if you enter *cle* in this mode, *clean*, *nucleus*, and *circle* are rejected, but *foot* is deemed to match, because it does not contain *cle*. • Starts with—The value of the attribute must start with the string you entered. For example, if the string is *foot*, *footwork* matches, but *afoot* does not. • Ends with—This is the reverse of the *starts with* case, when a given attribute matches only if the specified string is at the end of the attribute value. In this mode, for example, the string *foot* matches *afoot* but not *footwork*. • Is empty—Lists the result where there is no value in the field. • Is not empty—Lists the result where the value is not missing from the field. • Is exactly (or equals)—This is the most generic mode, in which you can enter a full or partial expression that defines which nodes you are interested in. • Does not equal—Lists the result that does not equal the specified value. • Is greater than—Lists the result that is greater than the specified value. • Is less than—Lists the result that is less than the specified value. • Is greater than or equal to—Lists the result that is greater than or equal to the specified value. • Is less than or equal to—Lists the result that is less than or equal to the specified value.
Third field (either drop-down list or entry field)	The third field either lists the available values or allows you to enter text: • If a drop-down list is displayed, choose the required entry. • If an entry field is displayed, enter a string or regular expression for the criterion. • Any entry that is not a regular expression is treated as a string.

Sorting

To sort data in a table, simply click a column heading. By clicking the column heading, you can toggle between ascending and descending sort order. The column tooltip indicates whether the column is sortable, not sortable, or currently sorted.

Note You can sort only one column at a time.

A triangle next to the column heading indicates the sort order:

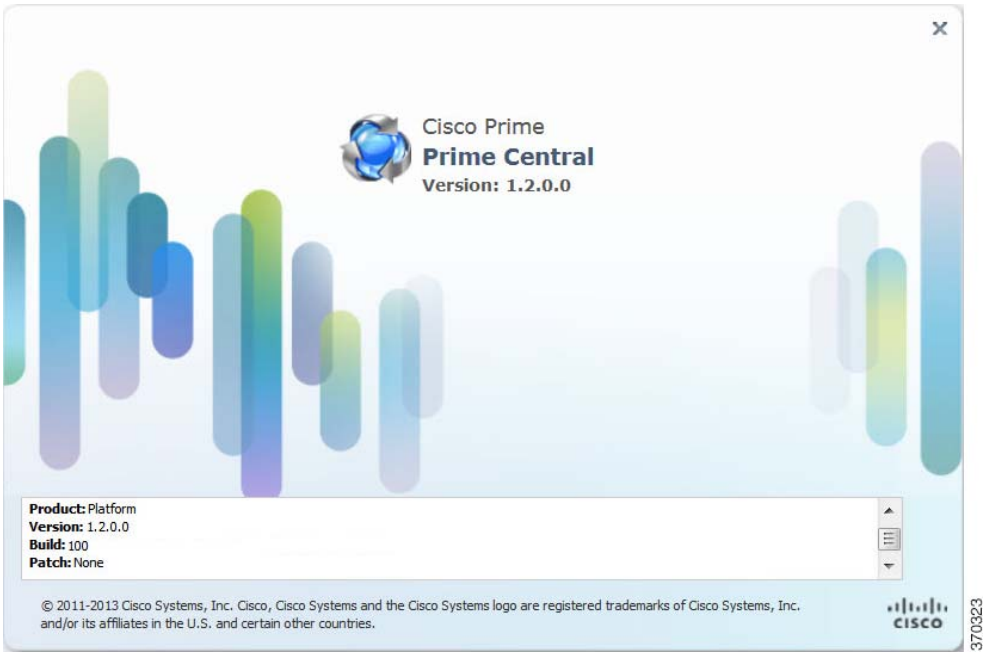
- indicates the column is sorted in ascending order.
- indicates the column is sorted in descending order.

Finding the Prime Central Version

To find the Prime Central version you are running, click the **About** link on the portal home page.

The About window (Figure 1-13) displays the Prime Central version. Use the vertical scroll bar to view the Prime Central build and patch numbers, as well as version information for any installed applications.

Figure 1-13 About Window



Logging Out of the Prime Central Portal

Prime Central features single sign-off. When you log out of the Prime Central portal home page, you are automatically logged out of any suite applications. If you cross-launched an application in a new browser tab or window, you must manually close that browser window after you log out of Prime Central.

Closing the Prime Central Browser Without Logging Out

If your user account has a maximum number of active sessions (for example, one active session), and if you close your browser without logging out of Prime Central, your session is still in use, and you cannot log back in. When you try to log back in, the following error appears:

```
You are running the maximum number of allowed sessions for this user account. Log out from one or more sessions and try again.
```

To restore your login, do either of the following:

- Ask your system administrator to disable and then enable your user account in the User Management portlet. See Enabling or Disabling a User Account, page 2-10.
- Wait for the user session timeout (by default, 60 minutes), at which point your session expires. 10 minutes after expiration, all expired sessions are cleared automatically.

Managing the Self-Signed Certificates

When you log into Prime Central for the first time, some browsers display a warning that the site is untrusted. When this happens, you must accept the self-signed, untrusted security certificates.

You can replace the Prime Central certificates in the following directories with your company's signed, trusted certificates.

Self-Signed Certificate	Certificate Locations
Portal	• *installation-directory*/SHARED/certificate/prime.cer • *installation-directory*/install/utils/sslgen/prime.cer When the prime.cer certificate is replaced with your company's signed certificate in the preceding locations, delete the old prime.cer certificate and add the new certificate in the following keystores: • *installation-directory*/install/utils/sslgen/prime.keystore • *installation-directory*/XMP_Platform/jre/lib/security/cacerts
Integration layer	• *installation-directory*/apache-servicemix-*version*/etc/certs/prime-client.jks • *installation-directory*/apache-servicemix-*version*/etc/certs/prime-ks.jks • *installation-directory*/apache-servicemix-*version*/etc/certs/prime-ts.jks
Prime Central Fault Management	See Replacing the Certificates for Prime Central Fault Management, page 1-19.

Replacing the Certificates for Prime Central Fault Management

Complete the following procedures to obtain new Secure Sockets Layer (SSL) certificates for Prime Central Fault Management.

Creating a Certificate Signing Request with WebSphere

Step 1 Verify that the keystore used to store the certificate signing request exists.

Step 2 On a supported browser, go to **https://***Fault-Management-server-IP-address***:***Fault-Management-web-service-listener-port***/primefm/console**.

Note The Prime Central Fault Management web service listener port is 16311.

Step 3 Log in with the username and password that you configured for the Prime Central Fault Management application user during installation.

Step 4 Choose **Settings > WebSphere Administrative Console > Launch WebSphere administrative console**.

Step 5 From the left-pane menu bar in the Integrated Solutions Console tab, choose **Security > SSL certificate and key management**.

Step 6 From the Related Items list in the center pane, choose **Key stores and certificates**.

Step 7 From the table of keystores and certificates, choose the appropriate keystore. The default is NodeDefaultKeystore.

Step 8 At the right of the Properties menu, choose **Personal certificate requests** from the Additional Properties list.

Step 9 From the table of existing certificate signing requests, click the **New** button at the top of the menu.

Step 10 From the General Properties menu, enter the following values:

- For the certificate request file, enter the desired path for the certificate signing request. By default, the path is ${CONFIG_ROOT}/cells/TIPCell/nodes/TIPNode/*desired-filename-for-certificate-signing-request*.
- For the key label, enter an alias name that identifies the certificate request in the keystore.

Step 11 Enter values in the remaining fields as you would for a normal certificate signing request.

Step 12 Click **Apply**.

The certificate signing request is created in the specified location and the associated entry is recorded in the keystore. The certificate signing request functions as a temporary placeholder for the signed certificate until you manually receive the certificate in the keystore.

Note Keystore tools such as keyTool cannot receive signed certificates that are generated by certificate requests from the WebSphere Application Server (WAS). Similarly, the WAS cannot accept certificates that are generated by certificate requests from other keystore utilities.

Step 13 Manually send the certificate signing request to a certificate authority (CA).

Step 14 Receive the CA-signed certificate into the keystore.

Receiving a Certificate Issued By a WebSphere Certificate Authority

Step 1 Verify that the keystore contains the certificate request that was created and sent to the CA.

Step 2 Verify that the keystore can access the certificate that the CA returned.

Step 3 On a supported browser, go to **https://***Fault-Management-server-IP-address***:***Fault-Management-web-service-listener-port***/primefm/console**.

Note The Prime Central Fault Management web service listener port is 16311.

Step 4 Log in with the username and password that you configured for the Prime Central Fault Management application user during installation.

Step 5 Choose **Settings > WebSphere Administrative Console > Launch WebSphere administrative console**.

Step 6 From the left-pane menu bar in the Integrated Solutions Console tab, choose **Security > SSL certificate and key management**.

Step 7 From the Related Items list in the center pane, choose **Key stores and certificates**.

Step 8 From the table of keystores and certificates, choose the appropriate keystore. The default is NodeDefaultKeystore.

Step 9 At the right of the Properties menu, choose **Personal certificates** from the Additional Properties list.

Step 10 From the table of certificates, click the **Receive from a certificate authority** button at the top.

Step 11 From the General Properties menu, enter the following values:

- For the certificate filename, enter the path for the certificate received from the CA. By default, the path is ${CONFIG_ROOT}/cells/TIPCell/nodes/TIPNode/*filename-of-certificate*.
- For the data type, choose the certificate data type.

Step 12 Click **Apply** and **Save**.

The keystore contains a new personal certificate that is issued by a CA.

Importing an Existing Certificate into WebSphere

Step 1 On a supported browser, go to **https://***Fault-Management-server-IP-address***:***Fault-Management-web-service-listener-port***/primefm/console**.

Note The Prime Central Fault Management web service listener port is 16311.

Step 2 Log in with the username and password that you configured for the Prime Central Fault Management application user during installation.

Step 3 Choose **Settings > WebSphere Administrative Console > Launch WebSphere administrative console**.

Step 4 From the left-pane menu bar in the Integrated Solutions Console tab, choose **Security > SSL certificate and key management**.

Step 5 From the Related Items list in the center pane, choose **Key stores and certificates**.

Step 6 From the table of keystores and certificates, choose the appropriate keystore. The default is NodeDefaultKeystore.

Step 7 At the right of the Properties menu, choose **Personal certificates** from the Additional Properties list.

Step 8 At the top of the certificates table, click the **Import** button.

Step 9 From the General Properties menu, choose either **Managed key store** or **Key store file**, and fill out the required information for the option you chose. See Table 1-3 for field descriptions.

Step 10 Click **Apply** and **Save**.

WebSphere General Properties Menu

The following table describes the WebSphere General Properties menu and the actions you need to take.

Table 1-3 WebSphere General Properties Menu

Field	Action
Managed key store option	Imports the certificate from another keystore that is already being managed by the WebSphere Application Server. If you choose this option, do *not*: • Enter a filename in the Key file name field • Select a format type from the Type drop-down list • Enter a password in the Key file password field
Key store file option	Imports the certificate from a keystore contained in a file. If you choose this option, do *not*: • Select a keystore from the Key store drop-down list • Enter a password in the Key store password field
Key store drop-down list	Choose a keystore to import.
Key store password field	Enter the keystore password. The default password is *WebAS*.
Key file name field	Enter the full filename of the keystore from which you want to import the certificate.
Type drop-down list	Choose the format type of the certificate.
Key file password field	Enter the key file password.
Certificate alias to import drop-down list	Choose the alias for the certificate you want to import.
Imported certificate alias field	Enter an alias for the certificate in the keystore.

Placing Certificates in the Internet Explorer Trusted Store

When you use Internet Explorer to log into Prime Central, if you accept the security certificates without placing them in the trusted certificate store, they reappear upon subsequent logins.

To place certificates in the trusted store so they do not reappear upon subsequent logins:

Internet Explorer 8

Step 1 With the Prime Central login window open, click **Certificate error** in the browser's address bar.

The Untrusted Certificate dialog box opens.

Step 2 Click **View certificates**.

The Certificate dialog box opens.

Step 3 Click **Install Certificate...** to launch the certificate import wizard.

Step 4 Click **Next**.

Step 5 Select the **Place all certificates in the following store** radio button option and then click **Browse...**.

Step 6 Navigate to the Trusted Root Certification Authorities folder and select it.

Step 7 Click **OK**.

Step 8 Click **Next**.

Step 9 Click **Finish** to complete the wizard.

A security warning appears.

Step 10 Click **Yes** to confirm that you want to install the certificate.

A message appears, indicating that the certificate import was successful.

Step 11 Click **OK** to close the message.

Step 12 Click **OK** to close the Certificate dialog box.

Internet Explorer 9

Step 1 In the Prime Central login window, right-click and choose **Properties**.

Step 2 In the Properties dialog box, click **Certificates**.

Step 3 Click **Install Certificate**.

Step 4 In the Certificate Import Wizard welcome window, click **Next**.

Step 5 Click the **Place all certificates in the following store** radio button and click **Browse**.

Step 6 Choose **Trusted Root Certification Authorities** and click **OK**.

Step 7 Click **Next**.

Step 8 Click **Finish**.

Step 9 At the confirmation prompt, click **Yes**.

Managing Users and Configuring Role-Based Access Control

This section describes how to manage users in Prime Central, including defining users and passwords and configuring role-based access control (RBAC).

Prime Central provides role-based access to various functions. Through RBAC, Prime Central allows a user to access some resources but not others, and to perform specific tasks based on the logged-in user's roles.

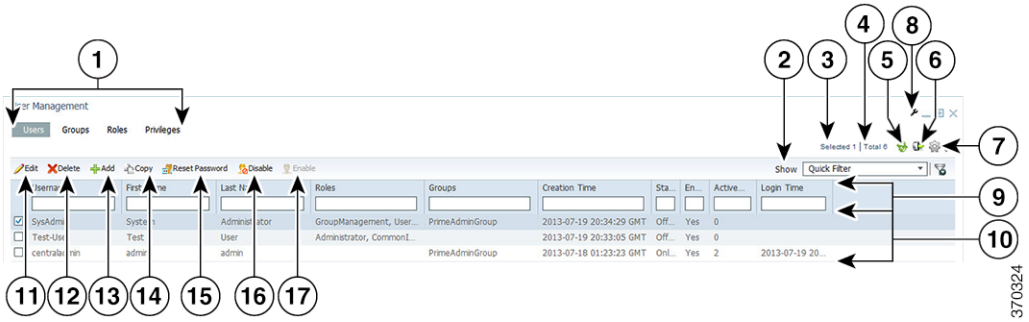
Authorization of tasks is controlled by user roles within Prime Central and user roles and scopes within the applications.

This section contains the following topics:

User Management Portlet

Figure 2-1 shows the User Management portlet, where users with administrator-level privileges can perform all user management tasks.

Figure 2-1 User Management Portlet



1	User management tabs: Users, Groups, Roles, Privileges	**10**	Properties pane
2	Show drop-down list and Filter icon	**11**	Edit icon
3	Number of selected table rows	**12**	Delete icon
4	Total table rows	**13**	Add icon
5	Refresh icon	**14**	Copy icon
6	Export icon	**15**	Reset Password icon
7	Settings icon	**16**	Disable icon
8	Options icon	**17**	Enable icon
9	Filter parameters area	—	—

Managing Users

You can add, edit, copy, and delete users; reset user passwords; disable and enable user accounts; and configure user security settings.

Each user can be assigned any number of roles, and each role can aggregate any number of privileges.

Prime Central includes a default user named *centraladmin* whose account cannot be deleted or disabled. The *centraladmin* user has local authentication, user management, and administrator privileges, but initially does not have any privileges on the various applications.

Adding a User

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, click **Add**.

Step 3 In the Add User window:

a. Enter general information about the new user, including username, first and last name, password, and email address. The variables that you define must adhere to the constraints described in Name, Password, Phone, and Note Constraints, page 2-4.

b. For the Local Authentication Fallback check box:

- If Prime Central is configured to use an external authentication provider such as TACACS+, RADIUS, or LDAP, check this check box to enable user authentication to fall back to the local Prime Central database when the external authentication server is unreachable.
- If Prime Central is not configured to use external authentication, leave this check box unchecked. (It is unchecked by default.)

c. (Optional) For the Concurrent User Sessions field, do one of the following:

- To have global user settings apply to the new user, click the **Use Global Settings** radio button. (For details about global settings, see Configuring User Security Settings, page 2-11.)
- To allow the user to open an unlimited number of concurrent Prime Central sessions, click the **Unlimited** radio button.
- To limit the user to a specific number of concurrent sessions, click the **Number of Sessions** radio button and enter the desired number in the text box.

d. (Optional) In the Note field, enter any notes for the user account.

Step 4 In the Application Access Privilege area, grant user access to the appropriate applications and assign individual roles:

a. Select an application from the list of installed applications.

The list of roles specific to that application is displayed.

b. Select the appropriate role for the user.

After you select a role, the Grant Access to <*application*> check box is checked automatically.

Note the following:

- Prime Central includes a set of default roles for security and access control that allow different system functions. Table 2-3 lists the default roles, the privileges that each roles inherits, and the portlets that each role can access.
- The application access privilege and the user role are related. For example, if you assigned the user the Prime Central Fault Management access privilege, be sure to assign the user the Prime Central Fault Management role.
- For Prime Central, all new users are assigned the User role automatically. You can assign the new user additional roles as desired.
- For Prime Central and Prime Provisioning, you can assign multiple roles to a user. For Prime Central Fault Management, Prime Network, Prime Optical, and Prime Performance Manager, you can assign only one role per user.
- If your network includes multiple instances of Prime Network or Prime Optical, the new user will be created on both application instances. For example, if you grant the new user access to Prime Optical and assign the user the SysAdmin role, that SysAdmin user will be created on both Prime Optical instances. However, if a Prime Optical instance is down when you add the new user, that SysAdmin user is not created on the Prime Optical instance until 5 minutes after the instance comes back up.

Step 5 Add the new user as a member of one or more groups:

a. Select **Prime Central** from the installed applications list.

b. Click the **Groups** tab.

c. Check the check boxes for the appropriate groups.

All users that belong to the group share the same role.

Step 6 Click **Add**. The new user is displayed in the User Management portlet.

Step 7 Assign device scopes (in Prime Network) or NEs (in Prime Optical) to the new user:

a. From the Prime Central menu, choose **Administration > Scope Management > Prime Network** or **Prime Optical**.

b. Launch the appropriate application and assign device scopes or NEs to the new user. See the application documentation for details:

- Prime Network—See "Creating New Device Scopes to Control Device Access" in the *Cisco Prime Network 4.0 Administrator Guide*, Chapter 6, "Controlling Device Access and Authorization Using Device Scopes."
- Prime Optical—See "Modifying a Prime Optical User's Properties" in the *Cisco Prime Optical 9.8 User Guide*, Chapter 8, "Managing Security."

Name, Password, Phone, and Note Constraints

When adding, editing, or copying a user, the variables that you define must adhere to the constraints listed in Table 2-1.

Table 2-1 Name, Password, Phone, and Note Constraints

Variable	Constraints
Username	The username must: • Start with a letter. • Contain from 4 to 20 case-sensitive letters (A-Z, a-z), numbers (0-9), or hyphens (-). • Not contain any other special characters or spaces. • Not be the reserved keywords *prime*, *web*, *guest*, *user*, *group*, *public*, or *private*, in any combination of uppercase or lowercase letters. **Note** Usernames are case-sensitive. Prime Central treats *UserA* and *userA* as separate users. If the username that you enter already exists in an installed application, Prime Central overwrites the existing application user with this new user.
Group name, role name, or privilege name	The name must: • Start with a letter. • Contain from 1 to 50 letters (A-Z, a-z), numbers (0-9), hyphens (-), or underscores (_). • Not contain spaces or other special characters.

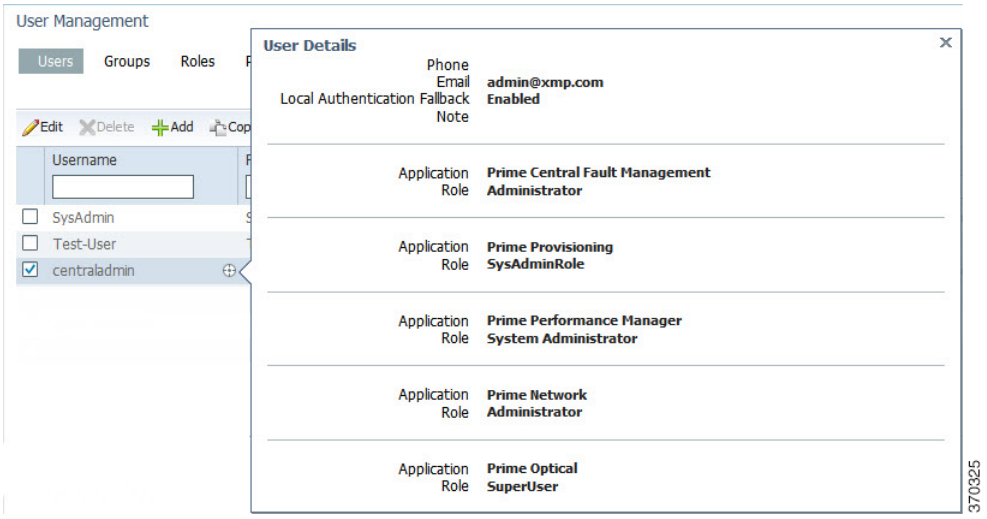
Table 2-1 Name, Password, Phone, and Note Constraints (continued)

Variable	Constraints
Password	The password must: • Contain from 8 to 32 characters. • Not repeat the same character three or more times. • Contain characters from at least three of the following four classes: – Uppercase letters (A-Z). – Lowercase letters (a-z). – Numbers (0-9). – Special characters. • Not contain the username or the username in reverse. • Not contain *cisco*, *ocsic*, or any variation.
Phone	The phone number can contain up to 64 characters. All characters are allowed.
Note	The note can contain up to 1000 characters. All characters are allowed.

User Information in the Quick View

In the User Management portlet, the quick view displays additional user information when the cursor rests over the icon shown in Figure 2-2.

Figure 2-2 Quick View of Additional User Details



Editing a User

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, select the user that you want to edit and click **Edit**.

Step 3 In the Edit User window:

a. Edit the user's first or last name, email address, or phone number, as required. The variables that you define must adhere to the constraints described in Name, Password, Phone, and Note Constraints, page 2-4.

The username is display only and cannot be changed.

b. For the Local Authentication Fallback check box:

- If Prime Central is configured to use an external authentication provider such as TACACS+, RADIUS, or LDAP, check this check box to enable user authentication to fall back to the local Prime Central database when the external authentication server is unreachable.
- If Prime Central is not configured to use external authentication, leave this check box unchecked. (It is unchecked by default.)

c. (Optional) For the Concurrent User Sessions field, do one of the following:

- To have global user settings apply to the user, click the **Use Global Settings** radio button. (For details about global settings, see Configuring User Security Settings, page 2-11.)
- To allow the user to open an unlimited number of concurrent Prime Central sessions, click the **Unlimited** radio button.
- To limit the user to a specific number of concurrent sessions, click the **Number of Sessions** radio button and enter the desired number in the text box.

d. (Optional) In the Note field, enter any notes for the user account.

Step 4 In the Application Access Privilege area, click the **Roles** tab and update the user's application access and roles, as required. If an application is not installed, it is not listed here.

Note the following:

- Application access and roles (except Prime Central roles) are all that you can edit for the *centraladmin* user.
- The application access privilege and the user role are related. For example, if you assigned the user the Prime Central Fault Management access privilege, be sure to assign the user the Prime Central Fault Management role.
- For Prime Central, all users are assigned the User role automatically. You can assign the user additional roles as desired.
- For Prime Central and Prime Provisioning, you can assign multiple roles to a user. For Prime Central Fault Management, Prime Network, Prime Optical, and Prime Performance Manager, you can assign only one role per user.
- If your network includes multiple instances of Prime Network or Prime Optical, the user will be created on both application instances. For example, if you grant the user access to Prime Optical and assign the user the SysAdmin role, that SysAdmin user will be created on both Prime Optical instances. However, if a Prime Optical instance is down when you add the user, that SysAdmin user is not created on the Prime Optical instance until 5 minutes after the instance comes back up.

Step 5 In the Application Access Privilege area, click the **Groups** tab and update the user's assigned groups and group roles, as required.

Step 6 Click **Update**. The updated user is displayed in the User Management portlet.

If you changed a user's assigned roles or access privileges, that user must log out of Prime Central and log back in to see the changes. The changes do not take effect until the user logs in next.

Step 7 (Optional) Reassign device scopes to the user you edited:

a. From the Prime Central menu, choose **Administration > Scope Management > Prime Network** or **Prime Optical**.

b. Launch the appropriate application and reassign device scopes or NEs to the user. See the application documentation for details:

- Prime Network—See "Creating New Device Scopes to Control Device Access" in the *Cisco Prime Network 4.0 Administrator Guide*, Chapter 6, "Controlling Device Access and Authorization Using Device Scopes."
- Prime Optical—See "Modifying a Prime Optical User's Properties" in the *Cisco Prime Optical 9.8 User Guide*, Chapter 8, "Managing Security."

Copying a User

You can easily create a new user by copying an existing user's assigned privileges, groups, and roles.

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, select the user that you want to copy and click **Copy**.

Step 3 In the Add User window, make the following entries (this information is unique to each user and is therefore not copied from the existing user):

a. Specify a username, first and last name, password, email address, and phone number. See the constraints described in Name, Password, Phone, and Note Constraints, page 2-4.

b. For the Local Authentication Fallback check box:

- If Prime Central is configured to use an external authentication provider such as TACACS+, RADIUS, or LDAP, check this check box to enable user authentication to fall back to the local Prime Central database when the external authentication server is unreachable.
- If Prime Central is not configured to use external authentication, leave this check box unchecked. (It is unchecked by default.)

c. (Optional) For the Concurrent User Sessions field, do one of the following:

- To have global user settings apply to the new user, click the **Use Global Settings** radio button. (For details about global settings, see Configuring User Security Settings, page 2-11.)
- To allow the user to open an unlimited number of concurrent Prime Central sessions, click the **Unlimited** radio button.
- To limit the user to a specific number of concurrent sessions, click the **Number of Sessions** radio button and enter the desired number in the text box.

d. (Optional) In the Note field, enter any notes for the user account.

Step 4 For each of the following items, make any changes needed for the new user (the current information is copied from the existing user):

- Application access
- User roles
- Groups and group roles

Step 5 Click **Add**. The new user is displayed in the User Management portlet.

Step 6 Assign device scopes (in Prime Network) or NEs (in Prime Optical) to the new user:

a. From the Prime Central menu, choose **Administration > Scope Management > Prime Network** or **Prime Optical**.

b. Launch the appropriate application and assign device scopes or NEs to the new user. See the application documentation for details:

- Prime Network—See "Creating New Device Scopes to Control Device Access" in the *Cisco Prime Network 4.0 Administrator Guide*, Chapter 6, "Controlling Device Access and Authorization Using Device Scopes."
- Prime Optical—See "Modifying a Prime Optical User's Properties" in the *Cisco Prime Optical 9.8 User Guide*, Chapter 8, "Managing Security."

Deleting a User

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, select the user that you want to delete and click **Delete**.

Step 3 At the confirmation prompt, click **Yes**.

If the user exists on an application that is down when you delete the user from Prime Central, that user will persist on that particular application as a local user.

Resetting Another User's Password

Users with administrator-level privileges can reset another user's password.

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, select the user whose password you want to reset and click **Reset Password**.

Step 3 In the Reset Password dialog box, enter a new password that adheres to the constraints described in Name, Password, Phone, and Note Constraints, page 2-4.

Step 4 Enter the new password again to confirm the entry.

Step 5 Click **Save**.

Resetting Your User Password

Users of any privilege level can use the My Account portlet to reset their own Prime Central password. The password reset applies to the Prime Central user who is currently logged in.

