



Maintaining Prime Infrastructure Server Health

- [Monitoring Prime Infrastructure Health](#)
- [Troubleshooting Prime Infrastructure](#)
- [Evaluating OVA Size and System Resources](#)
- [Improving Prime Infrastructure Performance](#)
- [Optimizing Memory for Assurance Processing](#)
- [Managing Data Sources](#)
- [Performing Special Administrative Tasks](#)
- [Installing Prime Infrastructure Software Updates](#)
- [Configuring Support Request Settings](#)
- [Managing Disk Space Issues](#)

Monitoring Prime Infrastructure Health

To view the system health dashboards, choose **Administration > Admin Dashboard**. [Table 4-1](#) describes the information displayed on the dashboards.

Table 4-1 Administration > Admin Dashboard Information

To view this information...	Choose this tab...	And see this dashlet
Prime Infrastructure server memory and CPU statistics over time.	Health	System Health
Alarms and events issued against the Prime Infrastructure server itself, including a list of events, times events occurred, and their severities.		System Alarms
General health statistics for the Prime Infrastructure server, such as the number of jobs scheduled and running, the number of supported MIB variables, how much polling the server is doing, and the number of users logged in.		System Information
The relative proportion of the Prime Infrastructure server database taken up by data on discovered device inventory (“Lifecycle Clients”), their current status and performance data (“Lifecycle Statistics”), and the server’s own system data (“Infrastructure” and “DB-Index”)		DB Usage Distribution

Table 4-1 Administration > Admin Dashboard Information (continued)

To view this information...	Choose this tab...	And see this dashlet
How quickly the Prime Infrastructure server is responding to user service requests for information, such as device reachability, alarms and events, and so on. Shows the maximum, minimum, and average response times for each API underlying a client service.	API Health	API Response Time Summary
The trend over time in how quickly the Prime Infrastructure server is responding to user service requests.	Service Details	API Response Time Trend
The activity level for each of the logged-in Prime Infrastructure users, measured by the number of service requests each is generating.		API Calls Per Client Chart
The trend over time in the total number of service requests logged-in clients are generating,		API Request Count Trend

Troubleshooting Prime Infrastructure

Cisco Prime Infrastructure provides helpful tools for network operators to connect to Cisco experts to diagnose and resolve problems. You can open support cases and track your cases from Prime Infrastructure. If you need help troubleshooting any problems, Prime Infrastructure allows you to:

- Connect with the Cisco Support Community to view and participate in discussion forums. See [Launching the Cisco Support Community](#).
- Open a support case with Cisco Technical Support. See [Opening a Support Case](#).

Launching the Cisco Support Community

You can use Prime Infrastructure to access and participate in discussion forums in the online Cisco Support Community. This forum can help you find information for diagnosing and resolving problems.



Note

You must enter your Cisco.com username and password to access and participate in the forums.

To launch the Cisco Support Community:

-
- Step 1** Choose one of the following:
- **Monitor > Alarms & Events**, click an alarm, then choose **Troubleshoot > Support Forum**.
 - From the device 360° view (hover your mouse cursor over a device IP address, then click the icon that appears): Click the Support Community icon. See “Getting Device Details from the Device 360° View” in the [Cisco Prime Infrastructure 2.2 User Guide](#).
- Step 2** In the Cisco Support Community Forum page, enter additional search parameters to refine the discussions that are displayed.
-

Opening a Support Case

You can use Prime Infrastructure to open a support request and to track your support cases. Prime Infrastructure helps you gather critical contextual information to be attached to the support case, reducing the time that it takes to create a support case.

**Note**

To open a support case or access the Cisco Support Community, you must:

- Have a direct Internet connection on the Prime Infrastructure server
 - Enter your Cisco.com username and password
-

To open a support case:

Step 1 Choose one of the following:

- **Monitor > Alarms & Events**, click an alarm, then choose **Troubleshoot > Support Case**.
- From the device 360° view (hover your mouse cursor over a device IP address, then click the icon that appears): Click the Support Request icon. See “Getting Device Details from the Device 360° View” in the *Cisco Prime Infrastructure 2.2 User Guide*.

Step 2 Enter your Cisco.com username and password.

Step 3 Click **Create**.

Prime Infrastructure gathers information about the device and populates the fields for which it can retrieve information. You can enter a Tracking Number that corresponds to your own organization’s trouble ticket system.

Step 4 Click **Next** and enter a description of the problem.

By default, Prime Infrastructure enters information that it can retrieve from the device. Prime Infrastructure automatically generates the necessary supporting documents such as the technical information for the device, configuration changes, and all device events over the last 24 hours. You can also upload files from your local machine.

Step 5 Click **Create Service Request**.

Evaluating OVA Size and System Resources

Your Prime Infrastructure system implementation should match the recommendations on appropriate OVA sizes given in the [System Requirements](#) section of the *Cisco Prime Infrastructure 2.2 Quick Start Guide*.

Note that the device, interface, and flow record recommendations given in the *Quick Start Guide* are all maximums; an OVA of a given size has been tuned to handle *no more than* this number of devices, interfaces, and flows per second. Also note that the system requirements for RAM, disk space, and processors are all minimums; you can increase any of these resources and either store more data for a longer period, or process incoming flows more quickly.

As your network grows, you will approach the maximum device/interface/flow rating for your OVA. You will want to check on this from time to time. You can do so using the information available to you on the Admin dashboards, as explained in [Monitoring Prime Infrastructure Health](#).

