

Overview

This Tech Note provides instructions on how to upgrade to ClearPass 6.6.0 from versions 6.3.6 and later.



Be sure to review the "Upgrade and Update Information" section of the Release Notes for this release before proceeding further.

This Tech Note describes the tasks you need to complete before you upgrade to ClearPass 6.6.0, detailed instructions for performing a cluster upgrade, and the tasks you might need to complete after a successful upgrade procedure. It also describes the steps to recover from a failed upgrade.

In addition, this document provides information on how to perform an offline upgrade.

- [Before You Upgrade ClearPass Policy Manager](#)
- [Upgrading via the Software Updates Portal](#)
- [Performing a Cluster Upgrade](#)
- [After a Successful Upgrade](#)
- [Recovering from a Failed Upgrade](#)
- [Appendix A: Performing an Offline Upgrade](#)

Before You Upgrade ClearPass Policy Manager

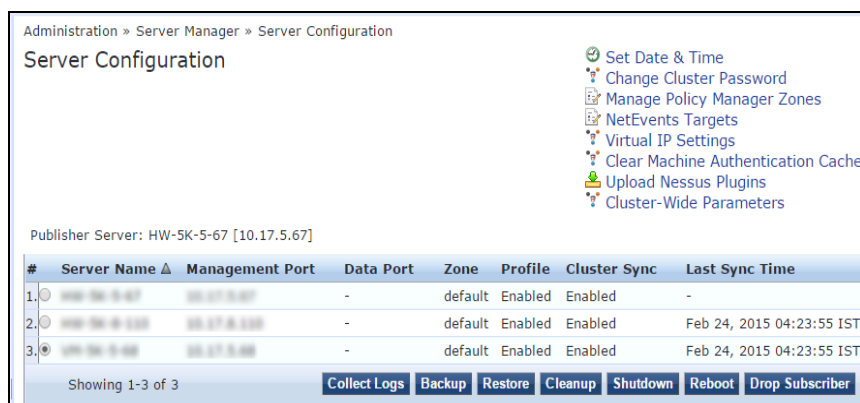
Before you begin to upgrade to ClearPass 6.6.0, note the following recommendations:

1. From the ClearPass Policy Manager user interface, back up the configuration data from the publisher node's Server Configuration page.
2. Be sure to schedule down time for the ClearPass upgrade procedure, as the upgrade process can take from one to two hours per node, based on the number of Access Tracker and Accounting records that exist on the server.

Mobile Device Management (MDM) integration with ClearPass can significantly increase upgrades by several hours if the number of audit records in your network is in the hundreds of thousands.

3. On the publisher node, verify from the Server Configuration page that all nodes are replicating successfully. To access the Server Configuration page, navigate to **Administration > Server Manager > Server Configuration**.

Figure 1 Policy Manager Server Configuration Page



- Any log settings that were modified prior to the upgrade are not retained and are reset to the default. After the upgrade completes successfully, the administrator should reconfigure any custom log settings.

Virtual Machine Upgrade Considerations

The considerations for upgrading a virtual machine (VM) vary according to the version of Policy Manager you are upgrading from:

- When upgrading from version 6.3.6: If you have two disks already loaded with previous ClearPass versions—for example, ClearPass 6.2 on SCSI 0:1 and ClearPass 6.3 on SCSI 0:2—do the following:
 - Drop the inactive disk before upgrading.
 - You must then add a new disk that is twice the size of the old disk.

The ClearPass upgrade process will partition the new disk into two logical volumes.

- If you are upgrading a ClearPass Virtual Machine and need to identify the necessary resources for the upgrade to ClearPass 6.6.0, review the latest Release Notes and the *Tech Note: Installing or Upgrading ClearPass 6.6 on a Virtual Machine*.
- For the Virtual Machine version of ClearPass Policy Manager 5.2 and prior versions, see ["Version-Specific Upgrade Considerations" on page 2](#).
- When upgrading to ClearPass 6.6, any custom authentication source filters must be migrated manually. During an upgrade, the console displays a warning message when custom filters are defined using tag values for Local and SQL authentication sources.

Version-Specific Upgrade Considerations

You can upgrade to ClearPass 6.6.0 from ClearPass 6.3.6, 6.4.7, or 6.5.x. Before you proceed with the upgrade, we recommend that you apply the latest available patch updates to your current release. For information on the patch update procedure, see the "Upgrade and Update Information" section of the Release Notes.

- For 6.5.x upgrades, versions 6.5.0 (FIPS/Non-FIPS) and 6.5.1 (FIPS only) require applying the ClearPass 6.6.0 Upgrade Preparation Patch before upgrading to 6.6.0. This patch is available through the Aruba Support site or through the Software Updates portal. Version 6.5.2 and later do not require the preparation patch.
- For 6.4.x upgrades, you must update to 6.4.7 followed by applying the ClearPass 6.6.0 Upgrade Preparation Patch before upgrading to 6.6.0. This patch is available through the Aruba Support site or through the Software Updates portal.