Step 1 On the portal home page, place your cursor over your login name (to the left of the Log Out link) and click **My Account**. In the example shown in Figure 2-3, the name is *Test User*.

Step 2 In the My Account portlet, enter your current password in the Current Password field.

Step 3 In the New Password field, enter a new password that adheres to the constraints described in Name, Password, Phone, and Note Constraints, page 2-4.

Step 4 Enter the new password again to confirm the entry.

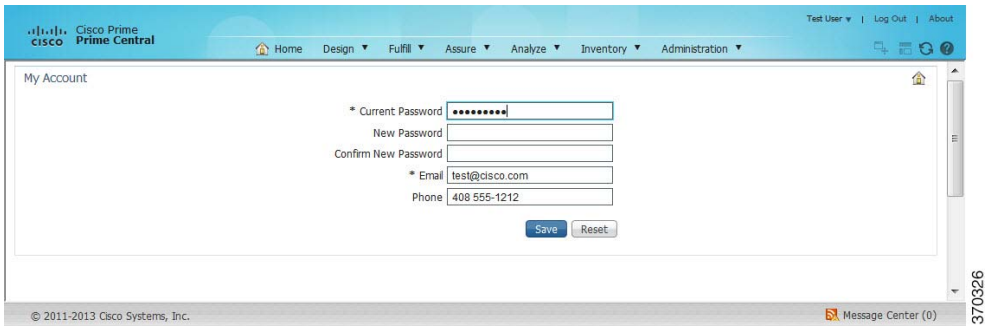
Step 5 (Optional) In the Email field, edit the email address that will be displayed in the User Management portlet. This field is dimmed for the *centraladmin* user.

Step 6 (Optional) In the Phone field, edit the phone number that will be displayed in the User Management portlet. This field is dimmed for the *centraladmin* user.

Tip If you want to update just your email address or phone number, first enter your current password and leave the new password fields blank.

Step 7 Click **Save**.

Figure 2-3 My Account Portlet



Resetting a Lost Password

From the UNIX command line, the Linux root user on the Prime Central portal can reset any Prime Central portal user's password, including an administrator password.

Complete this procedure only after trying Resetting Another User's Password, page 2-8 and Resetting Your User Password, page 2-9.

To reset a lost password:

Step 1 As the primeusr user, log into the Prime Central portal with the primeusr password that you specified during installation.

Step 2 Enter the following command:

```
su root
```

Step 3 When prompted, enter the root user password.

Step 4 Change directories to the $XMP_HOME/bin folder.

Step 5 Enter the following command:

```
resetUserPassword.ksh
```

Step 6 When prompted, enter the Prime Central username and the new password. In the following example, the Prime Central username is *User_XYZ*:

```
Please enter username:
User_XYZ
Please enter new password:
Please enter confirm password:
```

When the script finishes, output similar to the following is displayed:

```
Loading USER - User_XYZ
Validating new password..
Resetting password ..
Resetting password  COMPLETED.
EXECUTION STATUS : Success
```

Enabling or Disabling a User Account

Users with administrator-level privileges can enable or disable another user's account. However, you cannot disable the *centraladmin* user account.

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, select the desired user and click **Enable** or **Disable**.

The User Management portlet > Active column displays the following value:

- Yes—The user is enabled and can log into Prime Central.
- No—The user is disabled and cannot log into Prime Central.

Configuring User Security Settings

Users with the appropriate privileges can configure security settings that apply to all other users.

Note The following security settings do not apply to the *centraladmin* user, who has administrator-level privileges:

- Maximum Log In Attempts
- Maximum Active User Sessions
- User Inactivity Period Before Deactivation (days)
- User Inactivity Deactivation Mode

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

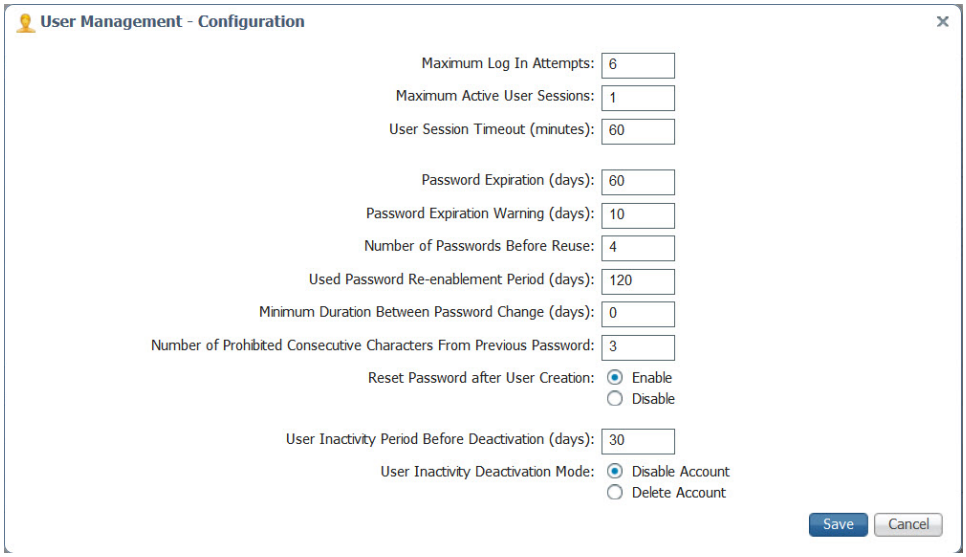
Step 2 In the top-right corner of the User Management portlet, click the **Options** icon.

Step 3 Click the **Configuration** link. The User Management - Configuration dialog box (Figure 2-4) opens.

Step 4 Configure the security settings that will apply to all users. See Table 2-2 for descriptions of the settings.

Step 5 Click **Save**.

Figure 2-4 User Management - Configuration Dialog Box



User Security Setting Descriptions

The following table describes the security settings you can configure for the users in your network.

Table 2-2 User Security Setting Descriptions

Setting	Description
Maximum Log In Attempts	The maximum number of failed login attempts allowed before the user account is denied access to Prime Central. The default is 6 retries.
Maximum Active User Sessions	The number of concurrent sessions allowed. The default is 1 session.
User Session Timeout	The number of minutes a user's session is inactive before Prime Central automatically locks the user out. By default, the session times out after 60 minutes of inactivity. You are prompted to extend the session 10 minutes before it times out. If you do not extend the session before the timeout, you are logged out automatically from Prime Central and from any applications.
Password Expiration	The number of days before the password expires. The default is 60 days.
Password Expiration Warning	The early warning period for password expiration. The default is 10 days. The value in this field must be less than the value in the Password Expiration field.
Number of Passwords Before Reuse	The number of different passwords a user must use before being allowed to reuse the first password. The default is 4 passwords. This field takes priority over the Used Password Re-enablement Period field. For example, assume that: • Number of Passwords Before Reuse: 2 • Used Password Re-enablement Period: 5 If the user password is *test*, you can change it *sample* the next day, and then to *basic* on the second day. You can then change it back to *test* before 5 days elapses, because the Number of Passwords Before Reuse field takes priority.
Used Password Re-enablement Period	The number of days before an old password can be reused. The default is 120 days.
Minimum Duration Between Password Change	The number of days a user must wait between password changes. The default is 0 days.
Number of Prohibited Consecutive Characters From Previous Password	The number of consecutive characters by which the new password must differ from the previous one. The default is 3 characters.
Reset Password after User Creation	Specify whether newly added users will be prompted to reset their password before their first login.
User Inactivity Period Before Deactivation	The number of days a user's session is inactive before Prime Central automatically deactivates the user. The default is 30 days.
User Inactivity Deactivation Mode	Specify whether to disable or delete an inactive user account. The default is *Disable Account*.

Managing Groups

All users that belong to a particular group share the same role and have access to a specific set of functions. User groups can be tied to one or more roles. The idea is to easily create groups of users who all share the same access privileges. A user can be assigned to more than one group, but this is not typical, as a single group should define an overall operational role within the suite.

Prime Central includes a default group named *PrimeAdminGroup* that cannot be edited or deleted.

Adding a Group

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, click the **Groups** tab.

Step 3 Click **Add**.

Step 4 In the Add Group dialog box:

a. Enter a group name that conforms to the constraints listed in Table 2-1.

b. Enter a description that contains from 1 to 50 alphanumeric or special characters.

c. Check the appropriate role check boxes to assign the new group at least one role.

d. Click **Add**.

The new group is displayed in the Groups tab.

Editing a Group

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, click the **Groups** tab.

Step 3 Select the group that you want to edit and click **Edit**.

Step 4 Edit the group description or assigned roles, as required. The group description can contain from 1 to 50 alphanumeric or special characters.

The group name is display only and cannot be changed.

Step 5 Click **Update**.

Deleting a Group

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, click the **Groups** tab.

Step 3 Select the group that you want to delete and click **Delete**.

Step 4 At the confirmation prompt, click **Yes**.

Managing Roles

Users have access to functions based on the role to which they are assigned. Roles define the functions or tasks a user can perform. A user can be assigned more than one role.

Prime Central includes a set of default roles for security and access control that allow different system functions. Table 2-3 lists the default roles, the privileges that each roles inherits, and the portlets that each role can access. (The default privileges are explained in Managing Privileges, page 2-16.) The default roles cannot be edited or deleted.

User roles inherit privileges as a union of role types. For example, the Fault Management role (which has no Common Inventory access) paired with the User role (which has Common Inventory access) results in Common Inventory access.

Table 2-3 Default Prime Central Roles

Default Role Name	Privileges	Ability to Access These Portlets:								
		My Account	User Preferences	User Management	Suite Monitoring	Group Management	Common Inventory	Alarm Browser	Alarm Report	Audit Log
Administrator	Admin Privilege	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	All Access Privilege									
	InTracer Launch Privilege									
Common Inventory Admin	Common Inventory Admin Privilege	Yes	Yes	No	Yes	No	Yes	No	No	No
	Cross Launch Privilege									
	Subsystem Inventory User Privilege									
	User Privilege									
Common Inventory User	Common Inventory User Privilege	Yes	Yes	No	Yes	No	Yes	No	No	No
	Cross Launch Privilege									
	Subsystem Inventory User Privilege									
	User Privilege									

Table 2-3 Default Prime Central Roles (continued)

Default Role Name	Privileges	Ability to Access These Portlets:								
		My Account	User Preferences	User Management	Suite Monitoring	Group Management	Common Inventory	Alarm Browser	Alarm Report	Audit Log
Fault Management	Cross Launch Privilege	Yes	Yes	No	Yes	No	No	Yes	Yes	No
	Fault Management Privilege									
	Subsystem Inventory User Privilege									
	User Privilege									
Group Management	Group Management Privilege	Yes	Yes	No	No	Yes	No	No	No	No
	User Privilege									
User (assigned to all new users automatically)	Common Inventory User Privilege	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No
	Cross Launch Privilege									
	Fault Management Privilege									
	Subsystem Inventory User Privilege									
	User Privilege									
User Management Admin	Cross Launch Privilege	Yes	Yes	Yes	Yes	No	No	No	No	No
	Subsystem Inventory Admin Privilege									
	User Privilege									
	User Management Admin Privilege									

Note In the GUI, there are no spaces in the role or privilege names.

Adding a Role

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, click the **Roles** tab.

Step 3 Click **Add**.

Step 4 In the Add Role dialog box:

a. Enter a role name that conforms to the constraints listed in Table 2-1.

b. Enter a description that contains from 1 to 50 alphanumeric or special characters.

c. Check the appropriate privilege check boxes to assign the new role at least one privilege. Prime Central provides the default privileges listed in Managing Privileges, page 2-16.

d. Click **Add**.

The new role is displayed in the Roles tab.

Editing a Role

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, click the **Roles** tab.

Step 3 Select the role that you want to edit and click **Edit**.

Step 4 Edit the role description or assigned privileges, as required. The role description can contain from 1 to 50 alphanumeric or special characters.

The role name is display only and cannot be changed.

Step 5 Click **Update**.

Deleting a Role

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, click the **Roles** tab.

Step 3 Select the role that you want to delete and click **Delete**.

Step 4 At the confirmation prompt, click **Yes**.

Managing Privileges

Privileges control the portlets, menu options, and back-end URLs that a role is authorized to access in Prime Central.

Prime Central provides the default privileges shown in Table 2-4. The default privileges cannot be edited or deleted.

Table 2-4 Default Prime Central Privileges

Default Privilege Name	Can...
Admin Privilege	• Issue all back-end operations, including create, read, update, and delete (CRUD).
All Access Privilege	• See all menu options.
Common Inventory Admin Privilege	• Access the Common Inventory portlet. • Access the Suite Monitoring portlet. • Issue all common inventory back-end operations, including CRUD.
Common Inventory User Privilege	• Issue GET ONLY common inventory back-end operations. • Access the Common Inventory portlet. • Access the Suite Monitoring portlet.
Cross Launch Privilege	• Cross-launch applications.
Fault Management Privilege	• Access the Alarm Browser portlet. • Access the Alarm Report portlet. • Access the Suite Monitoring portlet.
Group Management Privilege	• Access the Group Management portlet. • See the following menu option: Administration > Group Management > Groups • Issue all group management back-end operations, including CRUD.
InTracer Launch Privilege	• Cross-launch Cisco InTracer.
Subsystem Inventory Admin Privilege	• Issue all subsystem inventory back-end operations, including CRUD. • Access the Suite Monitoring portlet.
Subsystem Inventory User Privilege	• Issue GET ONLY subsystem inventory back-end operations.
User Management Admin Privilege	• Issue all user management back-end operations, including CRUD. • Access the User Management portlet. • Access the Suite Monitoring portlet.
User Privilege	• See most menu options, *except for the following*: – Assure > Prime Central Fault Management > Alarm Browser – Assure > Prime Central Fault Management > Alarm Report – Inventory > Common Inventory > Devices – Administration > User and Privilege Management > Users – Administration > System > Suite Monitoring • Access the My Account portlet. • Access the User Preferences portlet.

Note In the GUI, there are no spaces in the privilege names.

Adding a Privilege

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, click the **Privileges** tab.

Step 3 Click **Add**.

Step 4 In the Add Privilege window:

a. Enter a privilege name that conforms to the constraints listed in Table 2-1.

b. Enter a description that contains from 1 to 50 alphanumeric or special characters.

c. In the URL Filter Expression field, enter a URL filter expression to enable access to a specific back-end URL pattern. This field is a free-form text field; all characters are allowed.

d. Assign portlets to the privilege by checking the appropriate check boxes.

e. Select which menu options the privilege will be able to access. Click the Expand icon and navigate to the appropriate menu options.

Step 5 Click **Add**.

Step 6 Create a new role and assign it the newly created privilege in the Privileges tab. See Adding a Role, page 2-16.

Editing a Privilege

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, click the **Privileges** tab.

Step 3 Select the privilege that you want to edit and click **Edit**.

Step 4 In the Edit Privilege window, update the privilege description, URL filter expressions, assigned portlets, and menu options, as required. The description can contain from 1 to 50 alphanumeric or special characters.

The privilege name is display only and cannot be changed.

Step 5 Click **Update**.

Deleting a Privilege

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, click the **Privileges** tab.

Step 3 Select the privilege that you want to delete and click **Delete**.

Step 4 At the confirmation prompt, click **Yes**.

Importing Users in Bulk

From the UNIX command line, you can perform a bulk import of users from an Excel file that you create.

Step 1 As the primeusr user, log into the Prime Central portal with the primeusr password that you specified during installation.

Step 2 Change directories to the *installation-directory*/utils/prime_tools/UtilityUsersDir folder.

Step 3 Create your own Excel file that contains all the users you want to import; then, add that spreadsheet to the UtilityUsersDir folder.

By default, the UtilityUsersDir folder contains a sample spreadsheet named customers.xlsx. You can structure your Excel file similarly.

The sample customers.xls file contains four sheets, each of which corresponds to a step in the User Management portlet > Add wizard.

Each sheet contains a GLOBAL SETTING row with information that will apply to all users, unless you overwrite the global setting with your specified value. If you leave a cell blank, Prime Central uses the global setting.

Step 4 Enter the following command to import the users defined in your Excel file into the Prime Central database:

sh importUsers FILE *Excel-filename*

For example, to import a file named users_xyz.xlsx, enter:

sh importUsers FILE users_xyz.xlsx

Step 5 At the following prompt, enter your Prime Central administrative username and password:

```
Enter Prime Central admin username:
Enter Prime Central admin user password:
```

Step 6 At the following prompt:

```
Do you want the system to generate a random password for each imported user? [Y|N]:
```

Enter one of the following:

- **Y** if you want Prime Central to generate a random password for each imported user, unless overwritten by your Excel file.
- **N** if you want to choose a default password for all imported users. Then, at the following prompt, enter a password that will apply to all users:

  ```
  Enter a default password for all imported users:
  ```

The import begins. When it finishes, output similar to the following is displayed:

```
*** Importing user USER_3 ***
Creating USER_3 in Prime Central
User USER_3 is created successfully in Prime Central with local password password

*** Importing user USER_2 ***
Creating USER_2 in Prime Central
```

```
User USER_2 is created successfully in Prime Central with local password password

*** Importing user USER_1 ***
Creating USER_1 in Prime Central
User USER_1 is created successfully in Prime Central with local password password

Number of users requested: 3
Number of users imported: 3
```

Note You cannot import the same username more than once. If you try to import multiple users with the same username, Prime Central returns the following error: "User *username* already exists in Prime Central."

Step 7 Log into Prime Central and choose **Administration > User and Privilege Management > Users** to open the User Management portlet. Verify that the users you imported are visible in the Users tab.

Reporting User Logins in Bulk

From the UNIX command line, you can run a script to report users who logged into (or did not log into) Prime Central within a specific number of days.

Step 1 As the primeusr user, log into the Prime Central portal with the primeusr password that you specified during installation.

Step 2 Change directories to the *installation-directory*/utils/prime_tools/UtilityUsersDir folder.

Step 3 Enter the following command:

sh reportUsers *number-of-days* {**login** | **notlogin**} *output-filename*

For example, to report all users who logged in within the last 10 days and save the data to a text file named output_abc.txt, enter:

```
sh reportUsers 10 login output_abc.txt
```

To report all users who did not log in within the last 30 days and save the data to a text file named output_xyz.txt, enter:

```
sh reportUsers 30 notlogin output_xyz.txt
```

Step 4 At the following prompt, enter your Prime Central administrative username and password:

```
Enter Prime Central admin username:
Enter Prime Central admin user password:
```

The script begins to run. When it finishes, the following output is displayed:

```
Number of users reported: x
Report is created under filename
```

The output file is saved in the runtime location that you specified; either *absolute-path/filename* or *relative-path/filename*. The output file contains four tab-separated columns that report the username, first name, last name, and last login date and time.

Exporting User Data

Prime Central allows you to export user data to Microsoft Excel. Opening the exported file with any program other than Excel is not recommended.

If you sort or filter the data before exporting it, the exported data is likewise sorted or filtered. If you check the left-most check box for a row, the exported data contains a check box for each checked row.

Step 1 From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.

Step 2 In the User Management portlet, click the tab that contains the data you want to export.

Step 3 Click the **Export** icon.

Step 4 At the prompt to open or save the Excel file, click either the **Open with Microsoft Excel (default)** or **Save File** radio button and then click **OK**. The default filename depends on the tab you selected in Step 2:

- Users tab—usermgmt-Users-table.xls
- Groups tab—usermgmt-Groups-table.xls
- Roles tab—usermgmt-Roles-table.xls
- Privileges tab—usermgmt-Privileges-table.xls

Note By default, browser caching is enabled. If you disable caching, you might receive the following errors when you try to export user data:

```
Browser cannot download file from server.
Browser was not able to open this Internet site. The requested site is either unavailable
or cannot be found.
Please try again later.
```

Step 5 Click **Yes** at the following prompt:

```
The file you are trying to open, 'filename', is in a different format than specified by
the file extension. Verify that the file is not corrupted and is from a trusted source
before opening the file. Do you want to open the file now?
```

Auditing User Activity

Prime Central collects and stores security audit information, which you can use to track user activity such as logins or logouts, updates of user information, and application cross-launches.

Step 1 From the Prime Central menu, choose **Administration > System > Audit Log**.

The Audit Log portlet opens, displaying user activity for the past 90 days (by default).

Step 2 To change the default value, do the following:

a. In the top-right corner of the Audit Log portlet, click the **Options** icon.

b. Click the **Configuration** link.

The Audit Log - Configuration dialog box opens.

c. In the Number of Days of Audit Data Retention in Database field, enter the number of days for which you want Prime Central to store user activity. For example, if you enter 10, Prime Central will store activity for the past 10 days.

d. Click **Save**.

Using an External Authentication Provider (LDAP or AAA Server) for User Authentication

By default, Prime Central uses internal authentication, which means passwords are stored in and verified against the data that is stored in the Prime Central database. You can also use a Lightweight Directory Access Protocol (LDAP) server or AAA server to manage user authentication externally. If you use external authentication, user information is checked against what is stored in the external LDAP or AAA server (instead of the Prime Central database). The external authentication server only stores login and password information; information pertaining to user roles is stored in the Prime Central database. The same user must exist in both the Prime Central database and the external authentication server.

Configuring Prime Central to Communicate with an External LDAP Server

Use this procedure to configure the Prime Central portal to communicate with the LDAP server, and to test the connection after it is configured. This procedure uses LDAP terminology, such as distinguished name (DN), common name (CN), and domain component (DC). An LDAP distinguished name uniquely identifies a user in the LDAP database, similar to a full filename but in reverse order. CNs and DCs are attributes of the domain name.

Step 1 In the User Management portlet, create a new user as described in Adding a User, page 2-2. For example, create a Prime Central user named *test-admin*.

Step 2 If the test-admin user does not already exist on the LDAP server, use an LDAP application to create the test-admin user.

Step 3 Do the following to enable LDAP authentication on the Prime Central portal:

a. As the primeusr user, log into the Prime Central portal.

b. In the *installation-directory*/XMP_Platform/tomcat-7.0.23/webapps/SSO/WEB-INF/spring-configuration folder, open the cas_xmp_authentication_providers.xml file and uncomment the following bean reference line:

```
<ref bean="ldapProviderPRIME" />
```

c. Run the following script to encrypt the ldapPassword setting:

```
# portalAAAEncrypt
```

d. Enter the password (for example, **Cisco123**) that you want to encrypt. The script returns an encrypted value (for example, zhEaxSqhTpJY0R2vStJJBQ==) that you can use for the ldapPassword setting in the next step.

e. In the *installation-directory*/XMP_Platform/conf/prime/conf/extprovider.properties file, configure the LDAP settings. See Table 2-5 for a listing of sample settings.

Step 4 As the primeusr user, restart the Prime Central portal:

```
portalctl stop
portalctl start
```

Step 5 You can now use the external authentication server for Prime Central authentication. In this example, the credentials to log into the Prime Central portal are:

- Username: test-admin
- Password: *test-admin's password as configured on the external authentication server*

Sample LDAP Server Settings

The following table provides samples of the settings you would specify when configuring a LDAP server for Prime Central authentication.

Table 2-5 Sample LDAP Server Settings

Setting	Sample Value	Description
ldapServerName	ldap://209.165.200.254:56425	LDAP server IP address or hostname and directory server port number
ldapUserDn	uid=admin,ou=users,ou=system,dc=primedmc,dc=com	LDAP server user ID to log into the LDAP server
ldapPassword	(Encrypted) zhEaxSqhTpJY0R2vStJJBQ==	LDAP server user password to log into the LDAP server
ldapBase	ou=users,ou=system,dc=primedmc,dc=com	LDAP base of LDAP users for authentication

Configuring Prime Central to Communicate with an External AAA Server

Use this procedure to configure the Prime Central portal to communicate with the AAA (RADIUS or TACACS+) server, and to test the connection after it is configured. This procedure uses AAA terminology.

Step 1 In the User Management portlet, create a new user as described in Adding a User, page 2-2. For example, create a Prime Central user named *test-admin*.

Step 2 If the test-admin user does not already exist on the AAA server, use an AAA application to create the test-admin user.

Step 3 Do the following to enable AAA authentication on the Prime Central portal:

a. As the primeusr user, log into the Prime Central portal.

b. In the *installation-directory*/XMP_Platform/tomcat-7.0.23/webapps/SSO/WEB-INF/spring-configuration folder, open the cas_xmp_authentication_providers.xml file and uncomment the following bean reference line:

- For TACACS+, uncomment:

```
<ref bean="jaasTacacsAuthenticationProviderPRIME" />
```

- For RADIUS, uncomment:

```
<ref bean="jaasRadiusAuthenticationProviderPRIME" />
```

c. Run the following script to encrypt the JaasSecretKey setting:

```
# portalAAAEncrypt
```

d. Enter the secret key (for example, **Cisco123**) that you want to encrypt. The script returns an encrypted value (for example, zhEaxSqhTpJY0R2vStJJBQ==) that you can use for the JaasSecretKey setting in the next step.

e. In the *installation-directory*/XMP_Platform/conf/prime/conf folder, do one of the following:

- For TACACS+, open the jaas.config.tacacs file and configure the TACACS+ settings. See Table 2-6 for a listing of sample settings.
- For RADIUS, open the jaas.config.radius file and configure the RADIUS settings. See Table 2-6 for a listing of sample settings.

Step 4 As the primeusr user, restart the Prime Central portal:

```
portalctl stop
portalctl start
```

Step 5 You can now use the external authentication server for Prime Central authentication. In this example, the credentials to log into the Prime Central portal are:

- Username: test-admin
- Password: *test-admin's password as configured on the external authentication server*

Sample AAA Server Settings

The following table provides samples of the settings you would specify when configuring a AAA server for Prime Central authentication.

Table 2-6 Sample AAA Server Settings

Setting	Sample Value	Description
TACACS+		
server	209.165.200.254	TACACS+ server IP address or hostname
port	49	TACACS+ server port number
JaasSecretKey	(Encrypted) zhEaxSqhTpJY0R2vStJJBQ==	TACACS+ server secret key
RADIUS		
server	209.165.200.254	RADIUS server IP address or hostname
port	1812	RADIUS server port number
JaasSecretKey	(Encrypted) zhEaxSqhTpJY0R2vStJJBQ==	RADIUS server secret key
authenticationType	PAP	RADIUS server authentication type

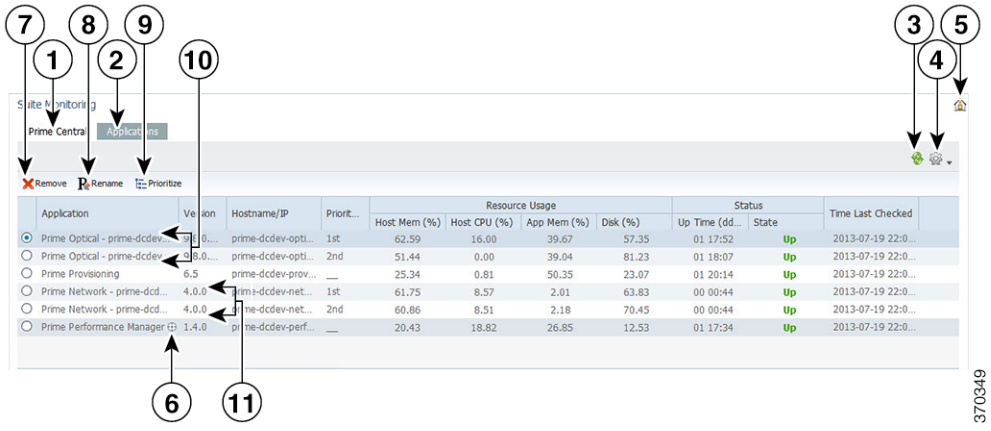
Monitoring Prime Central and the Applications

This section describes how to monitor the health status of Prime Central and the individual applications. It contains the following topics:

Monitoring the Health of Prime Central and the Applications

Figure 3-1 shows the Suite Monitoring portlet, where you monitor Prime Central and the individual applications for any changing conditions that might impact operation.