If you find Prime Infrastructure is using 80 percent or more of your system resources or the device/interface/flow counts recommended for the size of OVA you have installed, we recommend that you address this using one or more of the following approaches, as appropriate for your needs:

- Recover as much existing disk space as you can, following the instructions in [Compacting the Prime Infrastructure Database](#).
- Add more disk space—VMware OVA technology enables you to easily add disk space to an existing server. You will need to shut down the Prime Infrastructure server and then follow the [instructions provided by VMware](#) to add a new disk. You must add a new disk; you cannot expand the size of the existing disk. Once you restart the virtual appliance, Prime Infrastructure automatically makes use of the additional disk space.
- Limit collection—Not all data that Prime Infrastructure is capable of collecting will be of interest to you. For example, if you are not using the system to report on wireless radio performance statistics, you need not collect or retain that data, and can disable the Radio Performance collection task. Alternatively, you may decide that you need only the aggregated Radio Performance data, and can disable retention of raw performance data. For details on how to do this, see [Specifying Performance, Trend and Health Data Retention](#).
- Shorten retention—Prime Infrastructure defaults set generous retention periods for all of the data it persists and for the reports it generates. You may find that some of these periods exceed your needs, and that you can reduce them without negative effects. For details on this approach, see [Controlling Report Storage and Retention](#) and [Specifying Performance, Trend and Health Data Retention](#).
- Off load backups and reports—You can save space on the Prime Infrastructure server by saving reports and backups to a remote server. For details, see [Using Remote Backup Repositories](#).
- Migrate to a new server—Set up a new server that meets at least the minimum RAM, disk space, and processor requirements of the next higher level of physical or virtual appliance. Back up your existing system, then restore it to a virtual machine on the higher-rated server. For details, see [Migrating to Another Virtual Appliance Using Backup and Restore](#).

Viewing the Number of Devices Prime Infrastructure Is Managing

To check the total number of devices and interfaces that Prime Infrastructure is managing, choose **Administration > Licenses**.

To check the total system disk space usage, choose **Administration > Appliance**, then click the **Appliance Status** tab and click **Disk Usage**.

Improving Prime Infrastructure Performance

You can improve Prime Infrastructure's speed and scalability using several techniques.

- [Tuning the Server](#)
- [Compacting the Prime Infrastructure Database](#)
- [Configuring Client Performance Settings](#)
- [Optimizing Memory for Assurance Processing](#)
- [Monitoring Assurance Memory Allocation and Demand](#)

Tuning the Server

You can improve Prime Infrastructure's performance and scalability by increasing the amount of RAM, CPU, and disk space allocated to the Prime Infrastructure server and its virtual machine (or VM).

Successful server tuning requires you to complete the following workflow:

1. Changes to the VM include a risk of failure. Take an application backup before making any changes to the VM. See [Triggering Application Backups](#).
2. Although it is enabled by default, you should ensure that the Server Tuning option is enabled before making changes to the VM. See [Enabling Server Tuning During Restarts](#).
3. Perform the resource modifications in the VM, then restart the VM and the server. See [Modifying VM Resource Allocation Using VMware vSphere Client](#).

Enabling Server Tuning During Restarts

During system start, the Prime Infrastructure server inspects its VM hardware allocations for changes and will adjust to make use of expanded resources automatically.

The "Enable Server Tuning during restart option" is enabled by default and you will not want to change this setting under normal circumstances. If you find that the Prime Infrastructure server is not taking advantage of recent changes to its hardware, such as a larger RAM or disk space allocation, follow the steps below to ensure the tuning feature is enabled,

-
- Step 1** Choose **Administration > System Settings**.
- Step 2** From the left sidebar menu, choose **Server Tuning**.
- Step 3** Select the **Enable Server Tuning during restart** check box, then click **Save**.
-

Modifying VM Resource Allocation Using VMware vSphere Client

Use the following steps to make changes to the physical or virtual appliance RAM, CPU or disk space resource allocations.

Be sure to back up the Prime Infrastructure server before attempting these types of changes (see [Backing Up and Restoring Prime Infrastructure](#)).



Tip

For better performance: If you are changing RAM and CPU resource allocations for the virtual machine on which you run Prime Infrastructure, and you have more than one virtual machine running on the same hardware, you may also want to change your RAM and CPU resource *reservations* using the vSphere Client's **Resource Allocation** tab. For details, see the VMware vSphere Client documentation.

-
- Step 1** Open a CLI session with the Prime Infrastructure server (see [Connecting Via CLI](#)).
- Step 2** Stop Prime Infrastructure using the **ncs stop** command (see [Stopping Prime Infrastructure](#)).
- Step 3** Halt the VMware virtual appliance:
- ```
PIServer/admin# halt
```
- Step 4** Launch the vSphere Client, right-click the virtual appliance, then click **Edit Settings**.
- Step 5** To change the RAM allocation, select **Memory** and change the **Memory Size** as needed. Then click **OK**.
- Step 6** To change the CPU allocation, select **CPUs** and select the **Number of Virtual Processors** from the drop-down list. Then click **OK**.
- Step 7** To add a new disk (you cannot expand the space of the existing disk):
- Click **Add**.
  - Select **Hard Disk**, then click **Next**.
  - Check **Create a new virtual disk**, then click **Next**.
  - Enter the desired **Disk Size** and specify a **Location** for the new virtual disk, then click **Next**.
  - With the Advanced Options displayed, click **Next**, then click **Finish**.
- Step 8** Power on the virtual appliance (see [Restarting Prime Infrastructure](#))
- 

## Compacting the Prime Infrastructure Database

You can reclaim disk space by compacting the Prime Infrastructure database.

- 
- Step 1** Open a CLI session with the Prime Infrastructure server (see [Connecting Via CLI](#)).
- Step 2** Enter the following command to compact the application database:
- ```
PIServer/admin# ncs cleanup
```
- Step 3** When prompted, answer **Yes** to the deep cleanup option.
-

Configuring Client Performance Settings

You can configure the following client processes to improve Prime Infrastructure performance and scalability:

- [Enabling Automatic Client Troubleshooting](#)
- [Enabling DNS Hostname Lookup](#)
- [Specifying How Long to Retain Client Association History Data](#)
- [Polling Clients When Receiving Client Traps/Syslogs](#)
- [Saving Client Traps as Events](#)
- [Saving 802.1x and 802.11 Client Traps as Events](#)

Enabling Automatic Client Troubleshooting

The **Administration > System Settings > Client** page allows you to enable automatic client troubleshooting on a diagnostic channel for your third-party wireless clients running Cisco Compatible Extensions (CCX).

