



# Maintaining Prime Infrastructure Server Health

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## Monitoring Prime Infrastructure Health

To view the system health dashboards, choose **Administration > Admin Dashboard**. [Table 3-1](#) describes the information displayed on the dashboards.

**Table 3-1 Administration > Admin Dashboard Information**

To view this information...	Select 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 3-1 Administration &gt; Admin Dashboard Information (continued)

To view this information...	Select 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

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, page 3-2](#).
- Open a support case with Cisco Technical Support. See [Opening a Support Case, page 3-3](#).

## 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:

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- Step 1** Choose one of the following:
- **Operate > Alarms & Events**, click on an alarm, then choose **Troubleshoot > Support Forum**.
  - From the device 360° view (rest your cursor on 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 2.0 User Guide](#).
- Step 2** On the Cisco Support Community Forum page, enter additional search parameters to refine the discussions that are displayed.
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## 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 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:

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- Step 1** Choose one of the following:
- **Operate > Alarms & Events**, click on an alarm, then choose **Troubleshoot > Support Case**.
  - From the device 360° view (rest your cursor on 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 2.0 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 2.0 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, page 3-1](#)

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, page 3-6](#).
- 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 VMWare provides](#) on expanding physical disk space. You will need to add a new disk; you cannot extend 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 Data Retention Periods, page 6-2](#).
- 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 Cleanup, page 6-5](#) and [Specifying Data Retention Periods, page 6-2](#).
- 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, page 4-5](#).
- 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 OVA. Back up your existing system, then restore it to a VM on the higher-rated server. For details, see [Restoring From Application Backups, page 4-7](#).

## 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 by making a variety of changes:

- [Tuning the Server, page 3-5](#)
- [Compacting the Prime Infrastructure Database, page 3-6](#)
- [Configuring Client Performance Settings, page 3-6](#)

## 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 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 [Taking Application Backups From the Interface, page 4-3](#).
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, page 3-5](#).
3. Perform the resource modifications in the VM, then restart the VM and the server. See [Modifying VM Resource Allocation, page 3-5](#).

### Enabling Server Tuning During Restarts

Prime Infrastructure can adjust to make use of expanded VM resources automatically, as long as the "Enable Server Tuning during restart option" is enabled. It is enabled by default.

To enable automatic server tuning after VM changes:

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- 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**.
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### Modifying VM Resource Allocation

Use the following steps to make changes to the 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, page 4-1](#)).

- 
- Step 1** Shut down Prime Infrastructure
    - a. Log in as admin.
    - b. At the command line, enter `admin# ncs stop`.
  - Step 2** Shut down the Virtual Appliance:
    - a. Login as admin.
    - b. At the command line, enter `admin# halt`.
  - Step 3** Launch the vSphere Client, right click the Virtual Appliance, then click **Edit Settings**.
  - Step 4** To change the RAM allocation, select **Memory** and change the **Memory Size** as desired. Then click **OK**.
  - Step 5** To change the CPU allocation, select **CPUs** and select the **Number of Virtual Processors** you want from the drop-down list. Then click **OK**.
  - Step 6** To add a new disk (you cannot expand the size of the existing disk):
    - a. Click **Add....**

- b. Select **Hard Disk**, then click **Next**.
- c. Check **Create a new virtual disk**, then click **Next**.
- d. Enter the desired **Disk Size** and specify a **Location** for the new virtual disk, then click **Next**.
- e. With the Advanced Options displayed, click **Next**, then click **Finish**.

**Step 7** Power on the Virtual Appliance and restart Prime Infrastructure.

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## Compacting the Prime Infrastructure Database

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

**Step 1** Open a console session and log in to the server as admin. Enter the admin password when prompted.

**Step 2** At the command line, enter the following command to compact the application database:

```
admin# ncs cleanup
```

**Step 3** When prompted, answer Yes to the deep cleanup option.

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## Configuring Client Performance Settings

You can configure the following client processes to improve Prime Infrastructure performance and scalability. This section contains the following topics:

- [Enabling Automatic Client Troubleshooting, page 3-6](#)
- [Enabling Hostname Lookup, page 3-7](#)
- [Specifying for How Long to Retain Client Association History Data, page 3-7](#)
- [Polling Clients When Receiving Client Traps/Syslogs, page 3-8](#)
- [Saving Client Traps as Events, page 3-8](#)
- [Saving 802.1x and 802.11 Client Traps as Events, page 3-8](#)

### 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 group box. You can use the Export button 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 version 6. For a list of CCX-certified partner manufacturers and their CCX client devices, see the [Cisco Compatible Extensions Client Devices](#) page.

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

DNS lookup can take a considerable amount of time. Because of this, you can enable or disable the DNS lookup for client hostname. It is set to Disable by default.

To enable hostname lookup:

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- Step 1** Choose **Administration > System Settings**.
- Step 2** From the left sidebar menu, choose **Client**.
- Step 3** Click 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 for 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 retaining duration of a client association history can be configured to help manage this potential issue.

To configure data retention parameters:

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- Step 1** Choose **Administration > System Settings**.
- Step 2** From the left sidebar menu, choose **Client**.
- Step 3** Enter or edit the following data retention parameters, then click **Save**.
- **Dissociated Clients (days)**—Enter the number of days that you want Prime Infrastructure to retain the data. The default is 7 days. The valid range is 1 to 30 days.
  - **Client session history (days)**—Enter the number of days that you want Prime Infrastructure to retain the data. The default is 32 days. The valid range is 7 to 365 days.
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## Polling Clients When Receiving Client Traps/Syslogs

In a busy network, you might want to disable polling while the client traps are received because if there are a lot of client which tends to associate/disassociate, PI will get a lot of traps to process, this may impact PI performance. When you disable polling, PI will not track device traps during client association/disassociation and will learn about the client status once in XX minutes when PI polls the device. In this case, it will be impossible to debug client issues assuming that client moved from one place to another. This option is disabled by default. Choose **Administration > System Settings > Client**. If you select the **Poll clients when client traps/syslogs received** check box, Prime Infrastructure polls clients to identify client sessions.