Figure 3-1 Suite Monitoring Portlet



1	Prime Central tab	**7**	Remove icon
2	Applications tab	**8**	Rename icon
3	Refresh icon, with last updated time stamp	**9**	Prioritize icon

4	Settings icon	**10**	Multiple instances of Prime Optical
5	(When the portlet is maximized) Return to Home icon	**11**	Multiple instances of Prime Network
6	Quick view icon	—	—

To monitor the health of Prime Central and the applications:

Step 1 From the Prime Central menu, choose **Administration > System > Suite Monitoring**.

Step 2 In the Suite Monitoring portlet, click the **Prime Central** tab, where you can monitor the information described in Table 3-1.

If multiple Prime Central integration layer profiles are installed, all profiles are shown. For example:

- Integration Layer - Messaging—A separate Java Message Service (JMS) broker that enables the integration layer messaging framework to be configured as a JMS cluster for messaging service high availability.
- Integration Layer - Core—The integration layer core components.

Step 3 Click the **Applications** tab. For each application, you can monitor the information described in Table 3-1. If multiple instances of Prime Network or Prime Optical are installed, all instances are shown by their service name (not their hostname).

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)

Note While Prime Central allows you to monitor more than five instances of Prime Network and Prime Optical, we scale-certified up to only three instances. If you choose to monitor more than five instances, proceed with caution.

Step 4 To rename multiple instances of Prime Network or Prime Optical:

a. In the Applications tab, select an application instance and click **Rename**.

You cannot rename an application that has only one instance.

b. Enter the new instance name, which can contain letters (A-Z, a-z), numbers (0-9), and the following special characters: spaces ( ), hyphens (-), underscores (_), and periods (.).

c. Click **OK**.

Prime Central and Application Monitoring Information

The following table describes the high-level information you can monitor for Prime Central and the applications running in your network.

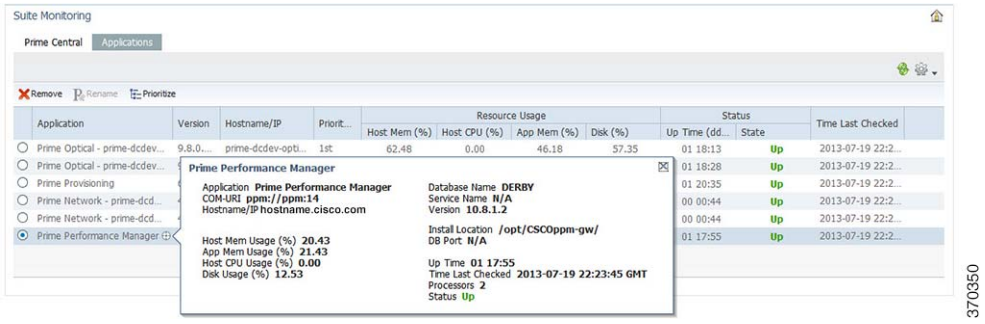
Table 3-1 Prime Central and Application Monitoring Information

Field	Description
Prime Central	
Component	Name of the Prime Central component.
Version	Prime Central version that is running.
Hostname/IP	Hostname or IP address of the Prime Central portal.
Resource Usage	Percentage of memory, CPU, and disk space that the application process has used, in terms of preconfigured thresholds. Stable memory consumption reflects a healthy network. • If the Prime Central integration layer does not return values, the Resource Usage fields show Not Available. • If the Prime Central integration layer returns invalid values, the Resource Usage fields show Unknown.
Status	Number of days, hours, and minutes (in *dd:hh:mm* format) that the Prime Central component has been running, plus the current state (Up or Down). The Prime Central integration layer shows Up when a ping to it succeeds.
Time Last Checked	Time stamp when the Prime Central portal was most recently monitored.
Applications	
Application	Name of the installed application.
Version	Version number of the application.
Hostname/IP	Hostname or IP address of the application.
Priority	Priority level of the Prime Network or Prime Optical instance, when multiple instances of the application are installed.
Resource Usage	Percentage of host memory, host CPU, application memory, and disk space that the application process has used, in terms of preconfigured thresholds. • If the application does not return values, the Resource Usage fields show Not Available. • If the application returns invalid values, the Resource Usage fields show Unknown. **Note** Due to the nature of garbage collection in Java, application memory utilization fluctuates depending on the system load and the timing of the garbage collection. If the application memory utilization continues to increase and never decreases, contact the Cisco Technical Assistance Center.
Status	Length of time that the application has been running, plus the current state (Up or Down). If the application does not respond to a ping, the State field shows Down.
Time Last Checked	Time stamp when the application was most recently monitored.

Suite Monitoring Information in the Quick View

In the Suite Monitoring portlet, the quick view displays additional information when the cursor rests over the icon shown in Figure 3-2.

Figure 3-2 Quick View



Prioritizing Application Instances

If multiple instances of Prime Network or Prime Optical are installed, specify which instance has priority for functions such as cross-launching and collecting data. When the instance with the highest priority is down, Prime Central will cross-launch or collect data from the next instance in line.

To prioritize multiple instances of Prime Network or Prime Optical:

Step 1 From the Prime Central menu, choose **Administration > System > Suite Monitoring**.

Step 2 In the Suite Monitoring portlet, click the **Applications** tab.

Step 3 Click **Prioritize**.

Step 4 In the Prioritize window, click the application instance and use the **Move up** and **Move down** arrows to configure the desired priority.

Step 5 Click **OK**.

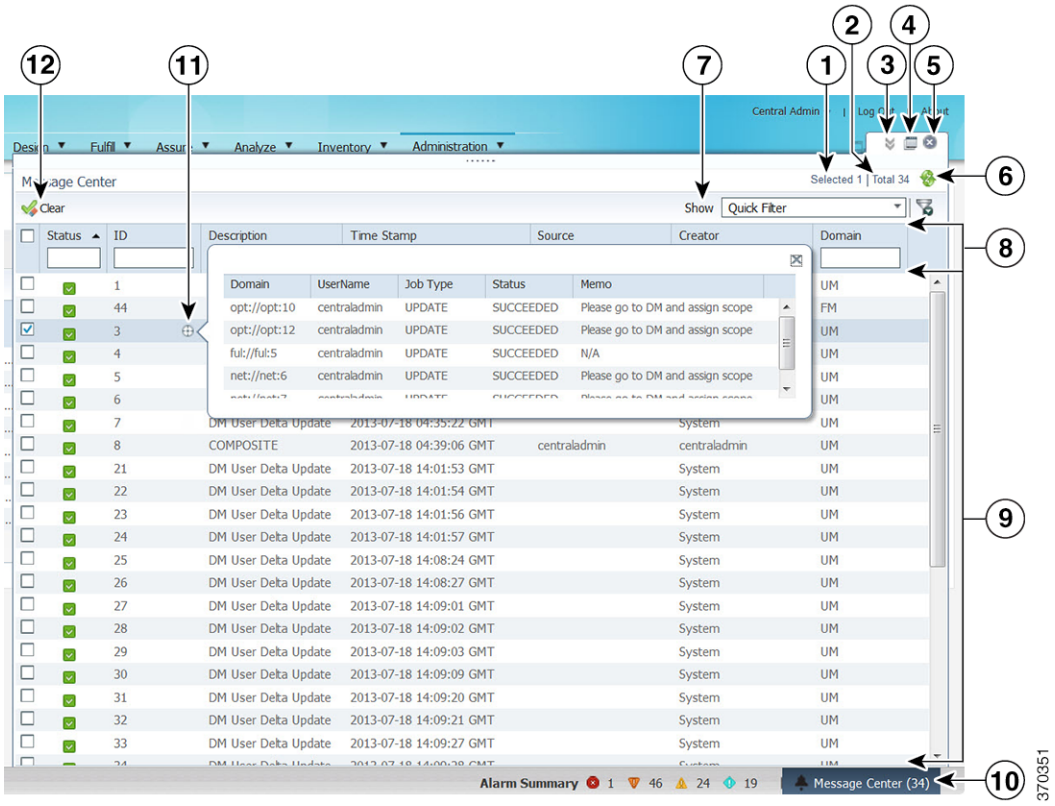
The instance priority is displayed in the Applications tab. For example, the Prime Network instance with the highest priority is the instance that cross-launches when you choose **Inventory > Common Inventory > Devices > Device Details via Prime Network**.

Monitoring System Activity

At the bottom of the Prime Central home page, all users can view a tabular listing of bulk system activity. Click the **Message Center** (Figure 3-3), which shows bulk system requests that affect applications, including jobs that succeed or fail on the individual applications.

The quick view displays detailed job information when the cursor rests over the icon shown in Figure 3-3.

Figure 3-3 Message Center



1	Number of selected table rows	**7**	Show drop-down list and Filter icon
2	Total table rows	**8**	Filter parameters area
3	Pull up/pull down toggle icon	**9**	Properties pane
4	Pull out icon	**10**	Message Center area
5	Close icon	**11**	Quick view icon
6	Refresh icon, with last updated time stamp	**12**	Clear icon

Table 3-2 describes the Message Center information, where:

- Users with administrator-level privileges can see their own bulk job records, plus any system-generated jobs.
- Users without administrator-level privileges can see only their own bulk job records.

Table 3-2 Message Center

Field	Description
Status	Whether the job succeeded, failed, or is still pending.
ID	ID that Prime Central assigns to the bulk job.

Table 3-2 Message Center (continued)

Field	Description
Description	Description of the bulk job. The following are the four most common operations logged in the Message Center: • CREATE—New users have been created in one or multiple Prime Carrier Management applications, such as Prime Network and Prime Optical. • UPDATE—User information has been updated in one or multiple applications. • DELETE—Users have been deleted from one or multiple applications. • COMPOSITE—Indicates a combination of the three previous operations (such as the creation of a new user in Prime Network and the update of a user's information in Prime Optical.
Time Stamp	Date and time the job was logged.
Source	Name of the entity on which the bulk job ran; for example, a username for a user management-related job.
Creator	Name of the user who created the bulk job.
Domain	Prime Central component or application on which the bulk job occurred.

Note the following:

- After using the CLI to import new users into Prime Central 1.2, the messages that are normally generated after adding new users are not logged into the Message Center.
- A user cannot view the messages generated for another user that performed fault or user management operations.
- A `DM User Delta Update` message is logged whenever a Prime Carrier Management application is brought online after being in the Down state previously.
- You are not allowed to clear Message Center items whose status is Pending.

Monitoring Prime Provisioning Service Requests

Users with the appropriate role can add the following portlets to monitor Prime Provisioning service requests (SRs):

- Device SR Count portlet (Figure 3-4 and Figure 3-5)
- SR Summary portlet (Figure 3-6)

To add the Prime Provisioning portlets:

Step 1 On the Prime Central home page, click the **Add Portlets** icon.

Step 2 In the Add Portlets dialog box, click **Cisco Prime**.

Step 3 Select the following portlets and click **Add**:

- **Device SR Count**
- **SR Summary**

Step 4 Click the Close (**X**) icon to close the Add Portlets dialog box.

Device SR Count Portlet

The Device SR Count portlet displays in bar chart format the top 10 devices with the most failed or successful SRs for the last 24 hours. Note that:

- Devices with failed SRs are shown in red (Figure 3-4).
- Devices with successful SRs are shown in blue (Figure 3-5).
- The vertical axis (y-axis) shows the SR count.
- The horizontal axis (x-axis) shows the device name.

You can toggle the display between successful and failed SRs by clicking the radio buttons **Devices with Most Failed Services** and **Devices with Most Successful Services**.

You can view the data in table format by clicking **View as Grid**.

Figure 3-4 Device SR Count Portlet—Most Failed Services

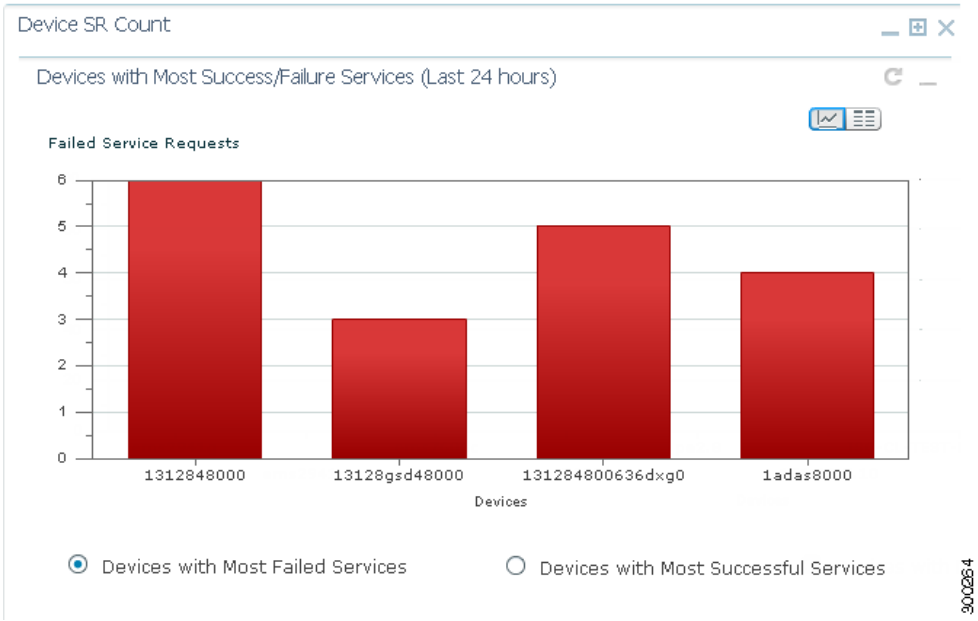
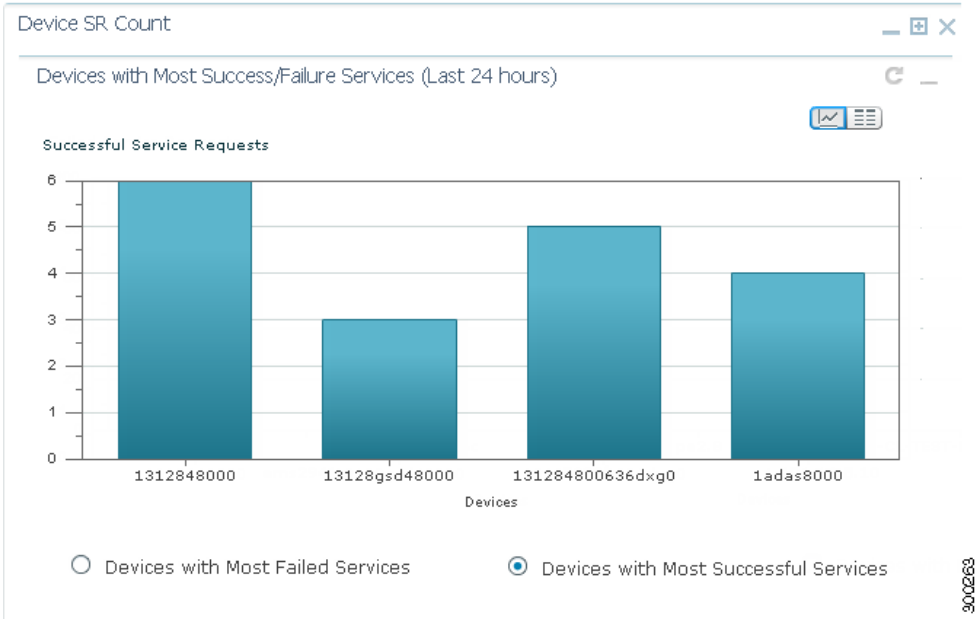


Figure 3-5 Device SR Count Portlet—Most Successful Services



SR Summary Portlet

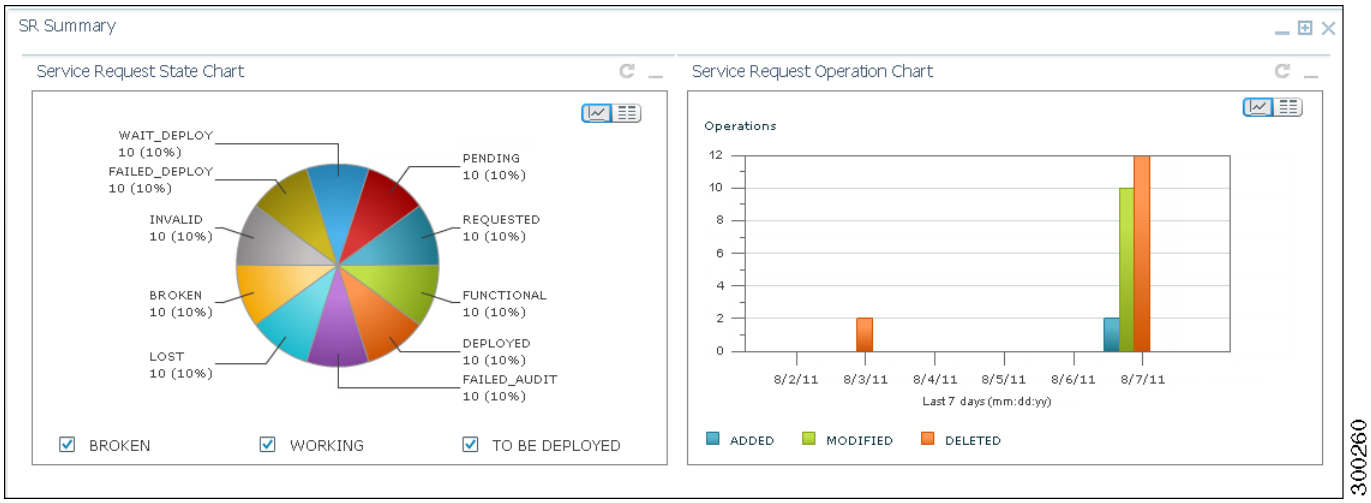
The SR Summary portlet (Figure 3-6) provides a count of Prime Provisioning SRs in different states and lists the SRs deployed for the last seven days. The portlet contains the following charts:

- Service Request State pie chart—Displays the number of SRs in different states. SRs are grouped into three main categories:
  - Broken (includes SRs in FAILED_DEPLOY, INVALID, BROKEN, LOST, and FAILED_AUDIT states)
  - Working (includes SRs in DEPLOYED and FUNCTIONAL states)
  - To be deployed (includes SRs in WAIT_DEPLOY, REQUESTED and PENDING states)

  You can view SRs in different states by checking the BROKEN, WORKING, and TO BE DEPLOYED check boxes.
- Service Request Operation bar chart—Displays the number of SRs that were added, modified, or deleted in the last seven days. The date is displayed in *mm/dd/yy* format.

You can view either chart in table format by clicking **View as Grid**.

Figure 3-6 SR Summary Portlet



Changing the Prime Central Transport Type Policy

From the UNIX command line, you can configure Prime Central to use SSL or Java New I/O (NIO) as the connection transport type.

The following procedure is optional. Complete it only if you want to change the Prime Central transport type from SSL to NIO (or vice versa) after installation.

Step 1 As the primeusr user, log into the Prime Central portal with the primeusr password that you specified during installation.

Step 2 Change directories to the *installation-directory*/install/scripts folder.

Step 3 Enter the following command:

```
./ilModifyTransportTypeUtil
```

Step 4 At the following prompts, enter your Prime Central administrative username and password:

```
Enter Prime Central admin username:
Enter Prime Central admin user password:
```

Step 5 At the following prompt, enter **nio** or **ssl**:

```
Enter Connection Transport Type [ssl/nio]:
```

For example, to change the transport type to SSL, the script usage is as follows:

```
primeusr@prime-dev-lnx [~/install/scripts]# ./ilModifyTransportTypeUtil
Enter Prime Central admin username:
centraladmin
Enter Prime Central admin user password:
Enter Connection Transport Type [ssl/nio]:
ssl
```

Note After the ilModifyTransportTypeUtil script is run at least once, the output is available in the *installation-directory*/install/logs/ilModifyTransportTypeUtil.log file.

Step 6 As the primeusr user, log into the Prime Central portal and enter the following commands to restart it:

```
portalctl stop
portalctl start
```

Removing an Application from the Suite Monitoring Portlet

The following steps remove application information—including the user roles specific to that application—from the Prime Central database.

To completely unregister an application from Prime Central, see "Unregistering an Application from Prime Central" in the *Cisco Prime Central 1.2 Quick Start Guide*.

To remove an application from the Suite Monitoring portlet:

Step 1 From the Prime Central menu, choose **Administration > System > Suite Monitoring**.

Step 2 In the Suite Monitoring portlet, click the **Prime Central** or the **Applications** tab.

Step 3 Click the radio button for the application that you want to remove.

Step 4 Click **Remove**.

In the Prime Central tab, if a component cannot be removed, the Remove icon is dimmed.

Step 5 At the confirmation prompt, click **Yes**.

Managing Inventory

This section describes how to use Prime Central to manage inventory. It contains the following topics:

What Is Inventory Management?

Managing inventory involves maintaining a record of all of devices installed in the network to support the provisioning of services. It also includes collecting information about the device name, type, operational status, IP address, and so on.

Inventory management is one of the fundamental network management functions. When forecasting service growth or even attempting to provision a new service, it is necessary to know the current network inventory. Can the existing inventory support the forecast growth or new service requests, or must additional equipment be ordered and installed onsite? Can your hardware support a new software release? You will need to check the type and revision of hardware to determine the answer. Has a recall been issued by the vendor for a certain hardware revision of a board? Are you affected? You will need to check the inventory again.

Prime Central can quickly capture, display, and store an inventory of the devices in your network. Prime Central remains automatically synchronized with changes relating to inventory that might occur in the network. All inventory information is stored in the Prime Central database and is available at any time.

Prime Central provides different levels of inventory reports:

- A complete list of all devices in the network. See Retrieving Common Inventory Data, page 4-3.

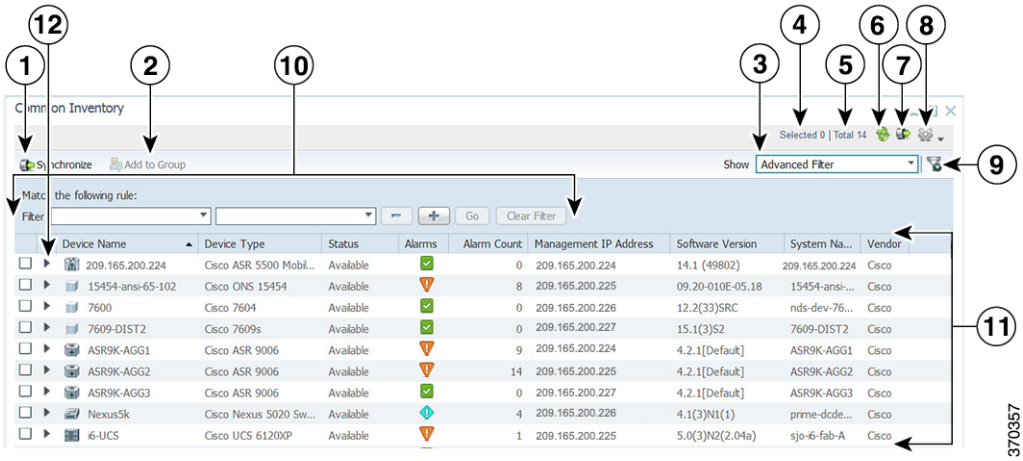
- A detailed list of slots, subslots, cards, and modules installed on the devices. See Retrieving Physical Inventory Data, page 4-5.

Common Inventory Portlet

Figure 4-1 shows the Common Inventory portlet, where you can view and manage the devices. Device inventory retrieval involves retrieving device and node information from Prime Network, Prime Optical, and Prime Performance Manager.

The Common Inventory portlet does not display device information for Prime Provisioning.

Figure 4-1 Common Inventory Portlet



1	Synchronize icon	**7**	Export icon
2	Add to Group icon	**8**	Settings icon
3	Show drop-down list	**9**	Filter icon
4	Number of selected table rows	**10**	Filter parameters area
5	Total table rows	**11**	Properties pane
6	Refresh icon, with last updated time stamp	**12**	Expand icon

Retrieving Common Inventory Data

Step 1 From the Prime Central menu, choose **Inventory > Common Inventory > Devices**. The Common Inventory portlet opens. For a description of the information provided here, see Common Inventory Properties Pane, page 4-3.

Note After an application is restarted, it takes several minutes for its device information to be displayed in the Common Inventory portlet.

After upgrading from Prime Central 1.1 to 1.2, users with administrator privileges must perform an on-demand inventory and scope synchronization to view the inventory data. See Synchronizing Inventory Data, page 4-4.

Step 2 (Optional) Use the Filter icon to view only those devices that are of interest to you. See Filtering and Searching, page 1-15.

Common Inventory Properties Pane

The following table describes the information provided in the properties pane of the Common Inventory portlet for the devices in your network.

Table 4-1 Common Inventory Properties Pane

Field	Description
ID	Numerical identifier assigned to the device. By default, this field is not displayed. For instructions on how to enable it, see Adding or Removing Columns in a Portlet, page 1-8.
Device Name	Icon representing the device, followed by the device name. When the same device is managed by multiple instances of Prime Network, the device name must be unique across all the instances of Prime Network. **Note** When a device name is changed in Prime Network or Prime Optical, the Common Inventory portlet might show two devices with the new and old names. After ten days, a scheduled job deletes the device with the old name.
Serial Number	Serial number of the device. By default, this field is not displayed. For instructions on how to enable it, see Adding or Removing Columns in a Portlet, page 1-8.
Device Type	Type of device. **Note** If a CPT device is discovered by both Prime Network and Prime Optical, Prime Optical takes precedence; the Common Inventory portlet reports the physical device details from Prime Optical.

Table 4-1 Common Inventory Properties Pane (continued)

Field	Description
Status	Communication state of the device: • Available—The device is reachable and supported by Prime Central. • Unavailable—Prime Central cannot establish a connection to the device.
Alarms	Highest severity alarm on the selected device. **Note** To view all alarms on the selected device, click the **Expand** icon to the left of the device name.
Alarm Count	Total number of alarms on the selected device.
Management IP Address	IPv4 or IPv6 address of the selected device. **Note** The Quick Filter supports a percentage character (%) as a wildcard in the Management IP Address field. Other fields do not use % as a wildcard. To search on complete octets in this field, the % character is not required. Instead, enter a period; the search returns the complete octet after the period.
Software Version	Version of software that is running on the selected device.
System Name	System name or hostname of the selected device, as defined in the device's MIB.
Vendor	Device vendor name.

Synchronizing Inventory Data

Administrators can perform an on-demand synchronization of user device scopes and inventory.

Step 1 From the Prime Central menu, choose **Inventory > Common Inventory > Devices**. The Common Inventory portlet opens.

Step 2 Click the **Synchronize** icon.

Note Only administrators can see the Synchronize icon, which is hidden for all other users.

Step 3 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. The time stamp of the last synchronization is displayed.
- Scopes and Inventory—Lets you synchronize device scopes and inventory. You can synchronize only the data that was received since the last synchronization, or you can synchronize all data. The time stamp of the last synchronization is displayed.

b. Click the **Sync Now** button.

The job status shows "Synchronizing..." until it completes and displays the time stamp of the last synchronization.

Step 4 In the Common Inventory portlet, click the **Refresh** icon. The synchronized data is displayed.

Retrieving Physical Inventory Data

Physical inventory retrieval involves retrieving information about tangible device and node assets, such as chassis, shelf, module, slot, and port information.