With this feature enabled, Prime Infrastructure will process the client ccx test-association trap that invokes a series of tests on each CCX client. Clients are updated on all completed tasks, and an automated troubleshooting report is produced (it is located in `dist/acs/win/webnms/logs`). When each test is complete, the location of the test log is updated in the client details pages, in the V5 or V6 tab, in the Automated Troubleshooting Report area. Click **Export** to export the logs.

When this feature is not enabled, Prime Infrastructure still raises the trap, but automated troubleshooting is not initiated.

**Note**

Automatic client troubleshooting is only available for clients running CCX Version 5 or 6. For a list of CCX-certified partner manufacturers and their CCX client devices, see the [Cisco Compatible Extensions Client Devices](#) page.

-
- Step 1** Choose **Administration > System Settings**.
- Step 2** From the left sidebar menu, choose **Client**. The Client page appears.
- Step 3** In the **Process Diagnostic Trap** area, select the **Automatically troubleshoot client on diagnostic channel** check box, then click **Save**.
-

Enabling DNS Hostname Lookup

DNS lookup can take a considerable amount of time, so Prime Infrastructure has it disabled by default. You can enable or disable the DNS lookup for client hostnames, and change how long Prime Infrastructure retains the results of previous DNS lookups in its cache.

-
- Step 1** Choose **Administration > System Settings**.
 - Step 2** From the left sidebar menu, choose **Client**.
 - Step 3** Select the **Lookup client host names from DNS server** check box.
 - Step 4** Enter the number of days that you want the hostname to remain in the cache, then click **Save**.
-

Specifying How Long to Retain Client Association History Data

Client association history can take a lot of database and disk space. This can be an issue for database backup and restore functions. The retention duration of client association history can be configured to help manage this potential issue.

-
- Step 1** Choose **Administration > System Settings > Client**.
 - Step 2** Change the following data retention parameters as needed:
 - **Dissociated Clients**—Enter the number of days that you want Prime Infrastructure to retain the data. The valid range is 1 to 30 days.
 - **Client session history**—Enter the number of days that you want Prime Infrastructure to retain the data. The valid range is 7 to 365 days.
 - Step 3** Click **Save**.
-

Polling Clients When Receiving Client Traps/Syslogs

Under normal circumstances, Prime Infrastructure polls clients on a regular schedule, every few minutes, identifying session information during the poll. You can also choose to have Prime Infrastructure poll clients immediately whenever traps and syslogs are received from them. This helps you discover new clients and their sessions quickly.

This option is disabled by default, as it can affect Prime Infrastructure performance. Busy networks with many clients can generate large amounts of traps/syslogs, especially during peak periods when clients are roaming and associating/disassociating often. In this case, polling clients at the same time can be a processing burden.

-
- Step 1** Choose **Administration > System Settings > Client**.
 - Step 2** Select the **Poll clients when client traps/syslogs received** check box. Prime Infrastructure will poll clients as soon as a trap or syslog is received, to identify client sessions.
 - Step 3** Click **Save**.
-

Saving Client Traps as Events

In some deployments, Prime Infrastructure might receive large amounts of client association and disassociation traps. Saving these traps as events can cause slow server performance. In addition, other events that might be useful could be aged out sooner than expected because of the amount of traps being saved.

Follow the steps below to ensure that Prime Infrastructure does not save client association and disassociation traps as events.

-
- Step 1** Choose **Administration > System Settings > Client**.
 - Step 2** Unselect the **Save client association and disassociation traps as events** check box.
 - Step 3** Click **Save** to confirm this configuration change. This option is disabled by default.
-

Saving 802.1x and 802.11 Client Traps as Events

You must enable **Save 802.1x and 802.11 client authentication failed traps as events** for debugging purposes.

-
- Step 1** Choose **Administration > System Settings > Client**.
 - Step 2** Select the **Save 802.1x and 802.11 client authentication fail traps as events** check box.
 - Step 3** Click **Save** to confirm this configuration change.
-

Optimizing Memory for Assurance Processing

Prime Infrastructure's Assurance features depend heavily on high-volume NetFlow data forwarded to the Prime Infrastructure server by devices, including NAMs. Because Prime Infrastructure always aggregates NetFlow data before storing it, supporting Assurance features with appropriate data is a memory-intensive process.

With more working memory to hold NetFlow data during aggregation, Prime Infrastructure can get this job done faster and more efficiently. This can lead to important performance improvements if your organization licenses Assurance features and makes heavy use of them.

Prime Infrastructure offers features to help you:

- Determine how much memory is currently allocated to Assurance-related data processing, and how completely individual Assurance features are using that memory pool.
- Increase the default pool of memory used to process Assurance-related data.
- Balance the memory allocated to individual Assurance features, so those with the greatest demand for memory get what they need.

The amount of performance improvement you can get from using these features depends on the memory available and how you use Assurance features, but can be substantial. For example: Given a Prime Infrastructure Professional implementation with the recommended minimum hardware Prime

Infrastructure can process up to 414,000 NetFlow host records in a single five-minute aggregation cycle. With Assurance memory optimization, maximum processing for the same type of data is closer to 800,000 records per cycle.

You can increase the Assurance memory pool without balancing Assurance memory allocations, and vice versa. But using these two optimization options together is the best way to improve Prime Infrastructure performance when Assurance features are used.

Related Topics

- [Optimizing Memory for Assurance Processing](#)
- [Monitoring Assurance Memory Allocation and Demand](#)
- [Increasing the Assurance Memory Pool](#)
- [Balancing Assurance Memory Allocation](#)
- [Resetting Assurance Memory Allocation](#)
- [Resetting the Assurance Memory Pool](#)

Monitoring Assurance Memory Allocation and Demand

You can quickly see Prime Infrastructure's current Assurance-related memory allocation and usage.