## 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.

To ensure that Prime Infrastructure does not save client association and disassociation traps as events, choose **Administration > System Settings > Client**, then unselect the **Save client association and disassociation traps as events** check box. Click **Save** to confirm this configuration change. This option is disabled by default.

## Saving 802.1x and 802.11 Client Traps as Events

You have to save the Save 802.1x and 802.11 client authentication failed traps as events for debugging purpose. To do this, choose **Administration > System Settings > Client**, then select the **Save 802.1x and 802.11 client authentication fail traps as events** check box.

# Checking the Status of Prime Infrastructure Using CLI

To check the status of Prime Infrastructure from the CLI:

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**Step 1** Log in to the system as **admin** by entering the following command:

```
ssh admin server_IP_or_hostname
```

Enter the following CLI:

```
# ncs status
```

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## Recovering Prime Infrastructure Passwords

You can change Prime Infrastructure application root user or FTP user password. To recover the passwords and regain access to Prime Infrastructure, follow these steps:

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**Step 1** Log in to Prime Infrastructure command-line interface as an admin user.

**Step 2** Enter the following command:



```
ncs password root password password
```

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

To change the FTP user password, enter the following command:

```
ncs password ftpuser username password password
```

Example of the command usage:

```
ncs-appliance/admin# ncs password root password <newpassword>
CompilerOracle: exclude org/snmp4j/Snmp.send
Loading USER - root
Validating new password..
Resetting password ..
Resetting password COMPLETED.
EXECUTION STATUS : Success
ncs-appliance/admin#
```

You must now be able to login to Prime Infrastructure web interface with the new root password.

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## Downloading Device Support and Product Updates

Device Package updates and software updates for major Prime Infrastructure product releases are integrated into update bundles. These bundles are available for download directly from Cisco.

To install update bundles for Prime Infrastructure:

**Step 1** Depending on your connectivity, do one of the following:

- If Prime Infrastructure has external connectivity:
  - Choose **Administration > Software Update**.
  - Click **Check for Updates**.
  - Enter your Cisco.com login credentials.
- If Prime Infrastructure does not have external connectivity:
  - Go to [Cisco.com/go/primeinfrastructure](https://Cisco.com/go/primeinfrastructure).
  - Under Support, select **Download Software**.
  - Choose **Cisco Prime Infrastructure**, then select the correct version of Prime Infrastructure.
  - From the page that appears, download the latest update file (with the extension .ubf).



**Note** Be sure to download the software updates that match your Prime Infrastructure version. For example, software updates for Release 1.1 can be installed only on Prime Infrastructure 1.1.

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- Choose **Administration > Software Update**.
- Click **Upload Update File** and browse to locate the update bundles you downloaded.

The Software Updates table appears.

Table 3-2 Software Updates Table

Field	Description
Name	The names of software updates that have been downloaded from Cisco.com.
Published Date	Date at which the software was published to Cisco.com. The Software Updates table always shows the published dates in chronological order (oldest to most recent).
Requires Restart	If the update requires a restart, the value of this field is <b>yes</b> .
Pending Restart	If a restart is pending for the update to be complete, the value of this field is <b>yes</b> .
Installed	If the software is already installed, this field has a green check mark. If the update bundle has not yet been installed, this field is blank.
Description	To see a detailed description of the software update bundle, select the radio button to the right of the description. A dialog box appears, showing the list of patches in that update bundle

- Step 2** To install the software updates:
- a. Choose the software updates you want to install, and click **Install**.



**Note** When you choose an update, all the uninstalled updates published prior to the update you have chosen are also auto-selected. In Prime Infrastructure, it is mandatory to install software updates incrementally, because older updates are sometimes prerequisites to more recent updates. This behavior also occurs in uninstallation.

The installed software updates appear at the bottom of the table, with a check mark at the **Installed** column.

- b. If the **Pending Restart** value is **yes**, restart Prime Infrastructure to complete the update.
- c. To uninstall any software updates, select the updates and click **Uninstall**.

You can apply the UBF patch on either a standalone Prime Infrastructure 2.0 server or in a Prime Infrastructure 2.0 High Availability (HA) environment. For more details, see [PI 2.0 UBF Patch Readme](#).

## 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—Click 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—Click this check box to allow interactions for support requests, only through client system.
- Technical Support Provider Information:
  - Cisco—Click 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—Click 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**.

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## Stopping Prime Infrastructure

You can stop Prime Infrastructure at any time by following these steps.



**Note**

If any users are logged in when you stop Prime Infrastructure, their sessions stop functioning.

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To stop Prime Infrastructure:

---

**Step 1** Log into the system as **admin** by entering the following command:

```
ssh admin server_IP address / hostname
```

**Step 2** Enter the following CLI:

```
# ncs stop
```

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## Removing Prime Infrastructure

Removing Prime Infrastructure using the following method will permanently delete all data on the server, including server settings and local backups. You will be unable to restore your data unless you have a remote backup.

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**Step 1** In the VMware vSphere client, right-click the Prime Infrastructure virtual appliance.

**Step 2** Power off the virtual appliance.

**Step 3** From the Disk option, choose **Delete**.

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