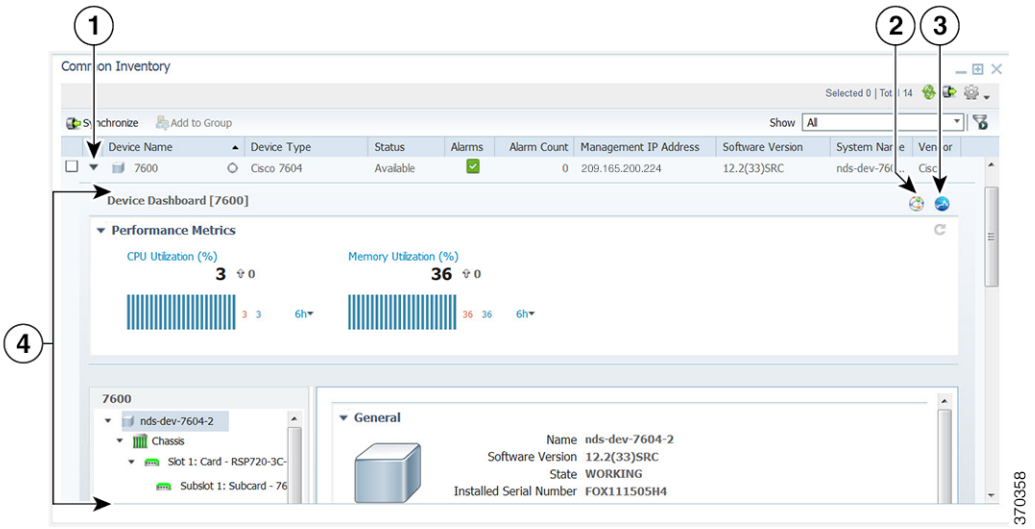
Step 1 From the Prime Central menu, choose **Inventory > Common Inventory > Devices**. The Common Inventory portlet opens.

Step 2 To the left of the device name, click the **Expand** icon to view a detailed dashboard for that device. See Figure 4-2.

Step 3 Expand the chassis to view the physical inventory of the subtending equipment: blades, slots, subslots, cards, and so on.

Note When you click a slot, the Common Inventory portlet shows the equipment holder and equipment attributes listed in Table 4-2.

Figure 4-2 Device Dashboard Window



1	Expand icon	**3**	Icon to cross-launch Prime Performance Manager
2	Icon to cross-launch Prime Network	**4**	Device dashboard

Table 4-2 Regular Device Attributes for Equipment Holder and Equipment

Equipment Holder Attributes	Equipment Attributes
Equipment Holder Location	Description
Operational Status	Installed Serial Number
Installed Serial Number	Installed Version

Table 4-2 Regular Device Attributes for Equipment Holder and Equipment (continued)

Equipment Holder Attributes	Equipment Attributes
Hardware Type	Protection Role
Model Type	Protection Scheme State
—	Resource Fulfillment State
—	Last Modified Time

Cross-Launching an Application to Retrieve Inventory Details

From Prime Central, you can cross-launch Prime Network, Prime Optical, or Prime Performance Manager and retrieve detailed inventory information. Use the application to retrieve logical inventory information; for example, information about logical resources used for service activation.

Note

- You can have up to ten cross-launched application windows open simultaneously. You cannot cross-launch an eleventh application until you close one of the open windows.
- You cannot cross-launch Prime Provisioning from anywhere within the Common Inventory portlet.

To cross-launch an application:

Step 1 From the Prime Central menu, choose **Inventory > Common Inventory > Devices**. The Common Inventory portlet opens.

Step 2 To the left of the device name, click the **Expand** icon for the desired application.

Step 3 In the top-right corner of the device dashboard, click the source icon to cross-launch the application. Table 4-3 lists the source icons.

If a device is managed by multiple instances of an application, you cross-launch to the instance that has priority (as specified in the Suite Monitoring portlet; see Prioritizing Application Instances, page 3-4).

Table 4-3 Source Icons

Click this source icon...	To cross-launch:
	Prime Network
	Prime Optical
	Prime Performance Manager

Performing a Contextual Cross-Launch to the Data Center Hypervisor Pane

While managing the devices in your network, you can perform a contextual cross-launch to the Data Center's Hypervisor pane and view detailed inventory information for a particular hypervisor.

Step 1 From the Prime Central menu, choose **Inventory > Common Inventory > Devices**.

The Common Inventory portlet opens.

Step 2 To the left of the device on which a particular hypervisor resides, click the **Expand** icon to open the corresponding dashboard.

Step 3 From the object selector pane, click the name of the blade server associated with the hypervisor.

The right-hand pane updates, displaying information for that blade server.

Step 4 From the Equipment section, click the hypervisor's link.

The Hypervisor pane (Assure > Data Center > Compute > Hypervisor) opens, displaying detailed inventory information for the selected hypervisor.

Device Information in the Device 360° View

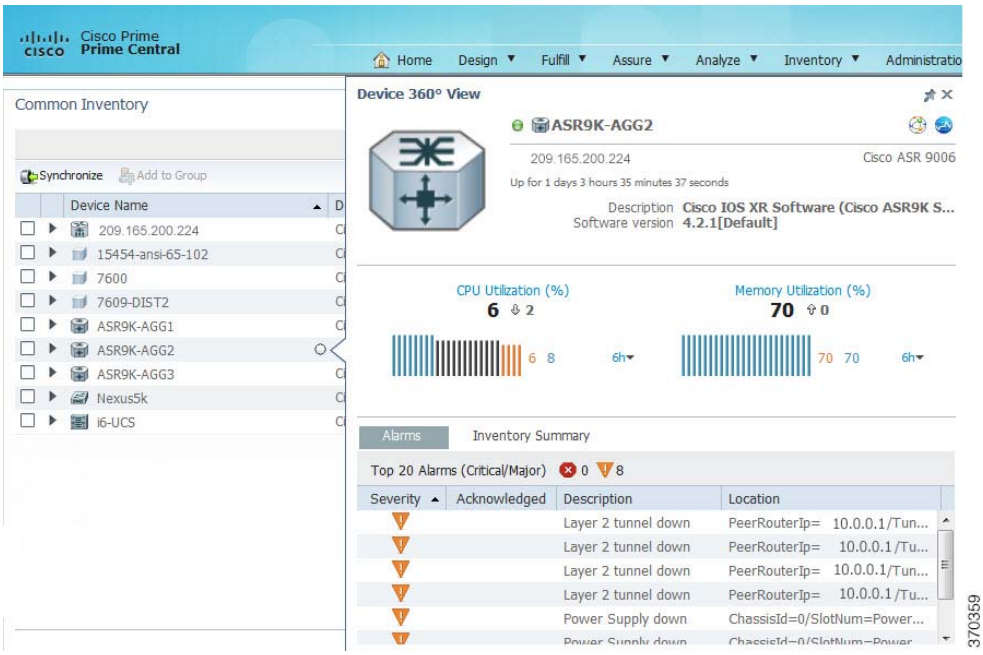
In the Common Inventory portlet, the Device 360° view displays additional device information when the cursor rests over the icon shown in Figure 4-3.

The Device 360° view shows device-specific alarms from the Prime Central Fault Management database, as well as performance charts from Prime Performance Manager.

Click the Alarms or Inventory Summary tabs to see detailed alarm and inventory information. (The features that appear in the Device 360° view differ depending on the device type.)

From the Device 360° view, you can cross-launch the application that manages the device and retrieve detailed inventory information. In the top-right corner, click the source icon listed in Table 4-3.

Figure 4-3 Device 360° View



Exporting Inventory Data

Prime Central allows you to export inventory data to Microsoft Excel. Opening the exported file with any program other than Excel is not recommended.

If you sort or filter the data before exporting it, the exported data is likewise sorted or filtered.

Step 1 From the Prime Central menu, choose **Inventory > Common Inventory > Devices**.

Step 2 In the Common Inventory portlet, click the **Export** icon.

Step 3 At the prompt, either open or save the Excel file and then click **OK**. The default filename is commoninventory.xls.

Note By default, browser caching is enabled. If you disable caching, you might receive the following errors when you try to export inventory data:

```
Browser cannot download file from server.
Browser was not able to open this Internet site. The requested site is either unavailable
or cannot be found. Please try again later.
```

Step 4 Click **Yes** at the following prompt:

```
The file you are trying to open, 'filename', is in a different format than specified by
the file extension. Verify that the file is not corrupted and is from a trusted source
before opening the file. Do you want to open the file now?
```

Grouping Network Devices and Services

In the Group Management portlet (Figure 4-4), you can logically group network devices and services by a certain criteria, such as location. This allows you to organize network elements as you see fit and quickly determine the members of a particular group when necessary.

To view the Group Management portlet, do one of the following:

- Choose **Administration > Group Management > Groups**.
- Add it to the Prime Central home page. See Adding a Portlet, page 1-7 for instructions.

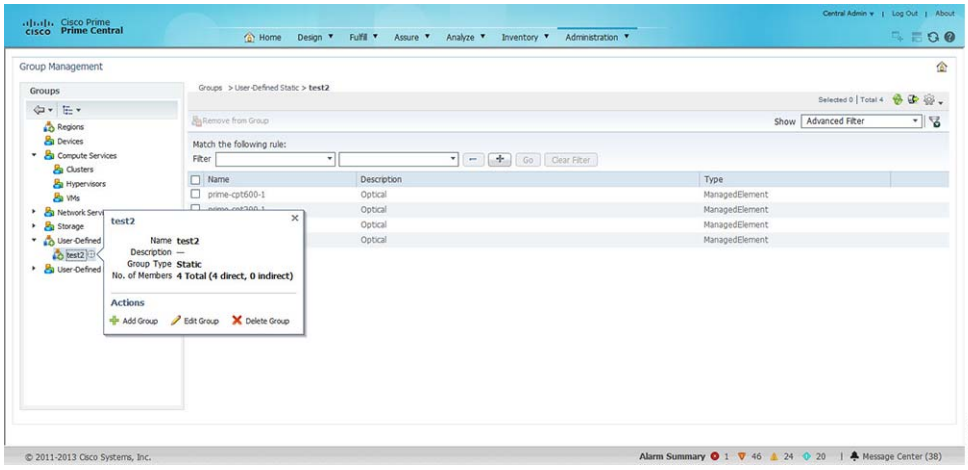
There are two types of groups: dynamic and static (indicated by a plus sign in the group's icon). Dynamic groups, such as the Hypervisor group, are automatically populated by Prime Central based on the rules configured for those groups. Static groups, such as the Regions group, are not automatically populated. You must add members to them manually from the Compute, Network, or Storage window in the Data Center page or the Common Inventory portlet. See Adding a Group Member, page 4-11 for more information.

Note the following:

- You cannot manually add members to or delete members from a dynamic group.
- You can only edit or delete user-created groups.
- Of the groups listed in this portlet, you can only create subgroups for the following:
  - Regions
  - User-Defined Static
  - User-Defined Dynamic

Tip To view the information in the Group Management portlet as a Microsoft Excel spreadsheet, click the **Export** icon in the top-right corner of the portlet.

Figure 4-4 Group Management Portlet



Adding a Group

Step 1 In the Group Management portlet, open the popup for the relevant parent group and click **Add Group**.

If this option is not available, you cannot create a group within the selected parent group.

Step 2 In the Add Group dialog box:

a. Enter the group's name, which must contain only alphanumeric characters (A-Z, a-z, 0-9) or any of the following special characters: , - . _ @

b. Select the appropriate parent group (if necessary).

c. (Optional) Enter a brief description of the group.

If you are configuring a dynamic group, proceed to Step 2d. Otherwise, skip ahead to Step 3.

d. Define the rules that Prime Central will use to filter the network elements associated with the group. See Configuring Group Rules, page 4-10 for more information.

Step 3 Click **Save**.

Configuring Group Rules

When configuring a new dynamic group in the Group Management portlet, you need to specify the rules Prime Central will use to populate the group.

Step 1 In the Group Rules field of the Add Group dialog box, select the object you want to filter by from the second drop-down list.

Step 2 From the third drop-down list, select the parameter you want to filter by.

The values listed here will vary, depending on the object you selected in Step 1.

Step 3 From the fourth drop-down list, select a logical operator.

Step 4 In the text field, enter the value you want to filter by. This value must contain only alphanumeric characters (A-Z, a-z, 0-9) or any of the following special characters: , - . _ @

If you want to configure another rule, proceed to Step 5. Otherwise, skip ahead to Step 8.

Step 5 Click the **+** icon.

Step 6 In the first drop-down list, select whether network elements must meet the conditions of this and any other rules you configured in order to be added to a group.

Step 7 Repeat Steps 1 through 4.

Step 8 Click **Save**.

Note After a group rule has been configured, it cannot be edited. To make the necessary changes, you must first delete the old rule and then configure a new one.

Editing a Group

To edit any of the user-created groups:

Step 1 In the Group Management portlet, open the popup for the relevant group and click **Edit Group**.

If this option is not available, you cannot edit the selected group.

Step 2 In the Edit Group dialog box, modify the group's name and description.

The group's name must contain only alphanumeric characters (A-Z, a-z, 0-9) or any of the following special characters: , - . _ @

Step 3 Click **Save**.

Deleting a Group

To delete any of the user-created groups:

Step 1 In the Group Management portlet, open the popup for the relevant group and click **Delete Group**.

If this option is not available, you cannot delete the selected group.

Step 2 Click **Yes** to confirm deletion of the group.

Adding a Group Member

To add a member to any of the static groups listed in the Group Management portlet:

Step 1 Do one of the following:

- To add a group member from the Common Inventory portlet, choose **Inventory > Common Inventory > Devices** from the Prime Central menu and skip ahead to Step 3.
- To add a group member from the Data Center page, choose **Assure > Services > Data Center** from the Prime Central menu and proceed to Step 2.

Step 2 Do one of the following:

- To add a compute service resource, hypervisor, or device cluster, click the **Compute** tab and then click the appropriate subtab.
- To add a VPN, click the **Network** tab.
- To add a storage device, click the **Storage** tab.

Step 3 Check the check box for the device or service that you want to add and click **Add to Group**.

Step 4 In the Select Group to Add window, select the appropriate group and click **Add**.

A message indicates that the member was successfully added.

Step 5 In the Group Management portlet, click the **Refresh** icon. The new group member is displayed.

Removing a Group Member

Step 1 In the Group Management portlet, navigate to the appropriate group.

Step 2 Check the check box for the group member that you want to remove and click **Remove from Group**.

Step 3 Click **Yes** to confirm deletion of the group member.

Managing Customers

This section describes how to manage customers in Prime Central and associate them with compute, network, and device resources.

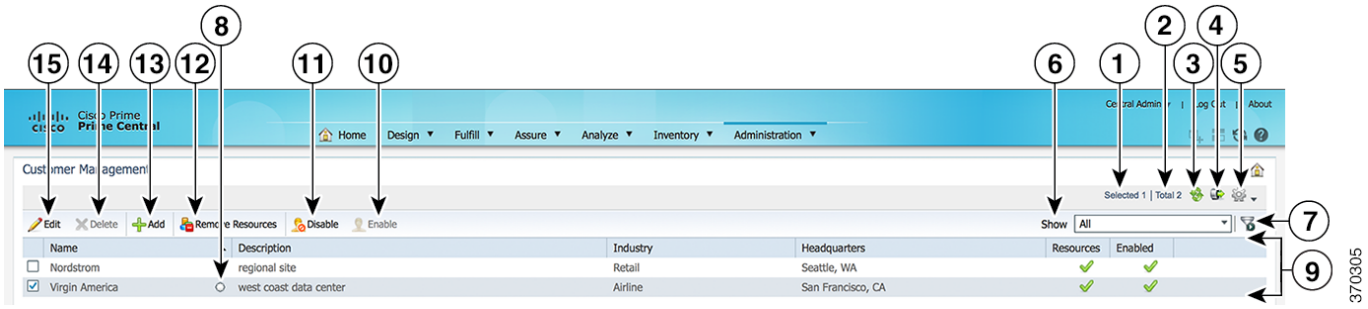
As a network administrator, you can create and manage customers for your assurance solution. You can associate physical and virtual devices and network services with a customer, and assess the impact that network-generated alarms and events have on that customer.

This section contains the following topics:

Customer Management Portlet

Figure 5-1 shows the Customer Management portlet, where you perform all customer management tasks.

Figure 5-1 Customer Management Portlet



1	Number of selected table rows	**9**	Properties pane
2	Total table rows	**10**	Enable icon
3	Refresh icon	**11**	Disable icon
4	Export icon	**12**	Remove Resources icon

5	Settings icon	**13**	Add icon
6	Show drop-down list	**14**	Delete icon
7	Filter icon	**15**	Edit icon
8	Icon to launch Customer 360° view	—	—

Managing Customers

You can add, edit, and delete customers; associate customers with resources monitored in the Data Center page; disable and enable customer accounts; and export customer data.

Adding a Customer

Step 1 From the Prime Central menu, choose **Administration > Customer Management > Customers**.

Step 2 In the Customer Management portlet, click **Add**.

Step 3 In the Add Customer window, enter general information about the new customer, including corporate name (required), industry, contact information, and website. The variables that you define must adhere to the constraints described in Customer Information Constraints, page 5-3.

Step 4 (Optional) Add a customer logo image:

a. Click **Add Photo**.

b. Click **Choose File** and upload the desired logo, which can have a maximum size of 128 x 128 pixels and 60 KB. Supported files types are .png, .jpg, and .jpeg.

Step 5 Click **Save**.

The new customer is displayed in the Customer Management portlet.

Note Newly added customers are enabled by default. See Enabling or Disabling a Customer Account, page 5-5 for instructions on how to disable a customer.

Customer Information Constraints

When adding or editing a customer, the variables that you define must adhere to the constraints listed in Table 5-1.

Table 5-1 Customer Information Constraints

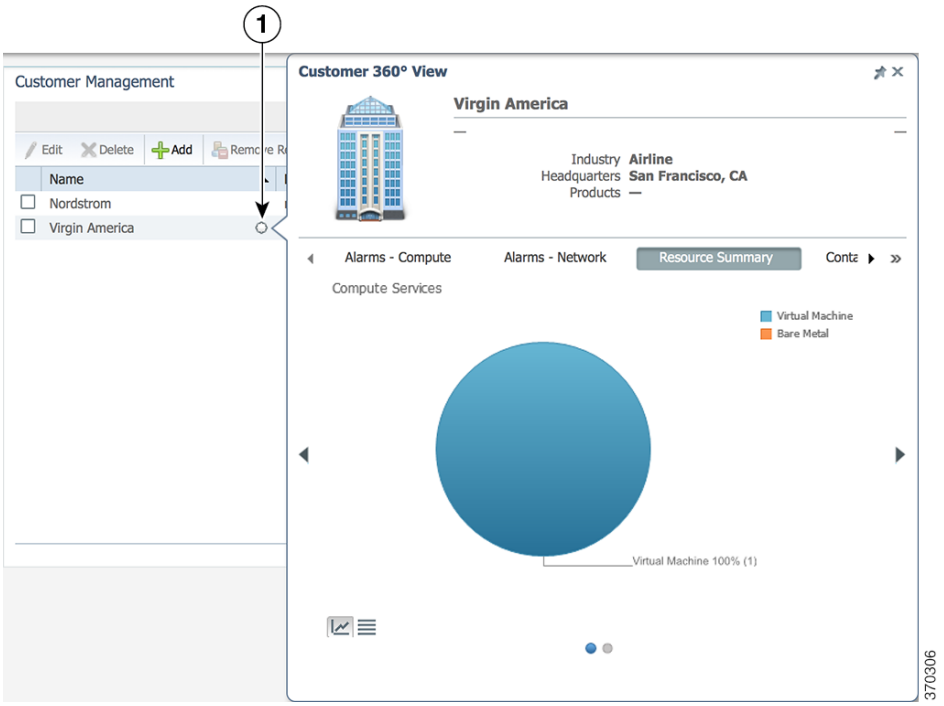
Variable	Constraints
Name	The name must: • Start with a letter (A-Z, a-z) or a number (0-9). • Contain from 1 to 50 case-sensitive letters (A-Z, a-z), numbers (0-9), hyphens (-), underscores (_), or spaces. • Not contain any other special characters.
Description	Can contain up to 4000 characters. All characters are allowed.
Industry	Can contain up to 255 characters. All characters are allowed.
Headquarters	Can contain up to 255 characters. All characters are allowed.
Products	Can contain up to 2000 characters. All characters are allowed.
URL	Can contain up to 255 characters. All characters are allowed.
Stock Symbol	Can contain up to 255 characters. All characters are allowed.
Main Contact	Can contain up to 255 characters. All characters are allowed.
Email	Can contain up to 255 characters. All characters are allowed.
Phone	Can contain up to 255 characters. All characters are allowed.
Note	Can contain up to 2000 characters. All characters are allowed.
Photo	Must be in .png, .jpg, or .jpeg format. The logo cannot exceed 128 x 128 pixels or 60 KB.

Customer Information in the Customer 360° View

In the Customer Management portlet, the Customer 360° view displays additional customer information when you click the icon shown in Figure 5-2. Click the following tabs within the Customer 360° view:

- Alarms—Shows customer-specific alarms from the Prime Central Fault Management database.
- Resource Summary—Shows the compute, network, or device resources that are associated with the selected customer.
- Contact Info—Shows detailed customer contact information.

Figure 5-2 Customer 360° View



Editing a Customer

Step 1 From the Prime Central menu, choose **Administration > Customer Management > Customers**.

Step 2 In the Customer Management portlet, select the customer that you want to edit and click **Edit**.

Step 3 In the Edit Customer window, edit the customer's general information, as required. The variables that you define must adhere to the constraints described in Customer Information Constraints, page 5-3.

Step 4 Click **Save**.

The updated customer is displayed in the Customer Management portlet.

Deleting a Customer

Step 1 From the Prime Central menu, choose **Administration > Customer Management > Customers**.

Step 2 In the Customer Management portlet, select the customer that you want to delete and click **Delete**.

Step 3 At the confirmation prompt, click **Yes**.

Enabling or Disabling a Customer Account

Users with administrator-level privileges can enable or disable a customer's account.

Step 1 From the Prime Central menu, choose **Administration > Customer Management > Customers**.

Step 2 In the Customer Management portlet, select the desired customer and click one of the following:

- **Enable**—The customer is enabled and can log into Prime Central. The Enabled column shows a green check mark. (By default, newly added customers are enabled.)
- **Disable**—The customer is disabled and cannot log into Prime Central or perform any operations.

Associating Resources to Customers

You can associate resources—virtual machines, bare metal blades, and network services—to customers. A single customer can be associated with multiple resources.

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

Step 2 In the Data Center portlet, depending on the type of resource you want to associate, click the **Compute** or **Network** tab.

Step 3 Select the desired resource and click **Associate to Customer**.

Note You cannot assign the same VPN to multiple customers.

Step 4 In the Select Customer to Associate window, select the desired customer and click **Associate**.

The resource is assigned to the selected customer.

- The Data Center portlet > Customers column shows the name of the customer that is associated with the selected resource. (See Figure 5-3.)
- The Customer Management portlet > Resources column shows a green check mark in the row for the selected customer. (See Figure 5-4.)

Figure 5-3 Name of Customer Associated with the Selected Resource

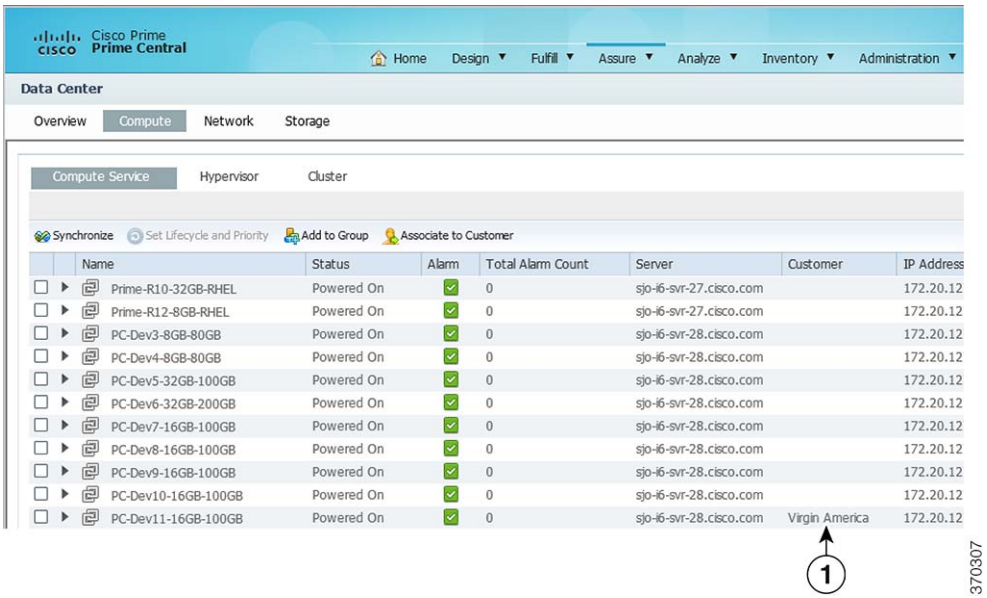


Figure 5-4 Visual Indication of an Assigned Resource

Removing Resources from Customers

Step 1 From the Prime Central menu, choose **Administration > Customer Management > Customers**.

Step 2 In the Customer Management portlet, select the desired customer and click **Remove Resources**.

Note If the selected customer has no resources assigned, the Remove Resources icon is dimmed.

Step 3 In the Remove Resources window, check the check box of the resource that you want to remove; then, click **Remove**.

The resource is removed from the customer.

Exporting Customer Data

Prime Central lets you export customer data to Microsoft Excel. Opening the exported file with any program other than Excel is not recommended.

If you sort or filter the data before exporting it, the exported data is likewise sorted or filtered. Each row in the exported data has a check box. If you check the left-most check box for a row before export, the corresponding check box in the exported data is also checked.

To export customer data to an Excel file:

Step 1 From the Prime Central menu, choose **Administration > Customer Management > Customers**.

Step 2 In the Customer Management portlet, click the **Export** icon.

Step 3 At the prompt to open or save the Excel file, click **Open** or **Save**.

Note By default, browser caching is enabled. If you disable caching, you might receive the following errors when you try to export user data:

```
Browser cannot download file from server.
Browser was not able to open this Internet site. The requested site is either unavailable
or cannot be found.
Please try again later.
```

Step 4 Click **Yes** at the following prompt:

```
The file you are trying to open, 'filename', is in a different format than specified by
the file extension. Verify that the file is not corrupted and is from a trusted source
before opening the file. Do you want to open the file now?
```

Managing Faults

This section describes how Prime Central locates, diagnoses, and reports network problems. It contains the following topics:

Note Prime Central Fault Management uses a very limited version of the IBM Tivoli Netcool/OMNIbus technology. Some of the windows in the Alarm Browser and Alarm Report portlets have a Help button that launches the IBM Tivoli Netcool online help. See the Cisco license agreement for the limitations that apply.

What Is Fault Management?

Fault management is the process of locating, diagnosing, and reporting network problems. This is important for increasing network reliability and effectiveness, and for increasing the productivity of network users. Fault management is more than just handling emergencies. It provides functions for managing problems with services and handling customer-facing service problems.

Efficient fault management can:

- Save repair costs through efficient fault detection, location, and correction
- Improve customer care through efficient trouble administration
- Improve service availability and equipment reliability through proactive maintenance and through measurement, review, and corrective action

One responsibility of fault management is to detect faults. A piece of equipment, a transmission medium, a software module, or a database is said to be in a fault state if it cannot perform its intended function and meet all of the requirements placed on that function. The onset of a fault is called a *failure event* and is usually signaled by one or more alarm reports. The termination of a fault state is called a *clear event*.

Fault management is responsible for determining, from a variety of information sources, the root cause of a fault, and for its repair. In certain cases, the root cause of a fault might be in a connecting network. In such cases, fault management is responsible for reporting the problem through appropriate channels.

The steps for successful fault management are:

1. Identify a problem by gathering data about the state of the network (polling and trap generation).
2. Restore any services that have been lost.
3. Isolate the cause, and decide if the fault should be managed.
4. Correct the fault.

Fault Management Terminology

In Prime Network, an *alarm* represents a scenario that involves a fault in the network, a managed element, or the management system. A *ticket* represents an attention-worthy root cause alarm. A ticket has the same type as the root cause alarm it represents, and it has a status, which represents the entire correlation tree.

In Prime Optical, an *alarm* represents a notification from a managed network element (NE) that a certain fault condition occurred. Alarms usually represent error conditions on NEs. Prime Optical does not use the term *tickets*. NEs managed by Prime Optical perform correlation and suppression and report only root cause alarms.