-
- Step 1** Select **Administration > Settings > Data Sources**.
- Step 2** Select the text link **Assurance Memory Statistics** (in the upper right corner of the Data Sources page). Prime Infrastructure displays:
- The current memory allocation in megabytes for each of the main Assurance feature categories, including Traffic, Applications, Voice-Video data, and Device Health information.
 - The usage of each area's memory allocation over the last 24 hours. The percentage represents the peak memory usage over that period (that is, if 100 percent of the memory allocation is used at any point in the past 24 hours, the usage percentage shown will be 100 percent).
-

Related Topics

- [Optimizing Memory for Assurance Processing](#)
- [Increasing the Assurance Memory Pool](#)
- [Balancing Assurance Memory Allocation](#)

Increasing the Assurance Memory Pool

You can use the Prime Infrastructure command line to allocate more memory to all types of Assurance-related data processing. Note that using the **ncs tune-resources assurance** command requires a server restart. Once restarted, the server will increase the total pool of memory allocated to all Assurance-related data processing.

-
- Step 1** Open a CLI session with the Prime Infrastructure server (see [Connecting Via CLI](#)).
- Step 2** Enter the following command:
- ```
PIServer/admin# ncs tune-resources assurance
```
- Step 3** Restart the Prime Infrastructure server (see [Restarting Prime Infrastructure](#)).
- 

### Related Topics

- [Optimizing Memory for Assurance Processing](#)
- [Monitoring Assurance Memory Allocation and Demand](#)
- [Balancing Assurance Memory Allocation](#)
- [Resetting the Assurance Memory Pool](#)
- [Connecting Via CLI](#)
- [Restarting Prime Infrastructure](#)

## Balancing Assurance Memory Allocation

You can use the Prime Infrastructure interface to automatically balance the allocation of the total Assurance memory pool to individual categories of Assurance-related data processing, ensuring that those Assurance features that need memory the most are getting it.

- 
- Step 1** Select **Administration > Settings > Data Sources**.
- Step 2** Select the text link **Assurance Memory Statistics** (in the upper right corner of the Data Sources page).
- Step 3** Click **Rebalance**.

Prime Infrastructure will change Assurance memory allocations to individual features as needed, reducing allocations for less-used features and increasing allocations for features where usage over the past 24 hours was at or near 100 percent.

---

### Related Topics

- [Optimizing Memory for Assurance Processing](#)
- [Monitoring Assurance Memory Allocation and Demand](#)
- [Increasing the Assurance Memory Pool](#)
- [Balancing Assurance Memory Allocation](#)
- [Resetting Assurance Memory Allocation](#)
- [Resetting the Assurance Memory Pool](#)

## Resetting Assurance Memory Allocation

You can use the Prime Infrastructure interface to cancel Assurance memory balancing, returning the allocation for each Assurance-related feature to its default value.

- 
- Step 1** Select **Administration > Settings > Data Sources**.
  - Step 2** Select the text link **Assurance Memory Statistics** (in the upper right corner of the Data Sources page).
  - Step 3** Click **Reset**.
- 

### Related Topics

- [Optimizing Memory for Assurance Processing](#)
- [Balancing Assurance Memory Allocation](#)

## Resetting the Assurance Memory Pool

You can use the Prime Infrastructure command line to return the Assurance memory pool to the default allocation, disabling all changes created using the **ncs tune-resources assurance** command explained in [Increasing the Assurance Memory Pool](#).

- 
- Step 1** Open a CLI session with the Prime Infrastructure server (see [Connecting Via CLI](#)).
  - Step 2** Enter the following command:  

```
PIServer/admin# ncs tune-resources default
```
  - Step 3** Restart the Prime Infrastructure server (see [Restarting Prime Infrastructure](#)).
- 

### Related Topics

- [Optimizing Memory for Assurance Processing](#)
- [Increasing the Assurance Memory Pool](#)
- [Connecting Via CLI](#)
- [Restarting Prime Infrastructure](#)

# Managing Data Sources

Prime Infrastructure depends on a variety of sources for accurate gathering and reporting of device, performance and assurance data. These sources include specialized monitoring devices such as NAMs, and protocols running on normal devices, such as Cisco Medianet, NetFlow, Flexible NetFlow, Network Based Application Recognition (NBAR), Performance Monitoring (PerfMon), and Performance Agent.

You will want to manage these sources to ensure that only the correct data is gathered from active sources. The Data Sources page allows you to review your current data sources, and delete those that are no longer active.

For details on the data sources used in dashlets, see “Advanced Monitoring” in Related Topics. For details on setting up individual data sources, see the data-source configuration sections of “Administrator Setup Tasks”, also listed in Related Topics.

## Related Topics

- [Viewing Current Data Sources](#)
- [Deleting Data Sources](#)
- [Viewing Current Data Sources](#)
- [Advanced Monitoring](#)
- [Administrator Setup Tasks](#)
- [Configuring Data Sources for Prime Infrastructure With Assurance](#)
- [Enabling Medianet NetFlow](#)
- [Enabling NetFlow and Flexible NetFlow](#)
- [Deploying Network Analysis Modules \(NAMs\)](#)
- [Enabling Performance Agent](#)

## Viewing Current Data Sources

Use the Data Sources page to review Prime Infrastructure’s current data sources. Access to this page requires administrator privileges

- 
- Step 1** Log in to Prime Infrastructure as an administrator
- Step 2** Select **Administration > Settings > Data Sources**. Prime Infrastructure displays a summary page that lists each data source’s:
- **Device Name**—The host name of the data source
  - **Data Source**—The IP address of the data source.
  - **Type**—The type of data the source is sending to Prime Infrastructure (e.g., “Netflow”).
  - **Exporting Device**—The IP address of the device exporting the data to Prime Infrastructure.
  - **Last 5 min Flow Read Rate**—The amount of data Prime Infrastructure has received from this source during the last five minutes.
  - **Last Active Time**—The latest date and time that Prime Infrastructure received data from this source.
-

**Related Topics**

- [Managing Data Sources](#)
- [Deleting Data Sources](#)

## Deleting Data Sources

Use the Data Sources page to delete inactive Prime Infrastructure data sources. Access to this page requires administrator privileges.

Note that you cannot delete a NetFlow data source until seven full days have elapsed without receipt of any data from that data source. This delay helps protect the integrity of NetFlow data (which Prime Infrastructure identifies and aggregates according to the source) by giving network operators a full week to ensure that the data source has been retired. If the source remains active during that period and sends data to Prime Infrastructure, data from that source will still be identified and aggregated properly with other data from the same source (instead of being identified as a new source).

- 
- Step 1** Log in to Prime Infrastructure as an administrator
  - Step 2** Select **Administration > Settings > Data Sources**.
  - Step 3** Select the checkbox next to the inactive data source you want to delete.
  - Step 4** Click **Delete**.
  - Step 5** Click OK to confirm the deletion.
- 

**Related Topics**

- [Managing Data Sources](#)
- [Viewing Current Data Sources](#)

# Performing Special Administrative Tasks

Prime Infrastructure provides administrators with special access in order to perform a variety of infrequent tasks, including

- Connecting to the server via an SSH command-line interface (CLI) session.
- Changing server hardware setup and resource allocations.
- Starting, stopping, and checking on the status of Prime Infrastructure services.
- Running Prime Infrastructure processes accessible only via the CLI.
- Managing access rights, including changing passwords for user IDs with special tasks.
- Removing or resetting Prime Infrastructure.

## Related Topics

- [Connecting Via CLI](#)
- [Starting Prime Infrastructure](#)
- [Checking Prime Infrastructure Server Status](#)
- [Checking Prime Infrastructure Version and Patch Status](#)
- [Stopping Prime Infrastructure](#)
- [Restarting Prime Infrastructure](#)
- [Removing Prime Infrastructure](#)
- [Resetting Prime Infrastructure to Defaults](#)
- [Restoring Physical Appliances to Clean State](#)
- [Changing the Prime Infrastructure Host Name](#)
- [Changing the FTP User Password](#)
- [Changing the Root User Password](#)
- [Recovering Administrator Passwords on Virtual Appliances](#)
- [Recovering Administrator Passwords on Physical Appliances](#)
- [Getting the Installation ISO Image](#)
- [Checking High Availability Status](#)

## Connecting Via CLI

Administrators can connect to the Prime Infrastructure server via its command-line interface (CLI). CLI access is required when you need to run commands and processes accessible only via the Prime Infrastructure CLI. These include commands to start the server, stop it, check on its status, and so on.

Before you begin, make sure you:

- Know the IP address or host name of the Prime Infrastructure server.
- Know the user ID and password of an administrative user with CLI access to that server or appliance. Unless specifically barred from doing so, all administrative users have CLI access.

- 
- Step 1** Start up your SSH client, start an SSH session via your local machine's command line, or connect to the dedicated console on the Prime Infrastructure physical or virtual appliance.
- Step 2** Log in as appropriate:
- a. If connecting via a GUI client: Enter the ID of an active administrator with CLI access and the IP address or host name of the Prime Infrastructure server. Then initiate the connection.  
Or
  - b. If you are using a command-line client or session: Log in with a command like the following:  

```
[localhost]# ssh -I admin IPHost
```

 Where:
    - *admin* is an active Prime Infrastructure administrator ID with CLI access.
    - *IPHost* is the IP address or host name of the Prime Infrastructure server or appliance.
 Or
  - c. If connecting via console: A prompt is shown for the administrator user name. Enter the user name. Prime Infrastructure will then prompt you for the password for the administrator ID you entered.
- Step 3** Enter the administrative ID password. Prime Infrastructure will present a command prompt like the following: `PIServer/admin#`.
- Step 4** If the command you need to enter requires that you enter “configure terminal” mode, enter the following command at the prompt:  

```
PIServer/admin# configure terminal
```

 The prompt will change from `PIServer/admin#` to `PIServer/admin/terminal#`.
- 

## Starting Prime Infrastructure

You will need to start Prime Infrastructure after upgrades.

- 
- Step 1** Open a CLI session with the Prime Infrastructure server (see [Connecting Via CLI](#)).
- Step 2** Enter the following command to stop the Prime Infrastructure server or appliance:  

```
PIServer/admin# ncs start
```
-



## Checking Prime Infrastructure Server Status

You can check on the status of all Prime Infrastructure server or appliance processes at any time, without stopping the server. Technical Assistance personnel may ask you to perform this task when troubleshooting a problem with Prime Infrastructure.

You can also check on the current health of the server using the dashlets on the Admin Dashboard dashlets (see [Monitoring Prime Infrastructure Health](#)).

You can check on the status of High Availability options enabled on the server using the command `ncs ha status`. See

- 
- Step 1** Open a CLI session with the Prime Infrastructure server (see [Connecting Via CLI](#)).
- Step 2** Enter the following command to display the current status of Prime Infrastructure processes and services:

```
PIServer/admin# ncs status
```

---

## Checking Prime Infrastructure Version and Patch Status

You can check on the version of a Prime Infrastructure server and the patches applied to it at any time, without stopping the server. You will usually need to do this when upgrading or patching the server software.

- 
- Step 1** Open a CLI session with the Prime Infrastructure server (see [Connecting Via CLI](#)).
- Step 2** Enter the following command to display the current status of Prime Infrastructure processes and services:

```
PIServer/admin# ncs show version
```

---

## Stopping Prime Infrastructure

You can stop a Prime Infrastructure server or appliance at any time using the command line interface. Any users logged in at the time you stop Prime Infrastructure will have their sessions stop functioning.

- 
- Step 1** Open a CLI session with the Prime Infrastructure server (see [Connecting Via CLI](#)).
- Step 2** Enter the following command to stop the Prime Infrastructure server or appliance:

```
PIServer/admin# ncs stop
```

---

## Restarting Prime Infrastructure

---

**Step 1** Open a CLI session with the Prime Infrastructure server (see [Connecting Via CLI](#)).

**Step 2** Enter the following command to stop the Prime Infrastructure server or appliance:

```
PIServer/admin# ncs stop
```

**Step 3** Wait for the previous command to complete.

**Step 4** Enter the following command to restart the Prime Infrastructure server or appliance:

```
PIServer/admin# ncs start
```

---

## Removing Prime Infrastructure

You may need to remove Prime Infrastructure in preparation for a clean “from scratch” re-installation. You can do so by following the steps below

Note that this procedure will delete all your existing data on the server, including all server settings and local backups. You will be unable to restore your data unless you have a remote backup or access to disk-level data recovery methods.