A *ticket* in Prime Network represents the same information as an *alarm* in Prime Optical.

Prime Central Fault Management uses the term *alarm* to mean a root cause fault condition on which the entire fault lifecycle can be performed.

Alarm Processing

Prime Network receives events (syslogs and traps) from network elements and performs the first level of alarm correlation. Prime Central Fault Management receives correlated alarms from Prime Network and alarms for Prime Optical and performs second-level, cross-domain alarm correlation and deduplication. Prime Central Fault Management provides an aggregated view of correlated and deduplicated alarms to network operation center (NOC) operators.

Note Prime Central Fault Management does not retrieve alarm data for Prime Provisioning or Cisco InTracer.

Prime Central Fault Management:

- Receives alarms from Prime Optical and tickets from Prime Network.
- Receives system alarms and threshold crossing alerts from Prime Performance Manager.
- Normalizes the alarms and tickets to a common alarm representation to perform aggregation, deduplication, correlation, and enrichment.
- Maintains all active alarms in the Fault Management database. When an alarm is cleared, it moves from the Fault Management database to the Oracle database for historical reporting.

Alarm Aggregation

Alarm aggregation involves the following functions:

- Receive alarms from Prime Optical—Java and CORBA probes use the CORBA northbound interface (NBI) to get and register for alarms from Prime Optical.
- Receive tickets from Prime Network—SNMP probes use the trap forwarding interface to receive tickets, ticket updates, and ticket severity updates from Prime Network.
- Use the Fault Management SNMP probe and the Prime Performance Manager trap forwarding interface to aggregate Prime Performance Manager alarms.
- Normalize and persist received alarms—Probes perform normalization; the Fault Management component persists normalized alarms.

Alarm Deduplication

Prime Optical and Prime Network manage the same CPT devices and generate the same alarm conditions for CPT managed objects. Table 6-1 shows some of the alarm conditions that Prime Optical and Prime Network generate for the same managed objects, and for which Prime Central Fault Management performs deduplication.

Table 6-1 Deduplication of Alarm Conditions

Prime Optical Alarm Condition	Prime Network Alarm Condition
Equipment failure	Card down
Equipment unplugged, missing, or removed incorrectly	Card out
AIS, LOS, LOF on port	Port/link operational/admin down

The following example illustrates an alarm deduplication:

Prime Optical Alarm

- Probable Cause—LOS.
- Object Name—ONS-SJC/rack=1/shelf=1/slot=3/port=4.
- Node—209.165.202.129.

Prime Network Alarm

- cenAlarmDescription—Port Down Due to Admin.
- cenAlarmManagedObjectClass—{[ManagedElement(Key=ONS-SJC)][PhysicalRoot][Chassis][Shelf(ShelfNum=1)][Slot(SlotNum=3)][Module][Port(PortNumber=TenGigabitEthernet1/3/4)][PhysicalLayer]}.
- cenAlarmManagedObjectAddress—209.165.202.129.

Alarm Correlation

Prime Central Fault Management correlates Layer 2 or Layer 3 alarms generated by Prime Network to the root cause that Prime Optical detects in the dense wavelength-division multiplexing (DWDM) optical layer. In Prime Central 1.2, cross-application correlation is limited to within the same CPT, meaning the root cause alarm and the correlated alarm are on the same CPT device.

Prime Central Fault Management performs correlation of the alarm conditions listed in Table 6-2 by Prime Optical and Prime Network.

Table 6-2 Alarm Correlation

Prime Optical Alarm		Prime Network Alarm	
Probable Cause	Object Name/ Location	cenAlarmDescription	cenAlarmManagedObjectClass
FEC-MISM, OTUK-TIM, LOM[1]	MPLS-TP enabled uplink port on CPT	MPLS-TP LSP down	OID of MPLS-TP LSP

1. FEC-MISM = forward error correction mismatch. TIM = trace identifier mismatch. LOM = loss of multiframe.

Alarm Aging

Prime Central Fault Management uses the following alarm aging policy:

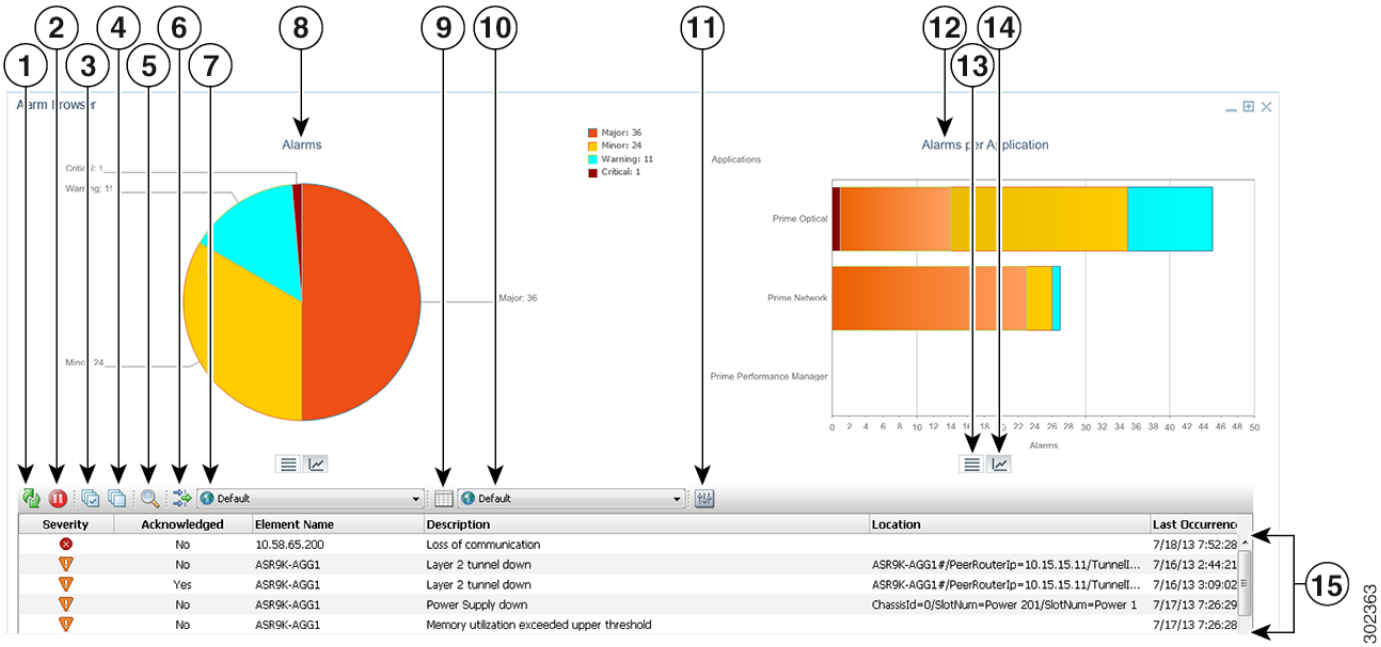
- By default, cleared alarms are deleted from the Prime Central Fault Management database after 60 minutes.
- Indeterminate and informational alarms that are not being used for service impact analysis or customer impact analysis are deleted after 1 day.
- Warning alarms that are not being used for service impact analysis or customer impact analysis are deleted after 7 days.
- Active alarms that do not meet the preceding criteria persist indefinitely in the database, unless a user clears them manually.
- The Prime Central database mirrors and archives the Prime Central Fault Management database. When you delete an alarm from the Prime Central Fault Management database, it is deleted immediately. However, the Prime Central database retains the deleted alarm for 14 days, and then purges it.

Monitoring Affected Services and Customers

Prime Central provides an Alarm Browser portlet (Figure 6-1). Users with the Fault Management role and privileges can use the Alarm Browser to monitor and manage data about faults in the network. Information about alarms is displayed in the portlet according to filters and views:

- Filters let you display a subset of alerts based on specific criteria.
- Views let you choose which alert fields to display.

Figure 6-1 Alarm Browser Portlet



1	Refresh icon	**9**	Edit Views icon
2	Freeze/Unfreeze icon	**10**	View list
3	Select All icon	**11**	Change Preferences icon
4	Deselect All icon	**12**	Alarms per Application chart
5	Find icon	**13**	Table View icon
6	Edit Filters icon	**14**	Chart View icon
7	Filter list	**15**	Properties pane
8	Alarms chart, which lists the number of alarms by severity	—	—

Opening the Alarm Browser Portlet

To open the Alarm Browser portlet to display aggregated, deduplicated, and correlated active alarms:

Step 1 From the Prime Central menu, choose **Assure > Prime Central Fault Management > Alarm Browser**.

You must have the appropriate role and privileges to open the Alarm Browser. If not, the following message is displayed:

```
You do not have access privileges to use the Fault Management component. Contact your
administrator for access.
```

Step 2 The first time you open the Alarm Browser, you must accept the self-signed, untrusted security certificates.

Mozilla Firefox

To accept the security certificates in Firefox, do the following:

a. At the "This Connection is Untrusted" security prompt, right-click the frame behind the popup message and choose **This Frame > Open Frame in New Tab**.

   The security certificate opens in a new browser tab.

b. Click **I Understand the Risks**.

c. Click **Add Exception**.

d. In the Add Security Exception dialog box, make sure the **Permanently store this exception** check box is checked. (If you leave it unchecked, you will have to reaccept the security certificates the next time you launch the Alarm Browser.) Then, click **Confirm Security Exception**.

e. Close the new tab, return to the Prime Central portal tab, and click the **Refresh Current Page** icon.

f. In the Warning - Security dialog box, check the **Always trust content from this publisher** check box. (If you leave it unchecked, you will have to reaccept the security certificates the next time you launch the Alarm Browser.) Then, click **Yes** to the following message:

```
The web site's certificate cannot be verified. Do you want to continue?
```

Note If you click No, the security certificate is denied, and the Alarm Browser displays the error "The application failed to run."

Microsoft Internet Explorer

To accept the security certificates in Internet Explorer, do the following:

a. At the security prompt, click **Continue to this website**.

b. In the Internet Explorer Information Bar, choose **Display Blocked Content**.

c. In the Warning - Security dialog box, check the **Always trust content from this publisher** check box. (If you leave it unchecked, you will have to reaccept the security certificates the next time you launch the Alarm Browser.) Then, click **Yes** to the following message:

```
The web site's certificate cannot be verified. Do you want to continue?
```

Note If you click No, the security certificate is denied, and the Alarm Browser displays the error "The application failed to run."

Step 3 (Optional) You can replace the Prime Central certificates with your company's signed, trusted certificates. See Managing the Self-Signed Certificates, page 1-19.

Information Displayed in the Alarm Browser Portlet

The Alarm Browser portlet displays the following charts:

- Alarms—Displays in pie chart format the total number of alarms of each severity (critical, major, minor, and warning) for all applications combined.
- Alarms per Application—Displays in bar chart format the number of critical, major, minor, and warning alarms for individual applications.

- The vertical axis (y-axis) shows the application.
- The horizontal axis (x-axis) shows the alarm count.

Note If Prime Performance Manager is registered with Prime Central and sends alarms to Prime Central Fault Management, the Alarms per Application chart includes Prime Performance Manager. If Prime Performance Manager is configured to send alarms directly to Prime Network, there is no bar chart for Prime Performance Manager.

The table on the bottom half of the portlet displays the following information by default.

Table 6-3 Field Descriptions for the Alarm Browser Portlet

Field	Description	
Severity	Severity of the selected alarm:	
		Critical alarm (red)
		Major alarm (orange)
		Minor alarm (amber)
		Warning alarm (turquoise)
		Indeterminate alarm (blue)
		Cleared, normal, or OK (green)
Acknowledged	Whether the selected alarm has been acknowledged in Prime Central. Values are Yes or No.	
Element IP	IP address of the device where the selected alarm occurred.	
Element Name	Name of the device where the selected alarm occurred.	
Description	Error message or condition that is associated with the selected alarm.	
Location	Physical location of the equipment where the selected alarm occurred, such as chassis, rack, subrack (shelf), slot, and port numbers.	
Last Occurrence	Time stamp when the alarm last occurred.	
Count	Number of times the alarm occurred.	
Source	Name of the source application where the selected alarm originated.	
Customer	Name of the customer affected by the alarm.	
Has Correlated	Whether the selected alarm has correlated alarms associated with it.	

The Alarm Browser's right-click menu options provide centralized alarm lifecycle management for the applications listed in the following table.

Right-Click Menu Option	Supported by...			For More Information, See...
	Prime Network	Prime Optical	Prime Performance Manager	
Acknowledge	Yes	Yes	Yes	Acknowledging or Deacknowledging an Alarm, page 6-10
Deacknowledge	Yes	Yes	Yes	Acknowledging or Deacknowledging an Alarm, page 6-10
Add to Journal	Yes	Yes	Yes	Adding Notes to an Alarm, page 6-11
Clear	Yes	Yes	Yes	Clearing an Alarm, page 6-10
Retire	Yes	Yes	Yes	Retiring an Alarm, page 6-10

Accessing Additional Alarm Information

From the Alarm Browser portlet, you can access detailed information for a specific alarm by doing the following:

Step 1 Click **View as Grid** to view either chart in table format.

Step 2 To view additional details about a specific alarm in the Alarm Browser table, double-click the alarm, or right-click the alarm and choose **Information**. The Alarm Status dialog opens, showing additional fields that are parsed from the alarm.

Step 3 Right-click an alarm in the table and choose **Correlated Alarms** to view alarms that are correlated to the selected alarm.

Prime Central identifies the relationship between a root cause alarm and its consequent alarms. It automatically correlates the consequent alarms as children of the root alarm. The Alarm Browser displays the root cause alarm, the aggregated severity of the alarm, and the severity of the root cause alarm. In addition, the Alarm Browser displays the time at which the original alarm was detected.

Step 4 Right-click a service-impacting alarm in the table and choose **Symptom Events** to see which symptom events are affected by the service-impacting alarm. The filtered view shows the causal relationship between an event and the consequent events that occurred because of it.

Step 5 Right-click an alarm in the table and choose **Device Details**. Depending on the alarm source, Prime Optical, Prime Network, or Prime Performance Manager launches, allowing you to view detailed alarm information at the application level.

- For information about using Prime Network to manage alarms and events, see the *Cisco Prime Network 4.0 Administrator Guide*.
- For information about using Prime Optical to view alarm information, see the "Managing Faults" chapter in the *Cisco Prime Optical 9.8 User Guide*.
- For information about using Prime Performance Manager to view alarm information, see the "Managing Network Alarms and Events" chapter in the *Cisco Prime Performance Manager 1.4 User Guide*.

Step 6 Right-click an alarm in the table and choose **Common Inventory**. The Common Inventory portlet launches, where you can view detailed information about the device on which the selected alarm occurred. For more information, see What Is Inventory Management?, page 4-1.

Viewing Alarms in the Alarm Summary

At the bottom of the Prime Central home page, users with the Fault Management role and privileges can view a summary of the alarm status of the network. Intended as a quick reference, the Alarm Summary (Figure 6-2) shows the total number of critical, major, minor, and warning alarms in the network—as do the charts in the Alarm Browser portlet.

You can change the rate at which the Alarm Summary refreshes automatically. Do the following:

Step 1 Click within the Alarm Summary area.

Step 2 In the Alarm Summary Timer dialog box, enter a refresh rate from 10 to 99,999 seconds. The default is 60 seconds.

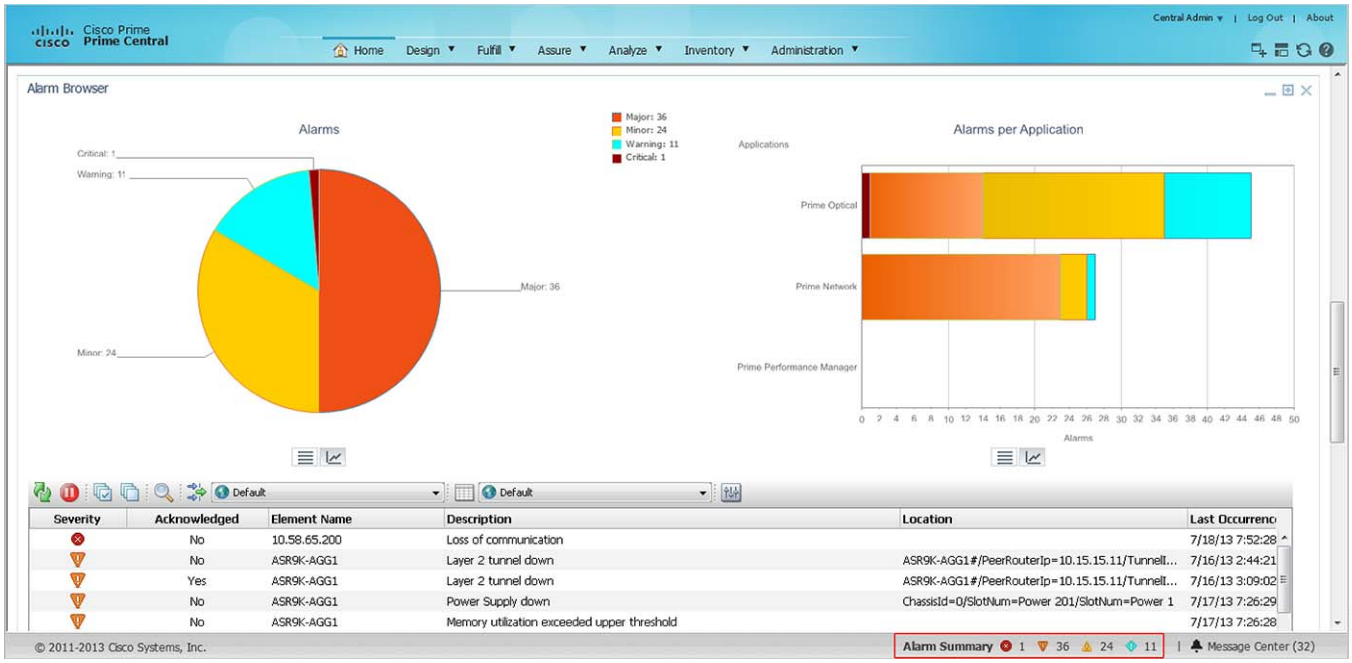
Note If you enter a value (such as 10abc) that cannot be parsed as a number, the refresh rate is reset to the last valid value. If you enter a number less than 10, the refresh rate is set to the lowest minimum, 10 seconds. You cannot enter a value higher than 99,999.

Step 3 Click **Update**. The Alarm Summary refreshes at the rate you entered.

Step 4 To stop the Alarm Summary from refreshing, reopen the Alarm Summary Timer dialog box and click **Stop**. (If later you decide to restart the automatic refresh, click **Start**.)

If you refresh your web browser, or if you log out of Prime Central and log back in, the Alarm Summary refresh rate resumes at the default 60 seconds, even if previously you had changed the refresh rate or stopped it altogether.

Figure 6-2 Alarm Summary



Acknowledging or Deacknowledging an Alarm

Acknowledging an alarm indicates that you are aware of the issue and are taking ownership of it. The acknowledged alarm remains visible in Prime Central.

To acknowledge or deacknowledge alarms within Prime Central and propagate the change back to the application:

Step 1 To acknowledge an alarm, right-click an alarm in the Alarm Browser and choose **Acknowledge**.

Step 2 To deacknowledge a previously acknowledged alarm, right-click the alarm and choose **De-acknowledge**.

Step 3 Refresh the Alarm Browser. The alarm is acknowledged (or deacknowledged) in Prime Central Fault Management, and the change propagates back to the application.

Clearing an Alarm

Cleared alarms remain in the Prime Central database, but in the Clear state. You clear an alarm when the condition that caused it no longer exists. A cleared alarms means the alarm should no longer be considered a problem.

To manually clear an active alarm in Prime Central and propagate the change back to the application:

Step 1 Right-click one or more alarms in the Alarm Browser and choose **Clear**.

Step 2 Refresh the Alarm Browser. The alarm is cleared in Prime Central Fault Management, and the cleared condition propagates back to the application.

When you try to clear certain Prime Optical alarms, the Prime Central Message Center might show the following error message for the clear operation:

```
API_ERROR:clearAlarm operation failed. Reason: Unable to perform action on alarm IDs - alarm IDs not found.
```

If the alarms exist in Prime Optical, you must clear them manually in Prime Optical. For a list of alarm categories that you must clear manually, see “EMS-Generated Alarms” in the *Cisco Prime Optical 9.8 User Guide*, Chapter 9, “Managing Faults.”

Retiring an Alarm

To retire a cleared alarm in Prime Central and delete that same alarm from the application:

Step 1 Right-click one or more alarms in the Alarm Browser and choose **Retire**. (Alarms must be cleared before they can be retired.)

Step 2 At the confirmation prompt, click **OK**.

Step 3 Refresh the Alarm Browser. The retired alarm is deleted from Prime Central and from the application.

Adding Notes to an Alarm

You can add and save your own alarm history information. You can maintain a journal for any alarm.

To add notes to an alarm and propagate the note back to the application:

Step 1 Right-click one or more alarms in the Alarm Browser and choose **Add to Journal**. The Journal dialog box opens.

Step 2 Enter a note of up to 4096 characters.

Step 3 Click **OK** to save the newly entered text and close the dialog box. The alarm note is saved in Prime Central and propagates back to the application.

Step 4 To view an alarm note in Prime Central:

a. Right-click one or more alarms and choose **Journal**. The journal shows the alarm note, the name of the user who entered it, and the date and time of the entry.

b. If you selected multiple alarms in the alarm list, click **Previous** or **Next** to move to the alarm note for the previous or next alarm in your selection.

c. Click **Close**.

Sorting Columns

Note the following when you sort columns in the Alarm Browser:

- To sort a column in the Alarm Browser, click the column header once. The rows are sorted in ascending order.
- To sort in descending order, click the column header again.
- To unsort the column, click the column header a third time.
- To sort multiple columns, press **Crtl** and click the required column headers. The sorting importance of the columns is indicated in square brackets ([]) in the column header. To alternate the sorting of individual columns within the selection between ascending and descending order, keep **Ctrl** pressed and click the column headers. To unsort the columns, release Crtl and click any header from among the sorted columns. The previously sorted columns are unsorted; the column that you clicked is sorted in ascending order.
- To lock a column, right-click the column header and click **Lock Column**. The column is moved to the left side of the portlet, and remains visible when you scroll horizontally. To unlock the column, right-click the column header and click **Lock Column** again.

Refreshing Data

The alarm list refreshes automatically at regular intervals to show all incoming alerts from the Prime Central integration layer. You can choose to refresh the alarm list manually between the configured intervals to view all the latest alerts at the current point in time.

To refresh the Alarm Browser manually between automatic refresh updates, click the **Refresh** icon in the toolbar.

Finding Data

Use the Find dialog box to search for specific text within the data in the Alarm Browser by doing the following:

Step 1 In the Alarm Browser toolbar, click the **Find** icon.

Step 2 In the Find dialog box, do the following:

a. In the Column list, select the column to search.

b. In the Value field, enter the search value that you want to match. You can enter an exact value to search for or a regular expression.

c. In the Options area, specify the type of match required:

- Exact Match—To find rows where the data in the selected column exactly matches the specified search value.
- Regular Expression—To find rows where the data in the selected column matches the specified regular expression.
- Sub String—To find rows where the data in the selected column contains the specified value somewhere within it.

d. Click **Find** to find the first matching occurrence.

If a matching row is found in the Alarm Browser, any currently selected rows are deselected, and the matching row is selected. The Find dialog box remains open so that you can view any additional matching occurrences.

e. Click **Next** to show the next match, and subsequent matches, in the Alarm Browser.

f. Click **Close** to close the Find dialog box.

Changing the Alarm Information Displayed

You can set what alarm information is displayed from the available data by editing the list view, or by selecting and applying a different view. You can also edit the filter criteria used by the current alarm list, or select a different filter to apply to the alarm list.

From the Alarm Browser, do any of the following:

- To select a different view to apply to the alarm list, click the View drop-down list on the toolbar and select from the list of available views.
- To edit the current view and change the columns displayed, click **Edit Views**. The View Builder opens, which you can use to edit the view. See Creating and Editing Views, page 6-15.
- To select a different filter to apply to the alarm list, select an available filter from the Filter list.

  For example, from the Filter list, choose **Service Impact Alarms** to view which customers and services are impacted by a specific alarm.
- To edit the current filter, click **Edit Filters**. The Filter Builder opens. See Filtering Alarms Using the Advanced Filter, page 6-13.

Filtering Alarms Using the Quick Filter

You can use the quick filtering facility as a fast way of displaying alarms that match a selected criteria. You can filter for alarm data and display alarms that correspond to the value of a specific cell. For example, you can quickly display only those alarms that occurred at the same time as the selected alarm, or before the selected alarm.

To filter alarms using the quick filter:

Step 1 In the Alarm Browser portlet, right-click a cell that contains a value on which to base the quick filter.

Step 2 From the right-click menu, choose **Quick Filter** and select a submenu option.

Step 3 To remove quick filtering and restore the portlet to its original view of all alarms, right-click a cell again and choose **Quick Filter > Off**.

Filtering Alarms Using the Advanced Filter

Network alarms typically create many alerts that are not of immediate importance to the personnel monitoring the system. Use advanced filters to control the alarm information that is displayed.

In the Alarm Browser, use the Filter drop-down list to filter alarm data by specific fields, such as Cleared Alarms.

To create and edit advanced filters for alarm data:

Step 1 In the Alarm Browser toolbar, click the **Edit Filters** icon. The Filter Builder opens.

Step 2 Do one of the following:

- To create a filter, click **New Filter**.
- To edit an existing filter, select the list that contains the required filter. After the list has refreshed, click the filter.

  If you are editing an existing filter, skip Step 3.

Caution Do not delete the “Default” filter. Deleting the Default filter generates an error.

Step 3 Select the users to whom you want to grant access to the filter, and click **OK**.

Step 4 Specify the general properties for the filter:

- Name—Enter a name for the filter. The name cannot contain the following characters:

  $! £ % ^ & * ( ) + = ¬ ` ~ # @ ’ : ; < > { } [ ] ? / \ | , "

  Note that you cannot change the name of a filter after you have created that filter.
- Default View—Select the view with which you want to associate the filter, or select the view that is associated with the filter. The default view is applied when you launch an Alarm Browser with the filter but do not specify a view.
- Collection—(For global filters and system filters only) Select the filter collection or collections to which you want to add the filter.

- Description—Enter a description that explains the purpose of the filter.
- Data Source—Select the data source or data sources that contain the fields against which you want to run queries. Click the **Show Data Sources** icon to display a list of available data sources.

If you are editing an existing filter, proceed to Step 8.

Step 5 In the first row of the **Basic** tab, create a filter condition as follows:

a. From the Field list, select a field from the specified data source.

b. From the Comparator list, select a comparator.

c. In the Value field, enter a numeric data type value, or a string data type value. The data types must correspond to those in the ObjectServer field. String data type entries in the Value field must be contained in single quotes.

d. (Optional) Use the “like” and “not like” comparators for regular expression pattern-matching metacharacters against the entry in the Value field.

Note Do not use the getdate expression in the Value field.

Step 6 To add additional filter conditions, click **+**. You can add as many filter conditions as required.

Step 7 Use the match options to specify how the filter conditions combine in aggregate:

- Click **All** to trigger the filter only if all the conditions are met.
- Click **Any** to trigger the filter if any of the conditions are met.

Step 8 (Optional) To preview the literal SQL WHERE clause output, click **Advanced**.

Step 9 Click **Metric** and use the following fields to set the metric value:

- Label—Enter a title for the metric.
- Function—Select a function to perform on the field data.
- Field—Select a field on which to perform the chosen function.

Step 10 Click **Save and Close**.

Filter Builder Modes

You can use the following modes to create filters; the Filter Builder displays a tab for each mode after you click **New Filter**.

Basic Mode

Basic mode provides a set of lists and text fields that you use to specify the filter conditions. To build the conditions, select a field from the specified data sources, select a comparator, and enter a numeric data type or string data type value. The data type value is used as the filtering criterion used against the field. If you use basic mode to construct your filter, you can view the resulting SQL in the text field on the Advanced tab.