---

**Step 1** Stop the server (see [Stopping Prime Infrastructure](#)).

**Step 2** In the VMware vSphere client, right-click the Prime Infrastructure virtual appliance.

**Step 3** Power off the virtual appliance.

**Step 4** From the **Disk** option, choose **Delete**.

---

## Resetting Prime Infrastructure to Defaults

You may need to reset the installed Prime Infrastructure server to factory defaults, removing all user data and customizations, but preserving the installation itself. You can do so by following the steps below.

Note that this procedure will delete all your existing data on the server host except for the default settings supplied with Prime Infrastructure. You will be unable to restore your data unless you have a remote backup or access to disk-level data recovery methods.

---

**Step 1** Stop the server (see [Stopping Prime Infrastructure](#)).

**Step 2** Download the installation ISO image appropriate for your installed version of the Prime Infrastructure virtual or physical appliance server software and burn it to DVD (see [Getting the Installation ISO Image](#)).

**Step 3** Power off the virtual appliance.

**Step 4** Reinstall the appliance or OVA by booting the host from the DVD.

---

## Restoring Physical Appliances to Clean State

You will want to restore your Prime Infrastructure physical appliance to a clean state in preparation for an RMA return or other hardware retirement.

Note that this procedure will delete all of your existing data on the server, including all server settings, local backups, and the Prime Infrastructure software. You will be unable to restore your data unless you have a remote backup. Restoring the host to a clean state also ensures data security by preventing disk-level data recovery.

To restore a Prime Infrastructure physical appliance to a clean state:

- 
- Step 1** Stop the server (see [Stopping Prime Infrastructure](#)).
  - Step 2** Power off the physical appliance, then power on.
  - Step 3** During the boot sequence, press **Ctrl+H** when prompted. The console displays the RAID Configuration screen.
  - Step 4** Click on the virtual drive containing the Prime Infrastructure server.
  - Step 5** Select **slow init** to re-initialize the hard drive. The physical appliance will overwrite the entire drive with zeroes.
- 

## Changing the Prime Infrastructure Host Name

Prime Infrastructure prompts you for a host name when you install the server. For a variety of reasons, you may find there is a mismatch between the host name on the Prime Infrastructure server and the host name elsewhere. If so, you can recover without reinstalling by changing the host name on the server.

- 
- Step 1** Open a CLI session with the Prime Infrastructure server (see [Connecting Via CLI](#)). Be sure to enter “configure terminal” mode.
  - Step 2** Enter the following command:  

```
PIServer/admin# hostname newHostName
```

Where *newHostName* is the new host name you want to assign to the Prime Infrastructure server.
  - Step 3** Restart the Prime Infrastructure server using the **ncs stop** and **ncs start** commands, as explained in [Restarting Prime Infrastructure](#)
-

## Changing the FTP User Password

Prime Infrastructure uses the “ftpuser” ID to access other servers (including other Prime Infrastructure servers and appliances) via FTP. Any administrative user can change the password associated with this special ID.

**Step 1** Open a CLI session with the Prime Infrastructure server (see [Connecting Via CLI](#)).

**Step 2** Enter the following command:

```
PIServer/admin/config# ncs password ftpuser username password password
```

Where *password* is the ftpuser login password. You can enter any password, not exceeding 80 characters.

For example:

```
PIServer/admin# ncs password ftpuser MyFTPUserName password MyFTPUserPassword
CompilerOracle: exclude org/snmp4j/Snmp.send
Loading USER - ftpuser
Validating new password..
Resetting password ..
Resetting password COMPLETED.
EXECUTION STATUS : Success
PIServer/admin#
```

## Changing the Root User Password

Prime Infrastructure uses the “root” ID to perform special tasks that require root access to the server or appliance operating system. Administrators can change the password associated with this special administrative ID only if they know the current “root” user password.

**Step 1** Open a CLI session with the Prime Infrastructure server (see [Connecting Via CLI](#)).

**Step 2** Assume root privileges on the server. For example:

```
PIServer/admin# root
Enter root password:
Starting root bash shell...
ade #
```

**Step 3** Enter the following command:

```
PIServer/admin# ncs password root password password
```

Where *password* is the root user login password. You can enter a password not exceeding 80 characters.

For example:

```
PIServer/admin# ncs password root password password
CompilerOracle: exclude org/snmp4j/Snmp.send
Loading USER - root
Validating new password..
Resetting password ..
Resetting password COMPLETED.
```

```
EXECUTION STATUS : Success
```

```
PIServer/admin#
```

**Step 4** To avoid leaving root access open, exit root mode:

```
PIServer/admin# ncs password ftpuser username password password
```

---

## Recovering Administrator Passwords on Virtual Appliances

You can recover (that is, reset) administrator passwords on Prime Infrastructure virtual machines (also known as OVAs) installed on your own hardware.

### Before You Begin

Ensure that you have:

- Physical access to the Prime Infrastructure server.
  - A copy of the installation ISO image appropriate for your version of the software. See [Getting the Installation ISO Image](#).
  - Access to the VMware vSphere client, and to the vSphere inventory, Datastores and Objects functions. If you do not have such access, consult your VMware administrator. You should avoid accessing ESX directly from the vSphere client.
- 

**Step 1** At the Prime Infrastructure OVA server, launch the VMware vSphere client.

**Step 2** Upload the installation ISO image to the data store on the OVA virtual machine, as follows:

- a. In the vSphere inventory, click **Datastores**.
- b. On the **Objects** tab, select the datastore to which you will upload the file.
- c. Click the **Navigate to the datastore file browser** icon.
- d. If needed, click the **Create a new folder** icon and create a new folder.
- e. Select the folder that you created or select an existing folder, and click the **Upload a File** icon.  
If the Client Integration Access Control dialog box appears, click **Allow** to allow the plug-in to access your operating system and proceed with the file upload.
- f. On the local computer, find the ISO file and upload it.
- g. Refresh the datastore file browser to see the uploaded file in the list.