The fields in the Basic tab map to the following columns in the Alarm Browser default view:

This field name:	... Maps to this Alarm Browser column title:
Severity	Severity
Acknowledged	Acknowledged
Node	Element IP
NodeAlias	Element Name
Summary	Description
AlertKey	Location
LastOccurrence	Last Occurrence
Tally	Count
Agent	Source
Customer	Customer
HasCorrelated	Has Correlated

Advanced Mode

Provides a text field into which you can enter an SQL syntax. If you create a filter in advanced mode, it might not be possible to express the SQL syntax in the fields on the Basic tab. After you have saved a filter created in advanced mode, the Basic tab is removed for that filter.

Dependent Mode

This tab is displayed only for dependent filters. On this tab, use the Search fields to identify the filters that you want to use for the dependencies. After you have identified the required filters, move the filters from the Available filters list to the Selected dependencies list. In a dependent filter, the SQL WHERE statements of each filter are concatenated by using OR statements.

Metric Mode

A metric is an aggregate statistic that can be derived from the alerts that match a filter to display a useful figure; for example, an average, count, or sum of all field values. If a filter is displayed using a monitor box linked to an Alarm Browser, the metric information obtained from the set of alerts that match this filter is used for this display.

Creating and Editing Views

Use the View Builder to create and edit views that are dynamically applied to Alarm Browser data. The views determine what information is displayed from the available alarm data.

Step 1 In the Alarm Browser toolbar, click the **Edit Views** icon.

Step 2 In the View Builder, do one of the following:

- To create a new view, click **New View**.
- To edit an existing view, select the desired view from the View list. The page updates with the view properties.

  If you are editing an existing view, skip Step 3.

Step 3 Select the users to whom you want to grant access to the view, and click **OK**.

Step 4 Use the following fields to set the general properties for the view:

- Name—Enter a name for the view. The name cannot contain the following characters:

  $! £ % ^ & * ( ) + = ¬ ` ~ # @ ’ : ; < > { } [ ] ? / \ | , "

  By default, the following characters cannot be used as the initial character of a view name:

  / \ * ? " < > | & .

- Data Source—Select the data source or data sources that contain the fields that you want to be displayed in the view. Click the **Show Data Sources** icon to display a list of available data sources.

Step 5 Select the columns you want the Alarm Browser to display, and specify how those columns are ordered.

a. In the Display Columns area, use the **>** and **<** arrows to move fields between lists. Only those fields in the Event list view list are visible as columns in the Alarm Browser.

b. In the Event list view list, select a field.

c. Use the arrow buttons to the right of the list to change the display order of the columns in the view:

- Click **Top** to move the field to the top of the list. In the Alarm Browser, the field is displayed as the column furthest to the left.
- Click **Up** to move the selected field up one position in the list.
- Click **Down** to move the selected field down one position in the list.
- Click **Bottom** to move the selected field to the bottom of the list. In the Alarm Browser, the field is displayed as the column furthest to the right.

d. (Optional) Check the **Lock column** check box to lock the selected column at the far left of the Alarm Browser in the view, so that the column is always displayed when you scroll horizontally.

e. (Optional) Select a field from the Event list view list and update the corresponding column’s title, width, and alignment.

Step 6 Click **Save and Close**.

Freezing and Unfreezing the Alarm Browser

To take a snapshot of alarm information before it is changed by updates from the Prime Central integration layer, you can freeze all the fields on the Alarm Browser by doing the following:

Step 1 To freeze the fields, click the **Freeze/Unfreeze** icon in the Alarm Browser toolbar.

The updates from the Prime Central integration layer are suppressed.

Step 2 To unfreeze the fields and obtain updates from the Prime Central integration layer, click the **Freeze/Unfreeze** icon again.

Step 3 (Optional) To force a refresh of the fields independently of the refresh rate, click the **Refresh** icon.

Configuring Email Notification of Critical and Major Alarms

You can choose to receive an email whenever a critical or major alarm occurs. Prime Central Fault Management uses the Linux sendmail function under /usr/sbin, /sbin, /usr/lib, /bin, or /usr/bin to send an email notification of critical and major alarms.

To configure email notification of alarms:

Step 1 As the primeusr user, log into the Prime Central portal with the primeusr password that you specified during installation.

Step 2 Change directories to the *installation-directory*/faultmgmt folder.

Step 3 Open the .primefmmailist file and add the email address(es) that you want to receive notification of critical and major alarms. You can enter multiple email addresses on a single line, separated by a space.

Step 4 Save and close the .primefmmailist file.

When a critical or major alarm occurs, you will receive an email similar to the following:

```
From: PRIMEFM User [mailto:primeusr@cisco.com]
Sent: Friday, July 19, 2013 7:21 AM
To: John Doe
Subject: Prime Central Fault Management Email

This message refers to node <node-ID>, which has the following problem:

Loss of communication

The severity is Critical

Sent by Cisco Prime Central Fault Management
```

Changing Alarm Browser Preferences

Step 1 In the Alarm Browser toolbar, click the **Change preferences** icon.

Step 2 In the Preferences dialog box, click the **Monitor Boxes** tab and specify what information is displayed by the monitor boxes on the Alarm Browser.

See Table 6-4 for a description of the options you can set in the Preferences dialog box.

Step 3 Click the **Notifications** tab and configure preferences for alert notifications when the alarm list is minimized.

Step 4 Click the **Flashing** tab and specify alarm list preferences for flashing on receipt of new alerts.

Step 5 Click the **Event List** tab and set other alarm list preferences.

Step 6 Click **Apply**.

Step 7 Click **Save**; then, click **Close**.

Preferences Dialog Box

The following table describes the options you can set in the Alarm Browser's Preferences dialog box.

Table 6-4 Preferences Dialog Box

Option	Description
Monitor Boxes Tab	
Show Number of Alerts	Displays the number of alerts that match the filter.
Show Highest Severity	Displays the highest severity of the alerts that match the filter.
Show Lowest Severity	Displays the lowest severity of the alerts that match the filter.
Show Highest Severity Border	Displays a border around the monitor box in the color of the highest-severity alert that matches the filter.
Show Metric	Displays the selected filter metric value.
Show Highest Color	(Applicable only if you selected the Show Highest Severity option) Displays the highest-severity alert indicator in the color of the alert: for example, in red if the highest-severity alert is critical.
Show Lowest Color	(Applicable only if you selected the Show Lowest Severity option) Displays the lowest-severity alert indicator in the color of the alert.
Font	Choose the font and the font size for the text on the monitor boxes.
Distribution meter	Specify the format for the distribution meter: • Show Lava Lamp—Displays the distribution meter as a series of horizontal bars. • Show Histogram—Displays the distribution meter as a bar graph. • Show None—Switches off the distribution meter.
Notifications Tab	
Enabled	Check this check box to receive notification of new, changed, or deleted alerts when the alarm list is minimized.
When Iconized	Click this radio button to receive notification of new, changed, or deleted alerts on iconized desktop environments. An iconized desktop environment displays an icon when the alarm list is minimized.
Always	Click this radio button to always receive notification of new, changed, or deleted alerts.
When	Check each check box to receive notification as follows: • New—You receive a notification when a new alert is added to the alarm list. • Change—You receive a notification when an existing alert changes in the alarm list. • Delete—You receive a notification when an existing alert is deleted from the alarm list.
How	Select each option to indicate how a notification should occur: • Alert Icon—Flashes the minimized alarm list. • Open Window—Opens the alarm list on the window. • Play Sound—Plays a sound on the workstation. • Open URL—Opens a URL. In the URL Target field, enter the URL that you want to be opened.

Table 6-4 Preferences Dialog Box (continued)

Option	Description
Flashing Tab	
Enable Flashing check box	Check to enable alarm list flashing.
Speed slider	Use to indicate how quickly the alarm list flashes.
Brightness slider	Use to indicate the degree of brightness of the flashing.
Event List Tab	
Show Colors	Displays each row of the alarm list with a background color that corresponds to the severity of the alarm.
Show Distribution Summary Bar	Displays the distribution summary bar, which shows the number of alerts that match each severity color.
Show Toolbar	Makes the toolbar available on the alarm list.
Font Name	Choose a font for your alarm list.
Font Size	Choose a font size for your alarm list.
Date Format	Choose the required date format. If you select Customize, enter a custom format.
Time Zone	Choose a time zone from the available options.
Event List Icons	Specify how you want the alarm severity to be depicted in the Severity column: • Show—Displays an icon to denote alarm severity. • Show With Text—Displays an icon and text to denote alarm severity. • Don't Show—Displays text to denote alarm severity.

Customizing the Sound of Alarm Notifications

To set up the Play Sound option for audible notification:

Step 1 Prepare the sound file and place it in the following directory on your server: *Fault-Management-installation-directory*/faultmgmt/tipv2/profiles/TIPProfile/installedApps/TIPCell/isc.ear/OMNIbusWebGUI.war/sounds.

Step 2 In the Alarm Browser toolbar, click the **Change preferences** icon.

Step 3 In the Preferences dialog box, click the **Notifications** tab.

Step 4 In the How area, check the **Play Sound** check box.

Tip To preview the default sound, click the **Play** button.

Step 5 To change the default sound to the one you uploaded in Step 1, specify the sound file in the Play Sound field. Use the following format:

$(SERVER)/sounds/*<sound-filename>*

For example:

```
$(SERVER)/sounds/crash.wav
```

Step 6 Click **Apply**.

Step 7 Click **Save**; then, click **Close**.

The change takes effect when a new notification appears.

Analyzing Fault Data

Prime Central provides an Alarm Report portlet (Figure 6-3) that lets you analyze fault data and help you make informed and timely decisions. Reports can be published to the portlet to ensure that everyone in your organization has accurate and relevant information when they need it.

The Alarm Report portlet shows an alarm summary and details grouped by node, severity, source application, and so on. Users with the appropriate role and privileges can view, customize, and schedule reports for active and historical alarms. You can export the generated reports in HTML, PDF, Excel, and PostScript format.

The Alarm Report portlet displays the following tabs:

- Public Folders—Reports that are placed in Public Folders are of interest to and can be viewed by many users.
- My Folders—You create personal folders and use them to organize reports according to your preferences. My Folders are accessible by you only when you are logged on.

Figure 6-3 Alarm Report Portlet

1	Predefined alarm reports	**6**	Set Properties icon
2	Public Folders tab	**7**	Launch menu
3	My Folders tab	**8**	Order icon
4	Refresh icon	**9**	More link
5	Delete icon	—	

Default Alarm Reports

The Alarm Report portlet supports the predefined alarm reports shown in Table 6-5.

Table 6-5 Default Alarm Reports

Report Name	Description	Purpose
Average Acknowledgement		
Ack_Events_Details	Shows a detailed breakdown of the average acknowledgement times within a network management environment for a specific user or group.	Assists operators and managers in pinpointing and addressing discrepancies in acknowledgement rates across the network.
Ack_Events_Summary	Shows the average acknowledgement times within a network management environment for all users and groups.	
Events		
Events_Details	Displays a detailed report of all events of a selected node, class, manager, alert group, or severity over a user-specified time period.	Assists operators and managers in providing coverage for specific criteria in event management.
Events_Summary	Displays the highest event-generating elements based on either node, class, manager, alert group, or severity over a user-specified time period.	Helps identify low performance of a system or server over a period of time.
Performance		
Perf_Details	Generates a supplementary drill-down report of a selected operator, group, class, or manager over a user-specified time period.	Helps identify the most overloaded owner, class, or event manager, and assists in identifying performance issues.
Perf_Summary	Generates a bar chart and supplementary drill-down table displaying the number of events handled by either an owner, class, or manager over a user-specified time period.	
Summary		
Get_All_Details	Retrieves all event details associated with a specific node.	Allows users to track detailed information about specific nodes and devices that have generated events.
Get_All_Journals	Retrieves all journal entries associated with a specific node.	Allows users to track journal or state change information about specific nodes and devices that have generated events.

Opening the Alarm Report Portlet

Tip If multiple users plan to share the same browser instance and use the Alarm Report portlet, it is recommended that those users clear their browser cache before logging into Prime Central.

To open the Alarm Report portlet:

Step 1 From the Prime Central menu, choose **Assure > Prime Central Fault Management > Alarm Report**.

If you do not have the appropriate role and privileges to open the Alarm Report, the following message is displayed:

```
You do not have access privileges to use the Fault Management component. Contact your
administrator for access.
```

Step 2 The first time you open the Alarm Report, you must accept the self-signed, untrusted security certificates.

Mozilla Firefox

To accept the security certificates in Firefox, do the following:

a. At the "This Connection is Untrusted" security prompt, right-click the frame behind the popup message and choose **This Frame > Open Frame in New Tab**.

   The security certificate opens in a new browser tab.

b. Click **I Understand the Risks**.

c. Click **Add Exception**.

d. In the Add Security Exception dialog box, make sure the **Permanently store this exception** check box is checked. (If you leave it unchecked, you will have to reaccept the security certificates the next time you launch the Alarm Report.) Then, click **Confirm Security Exception**.

e. Close the new tab, return to the Prime Central portal tab, and click the **Refresh Current Page** icon.

f. In the Warning - Security dialog box, check the **Always trust content from this publisher** check box. (If you leave it unchecked, you will have to reaccept the security certificates the next time you launch the Alarm Report.) Then, click **Yes** to the following message:

   ```
   The web site's certificate cannot be verified. Do you want to continue?
   ```

Note If you click No, the security certificate is denied, and the Alarm Report displays the error "The application failed to run."

Microsoft Internet Explorer

To accept the security certificates in Internet Explorer, do the following:

a. At the security prompt, click **Continue to this website**.

b. In the Internet Explorer Information Bar, choose **Display Blocked Content**.

c. In the Warning - Security dialog box, check the **Always trust content from this publisher** check box. (If you leave it unchecked, you will have to reaccept the security certificates the next time you launch the Alarm Report.) Then, click **Yes** to the following message:

   ```
   The web site's certificate cannot be verified. Do you want to continue?
   ```

Note If you click No, the security certificate is denied, and the Alarm Report displays the error "The application failed to run."

Step 3 (Optional) You can replace the Prime Central certificates with your company's signed, trusted certificates. See Managing the Self-Signed Certificates, page 1-19.

Creating a New Report

Step 1 In the Alarm Report portlet, click **Launch > Report Studio**.

Report Studio is a web product for creating reports that analyze corporate data according to specific information needs.

Step 2 Click **Create a new report or template**.

Step 3 Choose the desired report template; then, click **OK**.

Step 4 Select the data items you want to appear in your report:

a. In the Insertable Objects pane, on the Toolbox tab, drag **Singleton** to the report.

An empty data container is created.

b. From the Insertable Objects pane, on the Source tab, drag a data item into the singleton container. To create a singleton, you can also drag a data item anywhere in your report layout.

c. To change the query associated to the singleton object, in the Properties pane, double-click the Query property and make changes.

Step 5 From the **Run** menu, click one of the options to produce the report in the format you want.

You can produce a report in HTML, PDF, CSV, various Excel formats, and XML. You cannot produce a report in CSV format if you have more than one query defined in the report unless the additional queries are used for prompts.

The report runs. Once the report has finished running, you can run the report again in the same format or in a different format. If you run the report again in CSV or XLS format, the report will appear in a new browser window.

Scheduling a Report

You can set up a schedule to run a report at a later time or at a recurring date and time.

If you no longer need a schedule, you can delete it. You can also disable it without losing any scheduling details. You can then enable the schedule at a later time.

Step 1 Drill down to the report for which you want to set up a schedule; for example, **Public Folders > Alarm Reports > Events > Events_Details**.

Step 2 Click the **Schedule -** *report name* icon.

Step 3 Specify the schedule parameters:

- Under Priority, lower numbers designate higher priority. The default priority setting is 3.
- To create the schedule but not apply it right away, check the **Disable the schedule** check box. To enable it later, uncheck the check box.

Step 4 Click **OK**.

A schedule is created and the report runs at the next scheduled time.

Step 5 After clicking OK, you might receive the following "Renew the credentials" prompt:

```
The user or password you provided is not valid. Provide valid credentials.
```

If you enter the password you used to log into Prime Central and click **OK**, the dialog box remains open, and the password field becomes blank. If you click **OK** without entering a password, or if you click **Cancel**, the dialog box closes, but the scheduled report fails to run because of a password authentication failure.

Do the following:

a. As the primeusr user, log into the Prime Central Fault Management server.

b. Change directories to the faultmgmt/prime_integrator/scripts/ directory.

c. Run the **updatePasswdForReporting.sh** script, which lets you provide the username and password to use for report scheduling.

For example, enter:

```
# updatePasswdForReporting.sh centraladmin Admin
```

where:

- *centraladmin* is the username to use when scheduling a report.
- *Admin* is the password to use when scheduling a report.

d. Return to the "Renew the credentials" prompt and in the Password field, enter the password you configured in the previous step; then, click **OK**.

A schedule is created and the report runs at the next scheduled time.

Step 6 The next time you schedule a report, you do not have to rerun the updatePasswdForReporting.sh script or renew your credentials. However, if *someone else* runs the script and changes the report scheduling password, you must renew your credentials again. To do this:

a. In the Alarm Report portlet, choose **My Area > My Preferences**.

b. In the Set Preferences dialog box, click the **Personal** tab.

c. Scroll down and click **Renew the credentials**.

d. At the "Renew the credentials" prompt, enter the new password for scheduling reports; then, click **OK**.

Saving or Emailing a Report

You can distribute reports to other users by:

- Saving them where other users can access the reports at their convenience, such as in the public folders. Public folders typically contain reports that are of interest to many users.
- Sending them to users by email. This is especially useful if you want to share the report with a group of people who do not have access to the Alarm Report portlet.

To save or email a report:

Step 1 Open the report that you want to save or email; for example, **Public Folders > Alarm Reports > Average Acknowledgement > Ack_Events_Summary**.

Step 2 To save the report:

a. In the report toolbar, choose **Keep this version > Save as Report View**.

b. Enter a name for the report.

c. Accept the default location, or click **Select another location**.

d. Click **OK**.

Step 3 To email the report:

a. In the report toolbar, choose **Keep this version > Email Report**.

b. Enter the recipient's email address.

c. Check the following check boxes:

- **Include a link to the report**—To include a URL to the report in the email.
- **Attach the report**—To attach the report to the email.

d. Click **OK**.

Setting Report Properties

You can control the way a report appears and behaves by modifying its properties. To do so:

Step 1 Drill down to the report for which you want to set properties; for example, **Public Folders > Alarm Reports > Events > Events_Summary**.

Step 2 In the report's Actions toolbar, click **Set properties -** *report name*.

Step 3 Click the **General** tab and make any necessary changes to settings such as the report's owner, display icon, and name.

Step 4 Click the **Report** tab and set the default action that is taken on the report.

Step 5 Click the **Permissions** tab and specify which users and groups have access to the report, as well as the actions they can perform on the content.

Step 6 Click **OK**.

Specifying the Report Order

You can specify the order of reports in the Alarm Report portlet. You might decide to organize reports by level of usage and place reports that you use daily at the top of the list.

By default, existing reports are sorted alphabetically. Reports added after the order is specified are shown at the end of the list.

Step 1 In the Alarm Report toolbar, click **Order**.

Step 2 Select the reports in the "Shown in default order" list box and click the right-arrow button to move them to the "Shown first" list box.

Step 3 Click the **Up**, **Down**, **To top**, and **To bottom** links to move the reports within the list.

Step 4 Click **OK**.

Deleting a Report

Step 1 Drill down to the report that you want to delete; for example, **Public Folders > Alarm Reports > Summary > Get_All_Details**.

Step 2 Check the check box to the left of the report.

Step 3 In the toolbar, click **Delete**.

Step 4 At the confirmation prompt, click **OK**.

Enabling or Disabling Service Impact Analysis, Customer Impact Analysis, Virtualization, or the Northbound Interface

From the UNIX command line, you can run a script to enable or disable any of the following functions:

- Service impact analysis
- Customer impact analysis
- Virtualization
- Northbound interface, including 3GPP

To enable or disable the preceding functions:

Step 1 As the primeusr user, log into the Prime Central portal with the primeusr password that you specified during installation.

Step 2 Enter one of the following commands:

- To enable or disable a feature, enter:

```
enable.sh -enable {true | false} -featureKey {nbi | ia | virt}
```

- To list the status of all features, enter:

```
enable.sh -list
```

Note The script terminates if you do not run it as the primeusr.

The script has the following usage:

Command Syntax	Description
`-enable <arg>`	Enables or disables an enablement feature.
`-featureKey <arg>`	Configures a unique feature descriptor; for example, “datacenter.” The following feature keys are supported: • ia—Impact analysis • virt—Virtualization • nbi—Northbound interface
`-list`	Lists all existing enablement features in the database, as well as their enablement status.

Command Examples

- List all enablement features:

  enable.sh -list

- Modify an existing enablement feature (toggle enable on/off):

  enable.sh -enable {**true** | **false**} **-featureKey** *<feature-key>*

The output of the **enable.sh -list** command is similar to the following:

```
featureDisplay:Impact Analysis; featureKey:ia; enabled:false; lastChanged:
featureDisplay:Virtualization; featureKey:virt; enabled:true; lastChanged:2013-03-19
17:00:26.833
featureDisplay:Northbound Interface; featureKey:nbi; enabled:false; lastChanged:
```

Step 3 At the following notification, enter **y**:

```
================================================================================
| You are enabling the function-name function.                                 |
================================================================================
Are you sure you want to enable the function-name function? (y/n)
```

Step 4 If you enabled or disabled the virt feature key, you must restart the Prime Central portal. Enter:

```
portalctl stop
portalctl start
```

Step 5 If you enabled or disabled the nbi or ia feature keys, you must restart the Prime Central integration layer. As the primeusr user, log into the Prime Central integration layer and enter:

```
itgctl stop
itgctl start
```

Configuring the SNMP Gateway for NBI Integration

Step 1 As the primeusr user, log into the Prime Central Fault Management server.

Step 2 Copy the example properties file, NCO_GATE.props, from the $OMNIHOME/gates/snmp directory to the $OMNIHOME/etc directory.

Step 3 In the NCO_GATE.props file, change the values of the gateway-specific properties to suit your operating environment. The gateway-specific properties are listed in Table 6-6.

Step 4 Enter the following command to start the SNMP gateway:

```
nco_g_snmp &
```

Gateway-Specific Properties

The following table lists the properties you can modify when configuring an SNMP gateway for NBI integration.

Table 6-6 Gateway-Specific Properties

Property Name	Command-Line Option	Description
Gate.SNMP.Community *string*	-snmpcommunity *string*	Community string from SNMP traps. The default is public.
Gate.SNMP.EnableLookup *boolean*	-snmpenablelookup *boolean*	Whether or not host lookup is enabled. The default is TRUE.
Gate.SNMP.EngineID *string*	-snmpengineid *string*	Gateway engine ID, which identifies the gateway as the source of the SNMPv3 traps. The default is 0x0102030405. **Note** This property is used only with SNMPv3 traps and must match the engine ID specified in the configuration file of the receiver.
Gate.SNMP.ForwardUpdates *boolean*	-snmpforwardupdates *boolean*	Whether or not the gateway forwards alert updates to the ObjectServer. In effect, the original alert is duplicated but will include the updated data. The default is FALSE.
Gate.SNMP.Gateway *string*	-snmpgateway *string*	IP address and port to which the gateway forwards traps. The default is 127.0.0.1:162. If you are operating in an IPv4 environment, specify the location in IPv4 format as *address*:*port*. For example: 127.0.0.1:8080 If you are operating in an IPv6 environment, specify the location in IPv6 format, preceded by tcp6 or udp6, and followed by the port number, as tcp6|udp6:*address*:*port*. For example: tcp6:[::01]:6666

Table 6-6 Gateway-Specific Properties (continued)

Property Name	Command-Line Option	Description
Gate.SNMP.OID *string*	-snmpoid *string*	Object identifier (OID) for traps. The default is 1.3.6.1.4.1.1279 (an IANA-registered Private Enterprise Number). This property can also be defined as @NodeGroup to forward the value of the NodeGroup column in the status table.
Gate.SNMP.Protocol *string*	-snmpprotocol *string*	Transport protocol that the gateway uses: • TCP—Transmission Control Protocol. • UDP—(Default) User Datagram Protocol. **Note** Store-and-forward mode is not available when the gateway uses UDP.
Gate.SNMP.Retries *integer*	-snmpretries *integer*	Number of times that the gateway attempts to retry sending a message on failure. When this number is exceeded, the gateway stops sending messages to the port. The default is 5.
Gate.SNMP.SecurityLevel *string*	-snmpsecuritylevel *string*	Security level that the gateway uses for SNMPv3 messages: • AuthnoPriv—The gateway sends the username and password in encrypted format. • AuthPriv—The gateway transmits the SNMP traps in encrypted format. • noAuthnoPriv—(Default) The gateway does not encrypt the username, password, or SNMP traps. **Note** This property is used only with SNMPv3 traps.
Gate.SNMP.SecurityName *string*	-snmpsecurityname *string*	Security name for the gateway as defined in the configuration file of the receiver. The default is netcool. **Note** This property is used only with SNMPv3 traps.
Gate.SNMP.Security AuthProtocol *string*	-snmpsecurityauthprotocol *string*	Authentication protocol that the gateway uses: • MD5—(Default) Message Digest 5 protocol. • SHA1—Secure Hash Algorithm 1 protocol. **Note** This property is used only with SNMPv3 traps.
Gate.SNMP.Security PrivProtocol *string*	-snmpsecurityprivprotocol *string*	Privacy protocol that the gateway uses to encrypt data: • AES—Advanced Encryption Standard. • DES—(Default) Data Encryption Standard.
Gate.SNMP.Security AuthPassphrase *string*	-snmpsecurityauthpassphrase *string*	Password used for authentication. The default is password. **Note** The password must be at least eight characters long. This property is used only with SNMPv3 traps.
Gate.SNMP.Security PrivPassphrase *string*	-snmpsecuritypriv passphrase *string*	Password used for privacy. The default is password. **Note** This property is used only with SNMPv3 traps.

Table 6-6 Gateway-Specific Properties (continued)

Property Name	Command-Line Option	Description
Gate.SNMP.OID *string*	-snmpoid *string*	Object identifier (OID) for traps. The default is 1.3.6.1.4.1.1279 (an IANA-registered Private Enterprise Number). This property can also be defined as @NodeGroup to forward the value of the NodeGroup column in the status table.
Gate.SNMP.Protocol *string*	-snmpprotocol *string*	Transport protocol that the gateway uses: • TCP—Transmission Control Protocol. • UDP—(Default) User Datagram Protocol. **Note** Store-and-forward mode is not available when the gateway uses UDP.
Gate.SNMP.Retries *integer*	-snmpretries *integer*	Number of times that the gateway attempts to retry sending a message on failure. When this number is exceeded, the gateway stops sending messages to the port. The default is 5.
Gate.SNMP.SecurityLevel *string*	-snmpsecuritylevel *string*	Security level that the gateway uses for SNMPv3 messages: • AuthnoPriv—The gateway sends the username and password in encrypted format. • AuthPriv—The gateway transmits the SNMP traps in encrypted format. • noAuthnoPriv—(Default) The gateway does not encrypt the username, password, or SNMP traps. **Note** This property is used only with SNMPv3 traps.
Gate.SNMP.SecurityName *string*	-snmpsecurityname *string*	Security name for the gateway as defined in the configuration file of the receiver. The default is netcool. **Note** This property is used only with SNMPv3 traps.
Gate.SNMP.Security AuthProtocol *string*	-snmpsecurityauthprotocol *string*	Authentication protocol that the gateway uses: • MD5—(Default) Message Digest 5 protocol. • SHA1—Secure Hash Algorithm 1 protocol. **Note** This property is used only with SNMPv3 traps.
Gate.SNMP.Security PrivProtocol *string*	-snmpsecurityprivprotocol *string*	Privacy protocol that the gateway uses to encrypt data: • AES—Advanced Encryption Standard. • DES—(Default) Data Encryption Standard.
Gate.SNMP.Security AuthPassphrase *string*	-snmpsecurityauthpassphrase *string*	Password used for authentication. The default is password. **Note** The password must be at least eight characters long. This property is used only with SNMPv3 traps.
Gate.SNMP.Security PrivPassphrase *string*	-snmpsecuritypriv passphrase *string*	Password used for privacy. The default is password. **Note** This property is used only with SNMPv3 traps.

Table 6-6 Gateway-Specific Properties (continued)

Property Name	Command-Line Option	Description
Gate.SNMP.SNMPVersion *integer*	-snmpsnmpversion *integer*	Version of the SNMP writer. The default is 2.
Gate.SNMP.Specific *integer*	-snmpspecific *integer*	Trap type value for the specific trap field in forwarded SNMP traps. The default is 1. **Note** This property can also be defined as @Class to forward the value of the Class column in the alerts.status table.
Gate.SNMP.Store AndForward *boolean*	-snmpstoreandforward *boolean*	Whether or not the gateway runs in store-and-forward mode. The default is FALSE. **Note** Store-and-forward mode is not available when the gateway uses UDP.
Gate.SNMP.StoreFile *string*	-snmpstorefile *string*	Name and location of the storage file that the gateway uses when operating in store-and-forward mode. The default is $OMNIHOME/var/NCO_GATE_snmp_.store.
Gate.SNMP.Timeout *integer*	-snmptimeout *integer*	Time (in seconds) that the gateway waits for a connection from an SNMP receiver before timing out. The default is 600. **Note** This property is used only when the Gate.SNMP.Protocol property is set to TCP.
Gate.SNMP.Trap *integer*	-snmptrap *integer*	Trap type value of the generic trap field in forwarded SNMP traps. **Note** This property can also be defined as @Severity to forward the value of the Severity column in the alerts.status table.

Map Definition Files

Map definition files define how the gateway maps data from the SNMP gateway to the status tables in the Fault Management database. The default map definition file is $OMNIHOME/gates/snmp/snmp.map.

When an event is received, it is converted to the trap format defined in the CISCO-EPM-NOTIFICATION-MIB (see Table 6-7). All OSS clients receive the same traps in the same trap format.

Table 6-7 CISCO EPM-NOTIFICATION-MIB Summary

Trap Name	Object ID	Type	Value
cenAlarmVersion	1.3.6.1.4.1.9.9.311.1.1.2.1.2	SnmpAdmin String	MIB version number, in the format *major version.minor version*. Always set to *1.2*.
cenAlarmTimestamp	1.3.6.1.4.1.9.9.311. 1.1.2.1.3	Timestamp	Time when the alarm was raised.
cenAlarmUpdatedTimestamp	1.3.6.1.4.1.9.9.311.1.1.2.1.4	Timestamp	Alarms persist over time and their fields can change values. The updated time indicates the last time a field changed and this alarm updated.
cenAlarmInstanceID	1.3.6.1.4.1.9.9.311.1.1.2.1.5	SnmpAdmin String	Serial number that uniquely identifies each alarm.
cenAlarmStatus	1.3.6.1.4.1.9.9.311.1.1.2.1.6	Integer32	Alarm status: • 0—Not acknowledged • 1—Acknowledged
cenAlarmStatusDefinition	1.3.6.1.4.1.9.9.311.1.1.2.1.7	SnmpAdmin String	Alarm status definition, in the format *integer*,*string*: • 0,Not acknowledged • 1,Acknowledged
cenAlarmType	1.3.6.1.4.1.9.9.311.1.1.2.1.8	Integer	Not used.
cenAlarmCategory	1.3.6.1.4.1.9.9.311.1.1.2.1.9	Integer32	Alarm category: • 0—Unknown • 100—Raw alarm • 101—Root cause alarm • 102—Service alarm
cenAlarmCategory Definition	1.3.6.1.4.1.9.9.311.1.1.2.1.10	SnmpAdmin	Alarm category definition, in the format *integer*,*string*: • 0,Unknown • 100,Raw alarm • 101,Root cause alarm • 102,Service alarm
cenAlarmServer AddressType	1.3.6.1.4.1.9.9.311.1.1.2.1.11	InetAddress Type	Alarm server address type. Always set to *IPv4*.
cenAlarmServerAddress	1.3.6.1.4.1.9.9.311.1.1.2.1.12	InetAddress	IP address of the application that sent the alarm.
cenAlarmManaged ObjectClass	1.3.6.1.4.1.9.9.311.1.1.2.1.13	SnmpAdmin String	ID sent from the application to Prime Central Fault Management.
cenAlarmManaged ObjectAddressType	1.3.6.1.4.1.9.9.311.1.1.2.1.14	InetAddress Type	Not used.

Table 6-7 CISCO EPM-NOTIFICATION-MIB Summary (continued)

Trap Name	Object ID	Type	Value
cenAlarmManaged ObjectAddress	1.3.6.1.4.1.9.9.311.1.1.2.1.15	InetAddress	IP address of the application on which the alarm occurred.
cenAlarmDescription	1.3.6.1.4.1.9.9.311.1.1.2.1.16	OctetString	Event message text.
cenAlarmSeverity	1.3.6.1.4.1.9.9.311.1.1.2.1.17	Integer32	Integer that corresponds to the alarm severity: • 0—Clear. • 1—Intermediate. • 2—Warning. • 3—Minor. • 4—Major. • 5—Critical.
cenAlarmSeverity Definition	1.3.6.1.4.1.9.9.311.1.1.2.1.18	OctetString	String representation of the alarm severity, in the format *number*,*description*; for example: 5,Critical
cenAlarmTriageValue	1.3.6.1.4.1.9.9.311.1.1.2.1.19	Integer32	Not used.
cenEventIDList	1.3.6.1.4.1.9.9.311.1.1.2.1.20	OctetString	Not used.
cenUserMessage1	1.3.6.1.4.1.9.9.311.1.1.2.1.21	SnmpAdmin String	Alarm or event name; for example: • Vm Powered Off • Host Connection Lost
cenUserMessage2	1.3.6.1.4.1.9.9.311.1.1.2.1.22	SnmpAdmin String	Service impacted by the alarm.
cenUserMessage3	1.3.6.1.4.1.9.9.311.1.1.2.1.23	SnmpAdmin String	Not used.
cenAlarmMode	1.3.6.1.4.1.9.9.311.1.1.2.1.24	Integer	Always set to *alert*.
cenPartitionNumber	1.3.6.1.4.1.9.9.311.1.1.2.1.25	Unsigned32	Numerical ID of the service.
cenPartitionName	1.3.6.1.4.1.9.9.311.1.1.2.1.26	SnmpAdmin String	Service type.
cenCustomerIdentification	1.3.6.1.4.1.9.9.311.1.1.2.1.27	SnmpAdmin String	Name of the customer that is impacted by the alarm.
cenCustomerRevision	1.3.6.1.4.1.9.9.311.1.1.2.1.28	SnmpAdmin String	ID of the customer that is impacted by the alarm.
cenAlertID	1.3.6.1.4.1.9.9.311.1.1.2.1.29	SnmpAdmin String	Not used.

Gateways and DSAs Used with Prime Central

The Prime Central base application includes two application probes and one Tier 1 SNMP gateway for connection to a third-party OSS.

Prime Central requires a license to connect to and interoperate with other Cisco and third-party systems or components. The following restrictions apply:

- Prime Central Tier 1 and Tier 2 gateways may not be used to connect Prime Central to third-party systems, such as third-party trouble ticketing systems, except through a separately purchased license.
- Prime Central Tier 1 and Tier 3 data source adaptor (DSA) instances may only be used to connect to other Cisco applications or components embedded within Cisco applications, and in addition only if through a separately purchased license.
- Prime Central may not be integrated with an OSS system using an MTOSI interface except through a separately purchased license.
- Prime Central may not be integrated with Cisco applications except through a separately purchased license.

Table 6-8 lists the Tier 1 and Tier 2 gateways and the Tier 1 and Tier 3 DSAs that are available for use with Prime Central through a separately purchased license.

Table 6-8 Gateways and DSAs Used with Prime Central

Gateway or DSA Name	Description
Tier 1 Gateways	
Gateway for SNMP writer	The Gateway for SNMP Writer forwards Netcool alerts as Simple Network Management Protocol (SNMP) traps to an SNMP reader, such as the IBM Tivoli Netcool/OMNIbus SNMP probe. This allows Tivoli Netcool/OMNIbus to generate traps that are forwarded to another management platform such as SunNet Manager or HP Network Node Manager. The Gateway for SNMP Writer supports SNMP versions 1, 2, and 3. *For more information, see the IBM Tivoli Netcool/OMNIbus SNMP Writer Gateway Reference Guide*.
Gateway for socket writer	The Gateway for Socket Writer uses a TCP connection to forward alerts. Any program that listens to that socket receives the alerts. *For more information, see the IBM Tivoli Netcool/OMNIbus Socket Writer Gateway Reference Guide*.
Gateway for flat file writer	The Gateway for Flat File Writer is a unidirectional gateway that reads alerts from the Netcool/OMNIbus object server, and writes the details to a flat file. The gateway can receive insert, update, and delete notification information from multiple tables within the object server. *For more information, see the IBM Tivoli Netcool/OMNIbus Flat File Writer Gateway Reference Guide*.
Gateway for ODBC	The Gateway for ODBC uses a set of Open Database Connectivity (ODBC) libraries and drivers to enable data transfer between the Netcool/OMNIbus object server and Sybase, Microsoft SQL Server, Informix, DB2, and MySQL databases. *For more information, see the IBM Tivoli Netcool/OMNIbus Gateway for ODBC Reference Guide*.

Table 6-8 Gateways and DSAs Used with Prime Central (continued)

Gateway or DSA Name	Description
Gateway for message bus (XML/ESB)	The Gateway for Message Bus receives Netcool events from the object server, uses a transformer module to transform them to an XML format that can be understood by a destination application, and uses a transport module to send the transformed events to the application. *For more information, see the IBM Tivoli Netcool/OMNIbus Gateway for Message Bus Reference Guide*.
Gateway for JDBC	The Gateway for JDBC uses the standard Java Database Connectivity (JDBC) API to exchange alerts between Netcool/OMNIbus object servers and external databases. It communicates with the supported databases using Java Type 4 JDBC drivers supplied by the database vendors. The Gateway for JDBC can be used as a replacement for the Tivoli Netcool/OMNIbus Gateway for ODBC and the Tivoli Netcool/OMNIbus Gateway for Oracle. *For more information, see the IBM Tivoli Netcool/OMNIbus Gateway for JDBC Reference Guide*.
Gateway for Oracle	The Gateway for Oracle writes selected alert details to Oracle databases. The gateway writes to three Oracle database tables (status, journal, and details) to record all transactions that occur within alerts selected by an object server reader. *For more information, see the IBM Tivoli Netcool/OMNIbus Gateway for Oracle Reference Guide*.
Tier 2 Gateways	
Gateway for HP OpenView Service Center	The Gateway for HP OpenView Service Center is a fully functional bidirectional gateway. Alerts forwarded from the object server go through the gateway to form HP Service Center/Service Manager incident management tickets. Both systems work together to create and update alerts and tickets. *For more information, see the IBM Tivoli Netcool/OMNIbus Gateway for HP OpenView Service Center/Service Manager Reference Guide*.
Gateway for Remedy ARS	The Gateway for Remedy ARS is a help desk system that operates on UNIX platforms. The gateway converts alerts into Remedy help desk trouble tickets. Trouble tickets are updated according to a predefined mapping throughout the lifetime of the alert. *For more information, see the IBM Tivoli Netcool/OMNIbus Gateway for Remedy ARS Reference Guide*.
Gateway for TSRM	The Gateway for TSRM provides bidirectional communication between Netcool/OMNIbus and Tivoli Service Request Manager (TSRM). The gateway supports TSRM version 7.1 (Fix Pack 4 and later), TSRM version 7.2, and IBM Maximo Base Services (MBS) version 7.1.1.5. *For more information, see the IBM Tivoli Netcool/OMNIbus Gateway for TSRM Reference Guide*.
Tier 1 DSAs	
LDAP DSA	The LDAP DSA is used to access information stored in an LDAP server. This type of DSA is read-only. You cannot use Netcool/Impact to insert new LDAP data into the server data store. The LDAP DSA is built in and does not require additional installation or configuration. *For more information, see the IBM Tivoli Netcool/Impact DSA Reference Guide*.

Table 6-8 Gateways and DSAs Used with Prime Central (continued)

Gateway or DSA Name	Description
Socket DSA	The socket DSA provides an interface between Tivoli Netcool/Impact and a socket server. *For more information, see the IBM Tivoli Netcool/Impact DSA Reference Guide*.
XML DSA	The XML DSA reads and extracts data from any well-formed XML document. *For more information, see the IBM Tivoli Netcool/Impact DSA Reference Guide*.
DB2 DSA	*For more information, see the IBM Tivoli Netcool/Impact DSA Reference Guide*.
Flat File DSA	
Generic SQL DSA	
HSQLDB DSA	
Informix DSA	
MS-SQL Server DSA	
MySQL DSA	
ObjectServer DSA	
ODBC DSA	
Oracle DSA	
PostgreSQL DSA	
Sybase DSA	
Tier 3 DSAs	
JMS DSA	The JMS DSA sends and receives Java Message Service (JMS) messages from within a policy. The JMS DSA is installed automatically when you install Netcool/Impact. *For more information, see the IBM Tivoli Netcool/Impact DSA Reference Guide*.
Web services DSA	The web services DSA is a direct-mode DSA that Netcool/Impact automatically loads during application runtime. You do not have to start or stop this DSA independently of the application. The web services DSA is installed with Netcool/Impact and does not require additional installation or configuration. The web services DSA is compatible with its older versions in Netcool/Impact 3.x and 4.x. This means that your old IPL policies developed on Netcool/Impact 3.x and 4.x will continue to run without modification in the current version. The web services DSA provides support for WSDL version 1.1 and 2.0, and SOAP version 1.1. *For more information, see the IBM Tivoli Netcool/Impact DSA Reference Guide*.

Monitoring Your Data Center

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

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. See Default Prime Performance Manager Reports, page 7-2 for more information.
- 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	**Reports > Resources**	
Memory		
Interface	**Reports > Transport Statistics**	
Host Per Datastore	**Reports > Compute > VMWare > VMWare Cluster**	**Dashboards > Compute Dashboards > VMWare Dashboards > VMWare Cluster Stats**
Host Total CPU		
Host Total Memory		
vCenter Host Total CPU	**Reports > Compute > VMWare > vCenter**	**Dashboards > Compute Dashboards > VMWare Dashboards > vCenter Host Stats**
vCenter Host Per Network		
vCenter Host Per Datastore		
vCenter Host Total Memory		
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		

Report Name	Path	Corresponding Prime Performance Manager Dashboard Path (if applicable)
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**
CPU	**Reports > Resources**	**Dashboards > Resource Dashboards > CPU/Memory/Disk/Net Stats**
Memory		
Disk		
Interface	**Reports > Transport Statistics**	
CPU	**Reports > Resources**	**Dashboards > Server Health Dashboards > Server CPU/Mem/Disk/Net**
Memory		
Disk		
Interface	**Reports > Transport Statistics**	
L3 General VPN	**Reports > Transport Statistics > L3VPN**	**Dashboards > Transport Dashboards > L3VPN Stats**

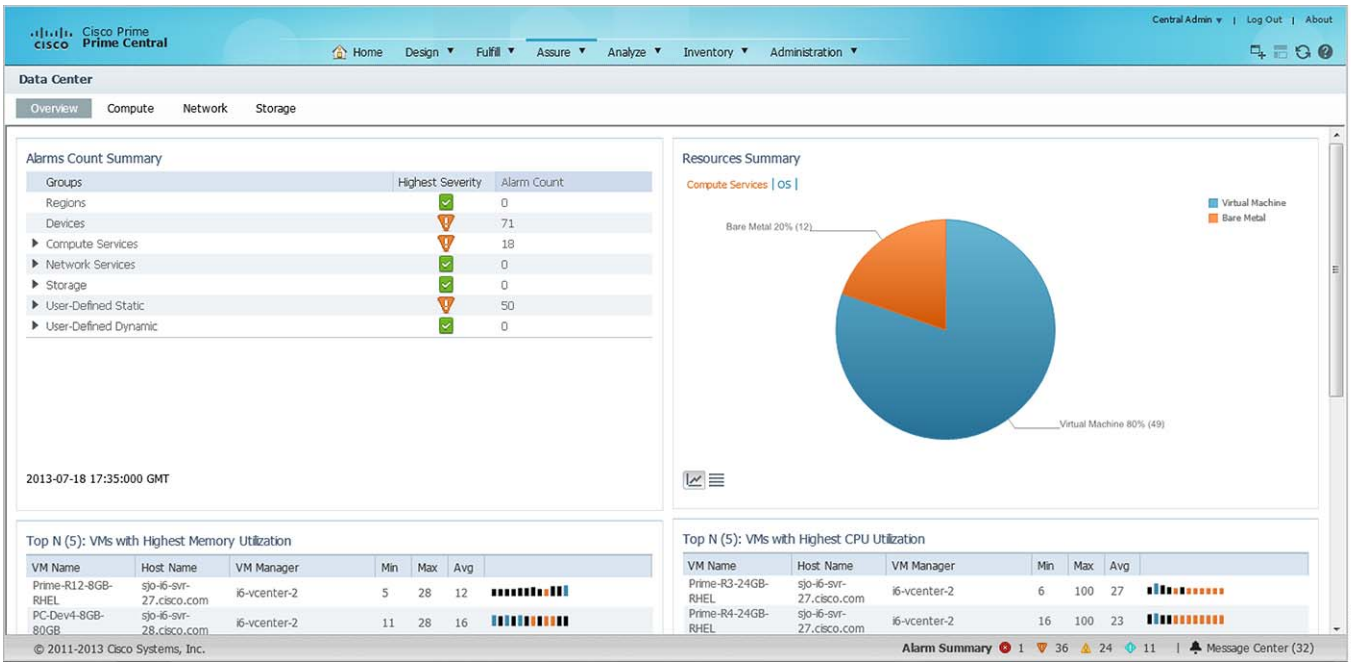
Overview Window

When monitoring your data center, begin by viewing the Overview window (Figure 7-1). 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 7-1 Overview Window



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.

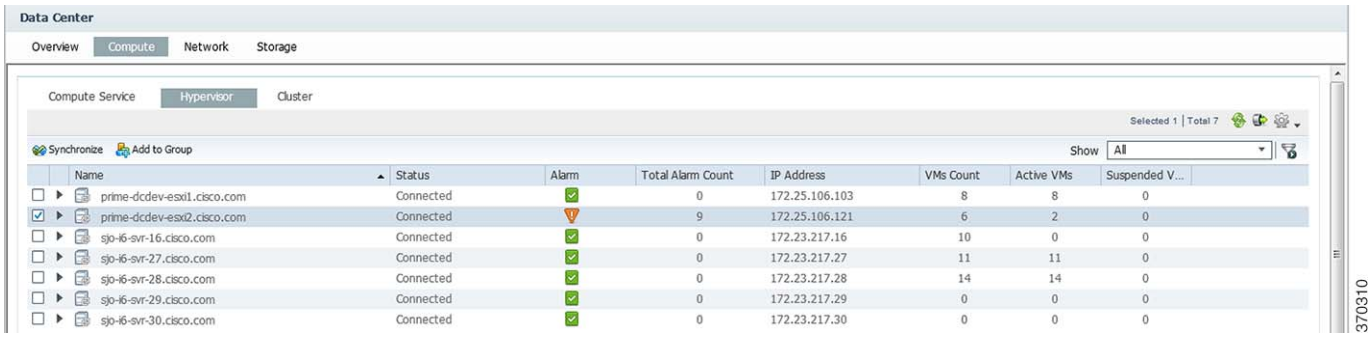
Compute Window

From the Compute window (Figure 7-2), 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 7-2 Compute Window



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.
Type	Indicates whether the compute service resource is a bare metal blade or virtual machine.
Hypervisor Type	Type of hypervisor configured for the selected virtual machine.
Lifecycle	Current lifecycle state for the compute service resource: Development, Production, or Staging. See Setting the Lifecycle State and Priority for a Compute Service Resource, page 7-11 for more information.
Priority	Priority assigned to the compute service resource. See Setting the Lifecycle State and Priority for a Compute Service Resource, page 7-11 for more information.

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.

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

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.

Clusters Pane

From the Clusters 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 Clusters pane.

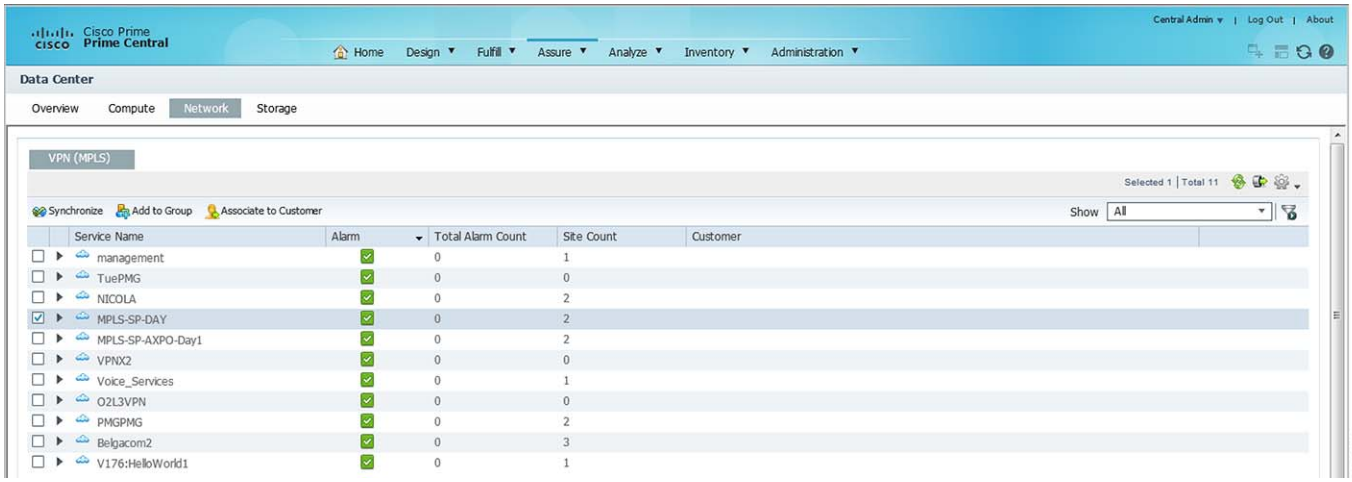
Column	Description
Name	Name of a device cluster.
Host Count	Number of host associated with the device cluster.
Alarm	Indicates the highest severity of any alarms generated for the device cluster.
Total Alarm Count	Total number of alarms generated for the device cluster.
vMotion Events	Number of vMotion 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 (Figure 7-3), 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.

Figure 7-3 Network Window



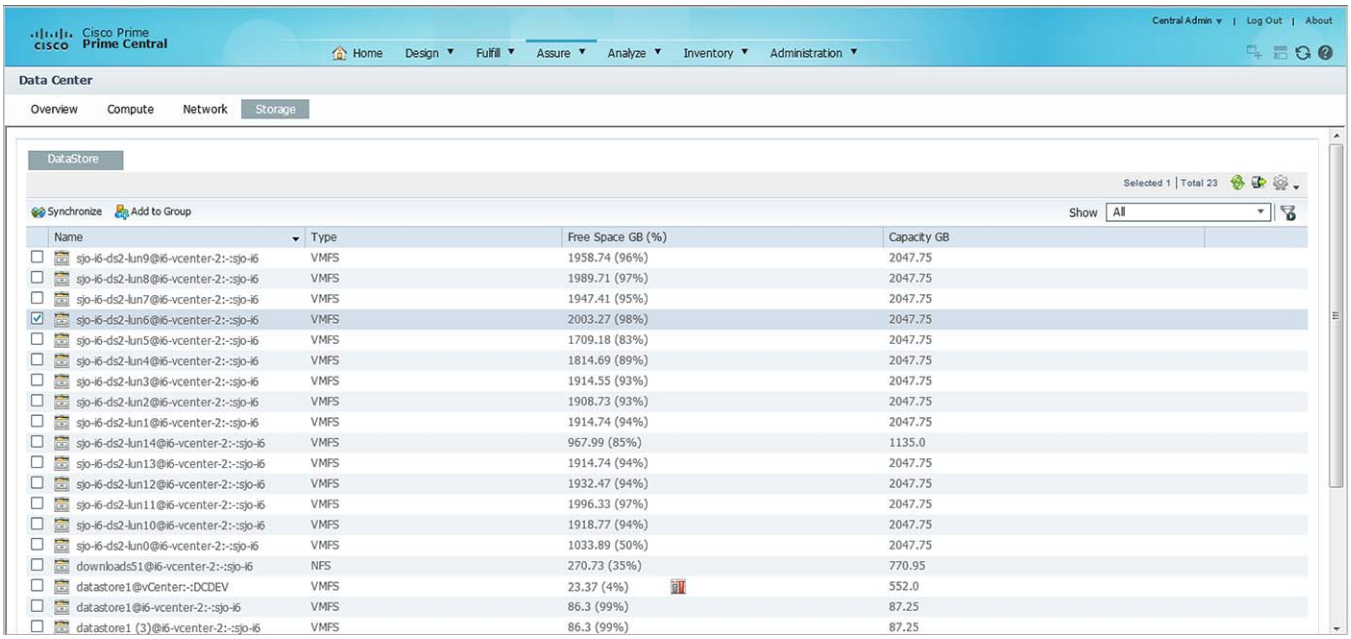
The following table describes the information provided in the VPN (MPLS) pane.

Column	Description
Service Name	Name of the VPN.
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 (Figure 7-4), 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 7-4 Storage Window



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

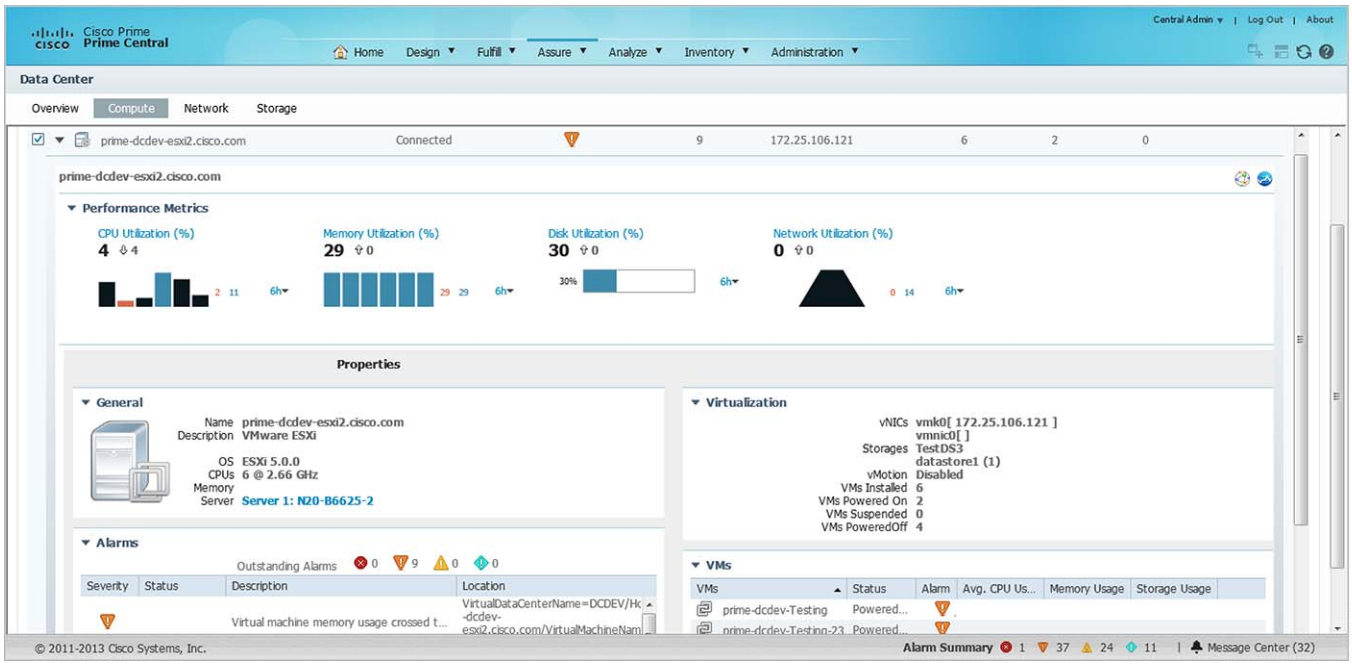
Column	Description
Name	Device name.
Type	Device type.
Free Space GB (%)	Percentage of available free space on a device.
Capacity GB	Total storage capacity of a device.