**Step 3** With the ISO image uploaded to a datastore, make it the default boot image, as follows:

- a. Using the VMware vSphere client, right-click the deployed OVA and choose **Power > Shut down guest**.
- b. Select **Edit Settings > Hardware**, then select **CD/DVD drive 1**.
- c. Under **Device Type**, select **Datastore ISO File**, then use the **Browse** button to select the ISO image file you uploaded to the datastore.
- d. Under **Device Status**, select **Connect at power on**.
- e. Click the **Options** tab and select **Boot Options**. Under **Force BIOS Setup**, select **Next time VM boots, force entry into BIOS setup Screen**. This will force a boot from the virtual machine BIOS when you restart the virtual machine.
- f. Click **OK**.

- g. In the VMware vSphere client, right-click the deployed OVA and choose **Power > Power On**.
- h. In the BIOS setup menu, find the option that controls the boot order of devices and move **DVD/CDROM** to the top.

**Step 4** Follow the steps below to reset a server administrator password:

- a. Save your BIOS settings and exit the BIOS setup menu. The virtual machine will boot from the ISO image and display a list of boot options.
- b. Enter **3** if you are using the keyboard and monitor to access the OVA, or **4** if you are accessing via command line or console. The vSphere client displays a list of administrator user names.
- c. Enter the number shown next to the administrator username for which you want to reset the password.
- d. Enter the new password and verify it with a second entry.
- e. Enter **Y** to save your changes and reboot.
- f. Once the virtual machine has rebooted: Using the vSphere client, click on the CD icon and select **Disconnect ISO image**.

**Step 5** Log in with the new administrator password.

---

## Recovering Administrator Passwords on Physical Appliances

You can recover (reset) administrator passwords on Prime Infrastructure physical appliances.

### Before You Begin

Ensure that you have:

- Physical access to the Prime Infrastructure appliance.
- A copy of the appliance recovery CD that was supplied with the shipped appliance.

If you have lost the appliance recovery CD, download and burn a DVD copy of the ISO image, as explained in [Getting the Installation ISO Image](#). You can then use the DVD to reset administrator passwords on the appliance (see [Recovering Administrator Passwords on Virtual Appliances](#) for detailed steps).

- 
- Step 1** Place the appliance recovery CD in the appliance's optical drive and reboot the appliance. The vSphere client displays a list of boot options.
  - Step 2** Enter **3** to select the **Reset Administrator Password (Keyboard/Monitor)** boot option. The vSphere client displays a list of administrator user names.
  - Step 3** Enter the number shown next to the administrator user name for which you want to recover (reset) the password.
  - Step 4** Enter the new password and verify it with a second entry.
  - Step 5** Enter **Y** to save your changes and reboot.
  - Step 6** Log in with the new administrator password.
-

## Getting the Installation ISO Image

Copies of the Prime Infrastructure installation ISO image are needed for some special maintenance operations, such as resetting administrator passwords.

Prime Infrastructure ISO image files have the format `NCS-APL-version-K9.iso`, where *version* is the version number of the product. The version number will often contain extended numbering indicating the patch level of the product. For example: If you are using a fully-updated version of Prime Infrastructure 1.3, you would need to download a copy of the ISO image file

`NCS-APL-1.3.0.20-1-K9.iso`.

If you do not have a copy of the ISO image, you can download it from Cisco.com using the steps below:

- 
- Step 1** On a browser with internet access, enter the URL <http://software.cisco.com/download/navigator.html>.
  - Step 2** Use the **Find** box to search for “Cisco Prime Infrastructure”.
  - Step 3** From the results list, select the software version you are using (for example, Cisco Prime Infrastructure 1.3).
  - Step 4** Select **Prime Infrastructure Software** to display the list of ISOs and other downloadable image files for that software version.
  - Step 5** Download the ISO image from the page.
  - Step 6** When the download is complete, check that the MD5 checksum of the downloaded file matches the checksum shown for the file on its Cisco.com download page. If the checksums do not match, the file is corrupt, and you will need to download it from Cisco.com again.
  - Step 7** If you need the ISO image on disk: Burn the ISO image to a Dual Layer DVD using DVD authoring software. For reliable results, we recommend that you conduct the burn at single (1X) speed and with the “Verify” option turned on.
- 

## Prime Infrastructure Software Updates

Prime Infrastructure periodically provides the following updates that you can view by choosing **Administration > Software Update**:

- Prime Infrastructure Critical Fixes—provides critical fixes to the Prime Infrastructure software. We strongly recommend you download these updates.
- Prime Infrastructure Device Support—adds manageability support for devices which Prime Infrastructure did not support at release time. These updates are published on a monthly basis.
- Prime Infrastructure Add-Ons—provides new Prime Infrastructure features, which can include new GUI screens and functionality to supplement the Prime Infrastructure version you are using.

See [Installing Prime Infrastructure Software Updates](#) for more information.

The update notifications that Prime Infrastructure displays are based on the Notification Settings you specify at **Administration > System Settings > Software Update**. See [Modifying the Display of Software Updates](#).

## Modifying the Display of Software Updates

You can modify the update notifications that Prime Infrastructure displays on the **Administration > Software Update** page. For example, if you do not want to install any updates to Prime Infrastructure, you can disable all notification and prevent Prime Infrastructure from displaying notifications of available updates.