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 Figure 7-5). 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 7-5 Data Center Dashboard



To access these dashboards:

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 (see Table 4-3 for a description of these icons). 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 (see Figure 7-6). To do so, place your cursor over the resource's table entry and then click the radio button in one of the following columns:

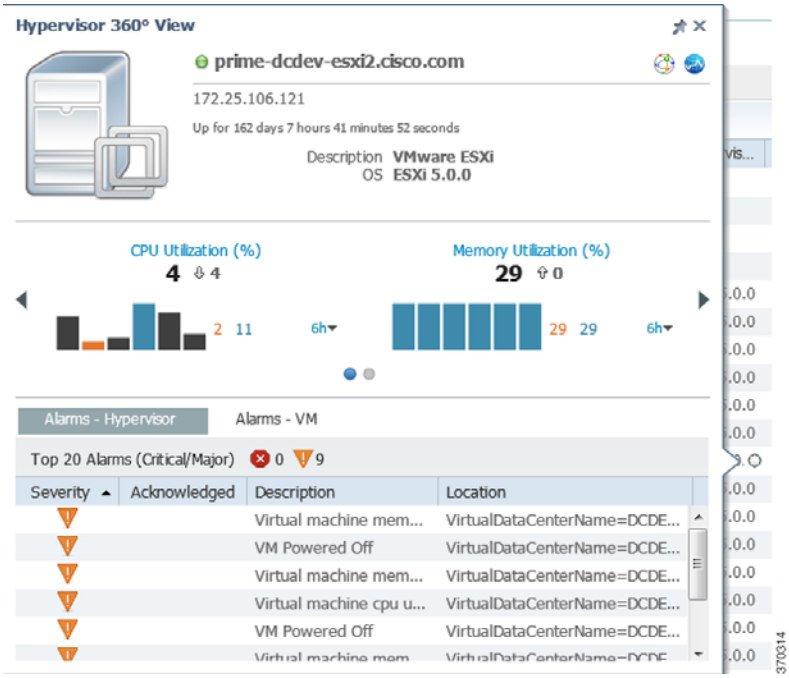
- Name column (Compute Service pane, Hypervisor pane, Clusters pane, and Storage window)
- Service Name column (Network window)
- Hypervisor Type (when launching a hypervisor's 360° view in the Compute Service pane)

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 (see Table 4-3 for a description of these icons).

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 7-6 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:

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.
- 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.

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

Step 2 From the Data Center page, click the **Compute** tab.

Step 3 In the Compute Service pane, check the check box for the appropriate resources, and then click the **Set Lifecycle and Priority** icon.

Step 4 Select the lifecycle state you want to assign to the resources.

Step 5 Select the priority (P1 - P6) you want to assign to the resources.

Step 6 Confirm 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.

Step 1 From the Prime Central menu, select **Assure > Services > Data Center**.

The Data Center Overview window opens.

Step 2 Click the **Compute** tab. The Compute Service pane is displayed.

Step 3 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 **Hypervisor** tab. The Hypervisor pane is displayed.

Step 4 To the left of the appropriate blade server or hypervisor, click the **Expand** 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, page 4-11 for more information.

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, page 5-5 for more information.

Troubleshooting

This section offers troubleshooting steps to help solve common problems while using Prime Central. Refer to the troubleshooting procedures in this appendix before contacting the Cisco Technical Assistance Center (TAC) at http://www.cisco.com/tac.

This section contains the following topics:

Troubleshooting the Prime Central Integration Layer

Log files contain detailed information about request processing and exceptions and are your best diagnostic tool for troubleshooting the Prime Central integration layer.

Prime Central integration layer files are located in the following directory: *primeusr-home-directory*/esb_<*ID*> (~/esb_<*ID*> if you are logged in as primeusr).

Prime Central integration layer log files are located in ~/esb_<*ID*>/data/log/ and increment with age:

- servicemix.log—Most recent log file.
- servicemix.log.1—Second oldest log file.
- servicemix.log.2—Third oldest log file.

Prime Central integration layer logger properties are located in ~/esb_<*ID*>/etc/org.ops4j.pax.logging.cfg. Useful properties include:

- log4j.appender.out.maxFileSize=10MB—Size of each servicemix.log file.
- log4j.appender.out.maxBackupIndex=10—Maximum number of log files. The oldest file has index 10; for example, servicemix.log.10.

The file also identifies the class package and log level to log; for example, log4j.logger.com.cisco.prime=DEBUG.

The Prime Central integration layer control script itgctl saves configuration and log information in ~/esb_<*ID*>/diagnostics/diagnostics.[*YYYYMMDDHHMMSS*].tar.gz.

Problem The Prime Central integration layer is not running.

Solution Use the **itgctl status** command to check the status of the Prime Central integration layer.

Problem The Prime Central configuration changed, but the Prime Central integration layer does not retrieve the changes.

Solution The Prime Central integration layer must be restarted before it can retrieve the following types of Prime Central configuration changes:

- Modifications to the applications.
- A new application registers with Prime Central.
- An existing application is removed from Prime Central.
- The Prime Central *suiteadmin* user credentials change.

Enter the following commands to restart the Prime Central integration layer:

```
itgctl stop
itgctl start
```

Problem An application or the Prime Central integration layer is shown as Unavailable or is missing from the Suite Monitoring or User Management portlets.

Solution Review the Prime Central integration layer log files for Central Authentication Service (CAS) exceptions or application connection problems. If you find CAS exceptions, enter the following commands to restart the Prime Central integration layer:

```
itgctl stop
itgctl start
```

Problem The Prime Central integration layer log files report any of the following problems:

- CAS unavailable
- Authentication unavailable
- Unable to establish session to applications

Solution All Prime Central components use CAS for authentication services. The CAS server runs on the Prime Central portal. If you encounter CAS problems, verify that the Prime Central portal is up and running. Then, check the connectivity between the application server and the Prime Central portal. Finally, restart the Prime Central integration layer.

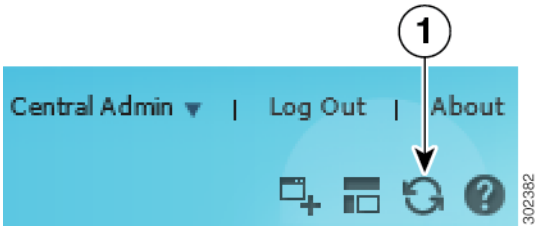
Problem An application times out or is unavailable. The log file reports an aggregation timeout for requests.

Solution For the first startup, use ping or tracert to verify routing to the application. Then, improve application performance. Finally, increase the Prime Central integration layer request aggregation timeout value.

Problem If you are using the User Management portlet while an application is brought up or down in Prime Central, you might receive Prime Central integration layer timeout errors.

Solution On the Prime Central home page, click the **Refresh Current Page** icon (Figure A-1).

Figure A-1 Home Page > Refresh Current Page Icon



Problem When you use the **itgctl stop** command to stop the integration layer, the following error message is generated:

```
Stop Prime Central - Integration Layer..... Warning: Karaf process can not be killed, may
need to remove the process manually.. Done
```

Solution As the primeusr user, enter the following command to kill the Apache Karaf process manually:

```
ps -ef | grep karaf | grep -v grep | cut -f2 -d' ' | xargs kill -9
```

Problem You want to determine the role and profile associated with every integration layer instance that resides on a host.

Solution Enter the following command:

```
itgctl list
```

Troubleshooting the Prime Central Portal

The Prime Central portal features single-sign on (SSO), meaning that when you log into the portal, you do not have to log in separately to each application within your domain.

Log files contain detailed information about request processing and exceptions and are your best diagnostic tool for SSO troubleshooting.

SSO files are located in $XMP_HOME, which is *primeusr-home-directory*/XMP_Platform/cas.log. The log files increment with age:

- cas.log—Most recent log file.
- cas.log.1—Second oldest log file.
- cas.log.2—Third oldest log file.

SSO logger properties are located in $XMP_HOME/tomcat-7.0.23/webapps/SSO/WEB-INF/classes/log4j.xml. Useful properties include:

```
<appender name="cas" class="org.apache.log4j.RollingFileAppender">
    <param name="File" value="cas.log" />
    <param name="MaxFileSize" value="512KB" /> - Size of each cas.log file
    <param name="MaxBackupIndex" value="3" /> - Max number of log files
</appender>

<logger name="org.jasig" additivity="true">
    <level value="ERROR" /> - File also identifies the packages of classes to log and what
    log level
    <appender-ref ref="cas" />
</logger>
```

Problem On Internet Explorer, portlets might spin without opening. This problem occurs occasionally when you:

- Clear your browser cache and reload the entire application.
- Log into Prime Central immediately after clearing your browser cache.

Solution On the Prime Central home page, click the **Refresh Current Page** icon (Figure A-1).

Problem After logging into the Prime Central portal, menu options are missing.

Solution Do the following:

1. Log out of the Prime Central portal.
2. Clear your browser cache.
3. Open your default browser and log back into the Prime Central portal.

Problem After updating the email address or phone number in the My Account portlet, there is no confirmation message.

Solution Do the following:

1. From the Prime Central menu, choose **Administration > User and Privilege Management > Users**. The User Management portlet opens.
2. Refresh the page.
3. Select the user with the updated email address or phone number and click **Edit**.
4. Verify the updated email address or phone number.

Problem A device is missing from the Common Inventory portlet.

Solution Do the following:

1. Verify that all Prime Central components are operational:
   a. Log into Prime Central and choose **Administration > System > Suite Monitoring**.
   b. In the Suite Monitoring portlet, click the **Prime Central** tab and verify that the Prime Central integration layer status is Up.
   c. Click the **Applications** tab and verify that the application status is Up.
2. Check the device inventory when logged in as the centraladmin user:
   a. Log into Prime Central as the centraladmin user.
   b. If the Common Inventory device table shows "No data available," and if an attempt has already been made to synchronize the inventory, skip to Step 4.
3. If the centraladmin user can see the missing device but another user cannot, you must assign device scopes or NEs to that user:
   a. See the application documentation for details:
   – Prime Network—See "Creating New Device Scopes to Control Device Access" in the *Cisco Prime Network 4.0 Administrator Guide*, Chapter 6, "Controlling Device Access and Authorization Using Device Scopes."
   – Prime Optical—See "Modifying a Prime Optical User's Properties" in the *Cisco Prime Optical 9.8 User Guide*, Chapter 8, "Managing Security."
   b. After the device scope change persists on the application, you must synchronize the scope data. In the Common Inventory device table, click the **Synchronize** icon. Click the **Scope** radio button; then, click **Sync Now**. Wait for at least 15 minutes.

4. If the device is still missing from the Common Inventory device table, verify that the device exists on the source application:
   a. Log into Prime Central as the centraladmin user.
   b. Choose **Administration > Discovery/Adding Devices > Prime Network** or **Prime Optical**.
   c. If the device is present, verify that its status is In Service or Up and it has been discovered by the application. If the device was added recently, wait for at least 15 minutes for it to be discovered.
   d. If the device is not present, add it on the application. Wait for it to be discovered and In Service (Prime Optical) or Available/Up (Prime Network).
5. When the device is discovered by the individual applications, synchronize the device inventory:
   a. Log into Prime Central as the centraladmin user.
   b. In the Common Inventory device table, click the **Synchronize** icon.
   c. Click the **Inventory and Scope** radio button.
   d. Click **Sync Now**.
6. If the device is still missing from the Common Inventory portlet:
   a. Enter the following command to log into the Prime Central shell:

      ```
      ssh -l primeusr prime-central-server
      ```

   b. Change directories to the $XMP_HOME directory and enter the following commands:

      ```
      tar -czvf common_inv_logs.tar.gz common_inventory.log
      /opt/primecentral/apache-servicemix-4.4.1-fuse-00-08/data/log/servicemix.log
      ```

   c. Send the log files to the Cisco TAC.

Problem If you are using Internet Explorer, when you zoom in or out to less than or greater than 100% screen resolution, the User Management and Common Inventory filters become blurry. This problem occurs only when you use the Filter option; no other views in either portlet blur when you zoom in or out.

Solution In Internet Explorer, do not zoom in or out when filtering data in the User Management and Common Inventory portlets. Alternately, use Firefox to launch Prime Central.

Problem In the My Account portlet and Add User wizard, if you change your password to include a trailing space at the end, Prime Central removes the last space character automatically. The next time you log into Prime Central with the password that includes the trailing space, your password is denied.

Solution When creating a password, do not include a trailing space at the end.

Problem After you log into the Prime Central portal, the login progress icon spins indefinitely or you see the “CAS is Unavailable” error message.

Solution Restart the Prime Central portal.

Troubleshooting Prime Network

Problem After registering with Prime Central, Prime Network is shown in the Suite Monitoring portlet > Applications tab, but its state is Down.

Solution Do the following:

1. Verify that the Prime Central integration layer configuration has been generated for Prime Network. Make sure the com.cisco.prime.esb.ana.cfg file has valid values for anaComURI and anaPtpServer.
2. Verify that the Prime Network gateway is up and accepting connections (BQL).
3. Check the servicemix.log file and capture any ana-bnd exceptions.
4. To bypass CAS authentication, configure anaPtpUser and anaPtpPw in com.cisco.prime.esb.ana.cfg.
5. Look for deserialization errors caused by a version mismatch between Prime Network and the Prime Central integration layer.
6. To troubleshoot transformation issues, look for the JMS queue name in the format DM_*operation-name*_net://net:*XXX*.

Troubleshooting Prime Optical

Problem After registering with Prime Central, Prime Optical is not shown in the Suite Monitoring portlet > Applications tab.

Solution Do the following:

1. Check the DMIntegrator.log file to see if the Prime Optical registration failed or succeeded.
2. Check if an incorrect hostname was entered for the Prime Central database during the Prime Optical registration. In the DMIntegrator.log file, check the value of the [SERVER:] property, which should be the hostname of the server where the Prime Optical database is installed.

Problem After registering with Prime Central, Prime Optical is shown in the Suite Monitoring portlet > Applications tab, but its state is Down.

Solution Do the following:

1. If the Prime Optical server did not start, log into the Prime Optical workstation as the root user and enter the **opticalctl status** command. The output should show the CTM Server, SMService, and CORBAGWService services. If those services are not running, enter the **opticalctl start** command to start them.
2. As the primeusr UNIX OS user, log into the Prime Central workstation and enter the **itgctl restart** command to reconfigure the Prime Central integration layer.
3. Wait for some time; then, check if the Prime Optical state changes to Up in the Suite Monitoring portlet > Applications tab.

If the problem persists, do the following:

1. Verify that the Prime Central integration layer configuration has been generated for Prime Optical. In the com.cisco.prime.esb.ctm.cfg file, make sure the file has valid values for ctmComURI ctmCorbaServer. If not, restart the Prime Central integration layer to configure Prime Optical.
2. On the Prime Optical server, enter the command **showctm -v** to see if the CORBAGWService is up.

3. Check the servicemix.log file and capture any ctm-bnd exceptions. If you see CAS exceptions, verify that the Prime Central portal is up and running. Then, check the connectivity between the application server and the Prime Central portal. Finally, restart the Prime Central integration layer.
4. See the *Cisco Prime Optical 9.8 User Guide* to create the GateWay/CORBA User on Prime Optical. Use ctmCorbaUser=*gateway-corba-user* and ctmCorbaPw=*gateway-corba-user-password* in the com.cisco.prime.esb.ctm.cfg file. Restart the Prime Central integration layer.

Problem Prime Optical is shown as Up in the Suite Monitoring portlet > Applications tab, but the menu options to launch Prime Optical are missing.

Solution Do the following:

1. In the User Management portlet, check whether the user has Prime Optical in his application access privileges.
2. If necessary, edit the user and check the **Grant Access to Prime Optical** check box in the Application Access Privilege area.

Problem Cannot cross-launch Prime Optical from Prime Central.

Solution Do the following:

1. Verify that the Prime Optical server is up and running. As the root user, log into the Prime Optical workstation and enter the **opticalctl status** command. The output should show the CTM Server, SMService, and Apache Web Server services, which are required to cross-launch Prime Optical from Prime Central.
2. The Prime Optical client is launched through Oracle Java Web Start technology. Verify that JRE 1.6 is installed on the client workstation, and that JNLP files are opened with Java Web Start.
3. When the Prime Optical client is launched for the first time on the client workstation, the client is downloaded, installed, and launched. Consequently, the first launch might take several minutes. If the client launches too slowly, the first opening might fail. Retry the cross-launch.
4. If the client is downloaded and launched, but closes without any messages, collect the Cisco/PrimeOptical_96/debug/CTMC-debug*.log files from the client workstation and contact the Cisco TAC.

Problem You receive an “Unable to connect” error when you try to cross-launch Prime Optical from the Prime Central portal or from Prime Network Vision.

Solution Send an update command through the browser by entering the following URL:

http://*portal-server***:***portal-http-port***/cxl/jnlpupdate?dm=***COM-URI*

where:

- *portal-server* is the hostname of the Prime Central portal host.
- *portal-http-port* is the portal port number.
- *COM-URI* is the Prime Optical identifier and can be found in the Prime Central Suite Monitoring portlet.

For example, if the Prime Central portal is running on the “prime_portal” host on port 8443 and the identifier for Prime Optical is 4, enter:

```
http://prime_portal:8443/cxl/jnlpupdate?dm=opt://opt:4
```

Troubleshooting Prime Performance Manager

Problem After registering with Prime Central, Prime Performance Manager is not shown in the Suite Monitoring portlet > Applications tab.

Solution Do the following:

1. On the Prime Performance Manager server, check the /opt/CSCOppm-gw/prime-integrator/DMIntegrator.log file to see if the Prime Performance Manager registration failed or succeeded.
2. Check if an incorrect hostname was entered for the Prime Central database during the Prime Performance Manager registration. In the DMIntegrator.log file, check the value of the [SERVER:] property, which should be the hostname of the server where the Prime Central database is installed.
3. If incorrect Prime Central database information was entered, re-enter the **/opt/CSCOppm-gw/bin/ppm primecentralintegration** command on the Prime Performance Manager gateway server. Use the correct database information.
4. If a previous incorrect instance of Prime Performance Manager exists in the Suite Monitoring portlet, do the following:
   a. In the Suite Monitoring portlet, click the **Applications** tab.
   b. Click the **Prime Performance Manager** radio button.
   c. Click **Delete**.
   d. After Prime Performance Manager has been removed from Prime Central, enter the **/opt/CSCOppm-gw/bin/ppm primecentralintegration** command on the Prime Performance Manager gateway server.

Problem After registering with Prime Central, Prime Performance Manager is shown in the Suite Monitoring portlet > Applications tab, but its state is Down.

Solution Do the following:

1. Restart Prime Performance Manager to complete the Prime Central registration. As the root user, log into the Prime Performance Manager gateway server and enter the **/opt/CSCOppm-gw/bin/ppm restart** command. Log into the Prime Performance Manager unit workstations and enter the **/opt/CSCOppm-unit/bin/ppm restart** command. Enter the **ppm status** command to check the operational status of Prime Performance Manager.
2. As the primeusr UNIX OS user, log into the Prime Central workstation and enter the **itgctl restart** command to reconfigure the Prime Central integration layer.
3. Wait for some time; then, check if the Prime Performance Manager state changes to Up in the Suite Monitoring portlet > Applications tab.

Problem Prime Performance Manager is shown as Up in the Suite Monitoring portlet > Applications tab, but the menu options to launch Prime Performance Manager are missing.

Solution Do the following:

1. In the User Management portlet, check whether the user has Prime Performance Manager in the application access privileges.
2. If necessary, edit the user and check the **Grant Access to Prime Performance Manager** check box in the Application Access Privilege area.

Problem Cannot cross-launch Prime Performance Manager from Prime Central.

Solution Do the following:

1. Verify that the Prime Performance Manager gateway server is up and running. As the root user, log into the Prime Performance Manager server and enter the **ppm status** command. All services should be running. If not, enter the **ppm restart** command to restart Prime Performance Manager.
2. If the problem persists, enter the **ppm tac** command on the Prime Performance Manager gateway server to collect the debug files. Then, contact the Cisco TAC.

Troubleshooting Prime Provisioning

Problem After logging into Prime Central, if you click the **Add Portlets** icon and add the Device SR Count or SR Summary portlets, a Prime Provisioning login screen might appear. Because you are already logged into Prime Central, you should not be prompted to log in a second time.

Solution This problem occurs when a user does not have the Application Access Privilege set to Prime Provisioning. The user can click the Add Portlets icon and add the Device SR Count or SR Summary portlets, at which point the Prime Provisioning login screen appears.

To give the user access to Prime Provisioning, do the following:

1. From the Prime Central menu, choose **Administration > User and Privilege Management > Users**.
2. In the User Management portlet, select the user that you want to edit and click **Edit**.
3. In the Enter User Info screen, click **Next**.
4. In the Application Access Privilege area, make sure the **Grant Access to Prime Provisioning** check box is checked. Click **Next**.
5. In the Assign Groups & Group Roles screen, click **Next**.
6. In the Assign Additional Individual User Roles screen > Prime Central tab, make sure the **Administrator** check box is checked. In the Prime Provisioning tab, click the desired radio button. Click **Next**.
7. In the Summary screen, click **Finished**. The updated user is displayed in the Users tab. When that user opens the Device SR Count or SR Summary portlets, he is not prompted to log in a second time.

Problem After registering with Prime Central, Prime Provisioning is shown in the Suite Monitoring portlet > Applications tab, but its state is Down.

Solution Do the following:

1. Use the **./prime.sh** command to check the list of running servers and verify that all services have started:

```
Name                State           Gen   Exec Time                Success  Missed
nspoller            started         1     Dec 16 01:55:08 EST      817      0
dbpoller            started         1     Dec 16 01:55:08 EST      824      0
httpd               started         1     Dec 16 01:55:13 EST      829      0
rgserver            started         1     Dec 16 01:55:58 EST      817      0
cnsserver           started         1     Dec 16 01:55:13 EST      823      0
```

2. If some services have stopped, enter the following commands to stop and restart them:

```
./prime.sh stopall
./prime.sh start
```

3. If the problem persists, check the log file in *Prime-Provisioning-installation-directory*/tmp.

Troubleshooting Prime Central Fault Management

Problem The Alarm Browser portlet displays the error "The application failed to run."

Solution To open the Alarm Browser portlet, you must accept the self-signed, untrusted security certificates. In the Warning - Security dialog box, if you click **No** to the following message, the security certificate is denied, and the Alarm Browser displays the error "The application failed to run":

```
This web site's certificate cannot be verified. Do you want to continue?
```

Depending on your browser, do one of the following to resolve the error:

Mozilla Firefox

1. Log out of the Prime Central portal.
2. Clear your browser cache.
3. Choose **Tools > Options** and click the **Advanced** panel.
4. Click the **Encryption** tab.
5. Click **View Certificates**. The Certificate Manager dialog box opens.
6. Click the **Servers** tab and delete the certificate for the Fault Management server (with port 16311).
7. At the confirmation prompt, click **OK**.
8. Click **OK** to close the Certificate Manager dialog box.

Microsoft Internet Explorer

1. Log out of the Prime Central portal.
2. Log back into the Prime Central portal and accept the self-signed, untrusted security certificates.

Problem The Alarm Browser does not show alarms for a supported application, even though the application is shown as Up in the Suite Monitoring portlet > Applications tab.

Solution If an application is registered with Prime Central but is not up and running when Prime Central Fault Management is installed, you must manually register with the application if you want to receive alarms immediately. (Within 10 minutes of the Prime Central Fault Management installation, an automatic cron job starts alarm retrieval.)

To bypass the 10-minute waiting period and begin receiving alarms immediately, do the following:

1. As the primeusr user, log into the Prime Central Fault Management server.
2. After the application is registered with Prime Central, go to the *installation-directory*/prime_integrator/scripts folder and enter:

```
./DMRegistration.sh
```

Problem The Alarm Browser does not show alarms for Prime Performance Manager, even though the application is shown as Up in the Suite Monitoring portlet > Applications tab.

Solution If Prime Performance Manager is supposed to send alarms directly to Prime Central Fault Management, make sure an upstream OSS host is configured correctly in the Prime Performance Manager System Event Editor. The OSS host must be a fully qualified hostname or an IP address.

Problem The Alarm Report portlet generates an error when you open the following predefined reports:

- Events Details
- Performance Details

Solution By default, Prime Central Fault Management is configured to support detailed alarm reports for 50,000 alarms. For reports with more than 50,000 alarms, you can reduce the elapsed period and run multiple reports on a smaller subset of alarms. Alternately, you can increase the Java heap size of the reporting server to 3 GB and run detailed alarm reports for up to 100,000 alarms.

To increase the Java heap size on the reporting server:

1. As the primeusr user, log into the Prime Central Fault Management server.
2. Enter the following command to stop the Fault Management server:

   ```
   $NCHOME/fmctl stop
   ```

3. Change directories to $NCHOME/tipv2/profiles/TIPProfile/config/cells/TIPCell/nodes/TIPNode/servers/server1.
4. Use a standard text editor such as vi to open the server.xml file and change the maximumHeapSize value to 3072.
5. Save and close the server.xml file.
6. Enter the following command to start the Fault Management server:

   ```
   $NCHOME/fmctl start
   ```

Problem After generating a report while using the Alarm Report portlet and either logging out of Prime Central or closing the portlet, you may receive the following Authentication Required prompt:

```
A username and password are being requested by https://server-name:port-number. The site
says: "Cognos 8."
```

You are prompted to enter a username and password.

Solution At the Authentication Required prompt, click **Cancel**.

Problem In the Suite Monitoring portlet > Prime Central tab, the Prime Central Fault Management state is Down.

This problem occurs when Prime Central and the Fault Management component are installed on the same server with an embedded Oracle database, and the server is rebooted. The Oracle database takes longer to restart automatically than does Fault Management. Because Fault Management cannot connect to the Oracle database, its state is shown as Down.

Solution As the primeusr user, restart Prime Central Fault Management:

```
fmctl stop
fmctl start
```

Problem After performing any of the following alarm management operations, the Alarm Browser does not display the result:

- Acknowledging or deacknowledging an alarm
- Clearing an alarm
- Retiring an alarm
- Adding notes to an alarm

Solution In the Alarm Browser portlet, click the **Refresh** icon. If the result is still not displayed after a manual refresh, do the following:

1. Open the Message Center.
2. Find the alarm action and click the **Memo** field to view any error information. (Errors reported by the applications prevent Prime Central Fault Management from completing the alarm action.)
3. If you see any timeout errors, verify that the Prime Central server and the application are synchronized.
4. If an error indicates that the alarm no longer exists on the application, do the following:
   - If the alarm state is Cleared, wait up to one hour for the alarm to be removed automatically.
   - If the alarm state is not Cleared, resynchronize the alarms by opening an SSH session on the Prime Central Fault Management server and entering:

     ```
     su - primeusr
     fmctl resync
     ```

INDEX

A

B

C

D

E

F

G

H

I

K

L

M

O

P

Q

R

S

T

U