- 
- Step 1** Choose **Administration > System Settings > Software Update**.
  - Step 2** Under Notification Settings, unselect the categories for which you do not want updates displayed on the **Administration > Software Update** page.
  - Step 3** Click **Save**.
- 

## Installing Prime Infrastructure Software Updates

Prime Infrastructure periodically provides critical fixes, device support, and add-on updates that you can download and install by choosing **Administration > Software Update**. Depending on your connectivity and preference, you can install software updates by:

- Downloading updates directly from [cisco.com](http://cisco.com). Prime Infrastructure must have external connectivity. See [Installing Software Updates from Cisco.com](#).
- Downloading updates on a different server and uploading them to Prime Infrastructure. See [Uploading and Installing Downloaded Software Updates](#).

### Installing Software Updates from Cisco.com

The following steps explain how to install software updates if Prime Infrastructure has external connectivity and you want to download updates directly from [cisco.com](http://cisco.com).

- 
- Step 1** Choose **Administration > Software Update**.
  - Step 2** Click **download** to get the latest updates from [cisco.com](http://cisco.com).
  - Step 3** Enter your [Cisco.com](http://cisco.com) login credentials.  
If you receive an error indicating there was a problem connecting to [cisco.com](http://cisco.com), verify your proxy settings by choosing **Administration > System Settings > Proxy Settings**. If your proxy settings are not working, deselect **Enable Proxy**, then click **Save**.  
Prime Infrastructure lists the available updates.
  - Step 4** Click **Show Details** to see the details about the updates.
  - Step 5** Click **Download** next to the update you want to install.
  - Step 6** After the update has been downloaded, click **Install** on the message that appears.  
The Status of Updates section shows the installed software updates.
  - Step 7** If prompted to restart the server, follow the steps in [Restarting Prime Infrastructure](#).
-



## Uploading and Installing Downloaded Software Updates

The following steps explain how to upload and install software updates if Prime Infrastructure does not have external connectivity or you prefer to download files on a different server.

- 
- Step 1** Choose **Administration > Software Update**.
  - Step 2** Click the **upload** link at the top of the page.
  - Step 3** On the Upload Update window, click **Cisco Download**, which takes you to the cisco.com Download Software page for Prime Infrastructure.
  - Step 4** Select **Products > Cloud and Systems Management > Routing and Switch Management > Network Management Solutions > Prime Infrastructure**.
  - Step 5** Select the correct version of Prime Infrastructure.
  - Step 6** Select an update software type.
  - Step 7** From the page that appears, download the latest update file (with the extension UBF).  
Be sure to download the software updates that match your Prime Infrastructure version. For example, software updates for Release 2.2 can be installed only on Prime Infrastructure 2.2.
  - Step 8** From Prime Infrastructure, choose **Administration > Software Update**.
  - Step 9** Click **Upload** and browse to locate the update you downloaded.
  - Step 10** Click **Install** for the updates you have uploaded.  
The Status of Updates section shows the installed software updates.
  - Step 11** If prompted to restart the Prime Infrastructure server, follow the steps explained in [Restarting Prime Infrastructure](#).
-

# Configuring Support Request Settings

The Support Request Settings page allows you to configure the general support and technical support information.

To configure support request settings:

- 
- Step 1** Choose **Administration > System Settings**.
- Step 2** From the left sidebar menu, choose **Support Request Settings**. The Support Request Settings page appears.
- Step 3** Configure the following parameters:
- General Support Settings:
    - Enable interactions directly from the server—Select this check box to allow interactions for support requests, directly from the server.
    - Sender E mail Address—Enter the email address of the sender.
    - Interactions via client system only—Select this check box to allow interactions for support requests, only through client system.
  - Technical Support Provider Information:
    - Cisco—Select this check box if the technical support provider is Cisco. In the Default Cisco.com Username field, enter a default username to log in to Cisco.com. Click **Test Connectivity** to test the connections to the mail server, Cisco support server, and forum server.
    - Third-Party Support Provider—Select this check box if the technical support provider is a third party. Enter the email address, email subject line format, and website URL of the third party or partner support provider.
- Step 4** Click **Save Settings**.
-

# Managing Disk Space Issues

Prime Infrastructure will trigger alarms indicating that the Prime Infrastructure physical or virtual server is low on disk space at the following thresholds:

- 60 percent usage triggers a Major alert.
- 65 percent usage triggers a Critical alert.

Threshold crossings for these alarms are calculated based on the usage of the Prime Infrastructure `optvol` and `localdiskvol` partitions only. The `optvol` partition contains the Oracle database used to store all of Prime Infrastructure's inventory and network data, while `localdiskvol` stores local application backups, WLC and MSE backups, and reports. The settings that trigger the alarms are defined in the file `PackagingResources.properties`, in `/opt/CSCOlumos/conf/rfm/classes/com/cisco/packaging`.

We recommend that administrators take action to increase disk space immediately upon receiving the Major alert. You can do this using any combination of the following methods:

- Free up existing database space as explained in [Compacting the Prime Infrastructure Database](#).
- Reduce the storage load on the `localdiskvol` partition by setting up and using remote backup repositories, as explained in [Using Remote Backup Repositories](#).
- Reduce the storage load on the `optvol` partition by reducing the amount and storage period for which you retain inventory and network data:
  - Reduce the length of time you store client association data and related events, as explained in [Specifying How Long to Retain Client Association History Data](#) and [Saving Client Traps as Events](#).
  - Reduce the length of time you store reports, as explained in [Controlling Report Storage and Retention](#).
  - Reduce the retention period for network inventory, performance, and other classes of data, as explained in [Specifying Performance, Trend and Health Data Retention](#) and [Enabling DNS Hostname Lookup](#).
- Increase the amount of existing virtual disk space allocated to Prime Infrastructure, as explained in [Modifying VM Resource Allocation Using VMware vSphere Client](#). If you are using VMware ESXi 5.5 or later, [use the vSphere Web Client to adjust disk space allocation](#). You can also install additional physical disk storage and then use VMware Edit Settings or the vSphere Web Client to allocate the additional storage to Prime Infrastructure.
- Move the Prime Infrastructure server installation to a server with adequate disk space, as explained in [Migrating to Another Virtual Appliance Using Backup and Restore](#) and [Migrating to Another Physical Appliance Using Backup and Restore](#).