- For 6.3.x upgrades, you must update to 6.3.6 followed by applying the ClearPass 6.6.0 Upgrade Preparation Patch before upgrading to 6.6.0. This patch is available through the Aruba Support site or through the Software Updates portal.
- For 6.1.x and 6.2.x, direct upgrades are not supported. Customers on 6.1.x or 6.2.x must intermediately upgrade to 6.3.6, 6.4.7, or 6.5.x first before upgrading to 6.6.0.
- For appliance upgrades from 5.2.0, you must upgrade to 6.3.6, 6.4.7, or 6.5.x before upgrading to 6.6.0.
- Upgrade images are available within ClearPass Policy Manager from the Software Updates portal at **Administration > Agents and Software Updates > Software Updates**.
- Upgrade images are also available for download on the Support site under **ClearPass > Policy Manager**.
- If you are running Avenda eTIPS 3.5.0 or earlier on an Aruba Networks ET-5000 series hardware appliance, you must upgrade to ClearPass Policy Manager 5.2.0, and then upgrade to 6.3.6 or 6.4.x before upgrading to 6.6.0.

Upgrading via the Software Updates Portal

This section describes how to upgrade to ClearPass 6.6 using the ClearPass Policy Manager Software Updates Portal.



For alternate upgrade methods for nodes that are not connected to the Internet, see "[Appendix A: Performing an Offline Upgrade](#)" on page 12.

To upgrade to ClearPass 6.6:

1. Open ClearPass Policy Manager.
2. Navigate to **Administration > Agents and Software Updates > Software Updates**.

The Software Updates Portal opens.

Figure 2 ClearPass Policy Manager Software Updates Portal

Administration » Agents and Software Updates » Software Updates

Software Updates

Subscription ID

Subscription ID:

Save

Reset

Posture & Profile Data Updates

Update Type	Data Version	Data Created	Last Update	Last Updated	Update Status
AntiVirus & AntiSpyware Updates	1.35505	2016/04/06 00:00:03	Online	2016/04/06 00:33:01	Latest
Windows Hotfixes Updates	1.1606	2016/04/05 04:16:14	Online	2016/04/05 04:20:03	Latest
Endpoint Profile Fingerprints	2.353	2016/03/28 22:41:57	Online	2016/04/04 18:42:08	Updated 1 day ago
User-Agents Updates	1415402581	2014/11/07 15:23:01	Online	2015/05/19 10:04:24	Updated 322 days ago

Import Updates

To manually import Posture & Profile Data Updates, refer to Help for this page.

Firmware & Patch Updates

Update Type	Name	Version	Size (MB)	Update Released	Last Checked	Status	Delete
Upgrade	ClearPass Upgrade version 6.6.0.80940*	-	1529.6236	2016/04/06	2016/04/05 04:05:05	Download	-
Upgrade	ClearPass Upgrade version 6.6.0.81015*	-	1529.7596	2016/04/06	2016/04/05 04:05:05	Download	-
Patch	OpenSSL fix for CVE-2015-1793*	-	1.7256	2015/07/14	2016/04/05 04:05:05	Download	-
Patch	MySQL driver updates	-	0.1580	2016/01/12	2016/04/05 04:05:05	Download	-
Patch	ClearPass Cumulative Patch 3 for 6.5.0, 6.5.1 & 6.5.2*	-	1049.4087	2015/11/18	2016/04/05 04:05:05	Download	-

3. From the **Firmware & Patch Updates** section, locate the appropriate Upgrade file, and then click **Download**.

The Policy Manager Upgrade executable file downloads to your local system. After you have downloaded the Upgrade file, the button in the **Status** column changes to **Install**.

4. Click **Install**.

The installation process for the selected ClearPass upgrade begins.

The **Install Update** dialog opens and displays the installation log messages that are generated during the installation process.

Performing a Cluster Upgrade

This section describes how to upgrade a ClearPass Cluster to ClearPass 6.6.

A ClearPass cluster comprises one publisher node and one or more ClearPass servers acting as subscribers. In a ClearPass cluster, configuration changes can be performed on the ClearPass publisher; they are then replicated to the subscribers. You cannot make configuration changes on subscriber nodes. Each node in a ClearPass cluster operates as a fully functional ClearPass server.



To upgrade a cluster to 6.6.0, we recommend using the Cluster Upgrade Tool.

ClearPass Cluster Upgrade Overview

You must upgrade the publisher node in the ClearPass cluster first, before any of the subscriber nodes are upgraded. If you are using the Session Log Database as an authentication/authorization source, contact ClearPass Support for assistance with the upgrade procedure before upgrading (see [Session Log Database](#) below).

Upgrading each ClearPass node is a two-step process:

1. On the node you need to upgrade, initiate the upgrade from either the Policy Manager user interface or the command line interface (CLI).

The upgrade operation installs the file system for the new version in a secondary location on disk. All services on the node will continue to function and service requests as usual; however, there might be some performance impact due to disk I/O activity.

2. Reboot

- a. ClearPass databases are initialized upon reboot. All ClearPass services are inaccessible during this time. The amount of time required for this operation depends on the size of your configuration and Insight databases.
- b. If this is a subscriber node, it is added back into the cluster. The amount of time required for this operation depends on the size of your configuration database and the nature of the network link to the publisher node.
- c. The Administration user interface and all services are backed up. The Event Viewer displays the message "Upgrade complete."

Session Log Database

In this release, the Session Log Database is not restored as part of the upgrade process. For more information, see ["Restoring the Session Log Database" on page 10](#). The Session Log Database contains the following elements:

- Access Tracker and accounting records
- Event Viewer
- ClearPass Policy Manager Application Log



If you are using the Session Log Database as an authentication/authorization source, contact ClearPass Support before upgrading for assistance with the upgrade procedure,

Insight Database

The Insight database is *not* part of the Session Log Database. The Insight database is automatically migrated as part of the upgrade process.

Summary of Cluster Upgrade Tasks

This section summarizes the high-level tasks you must complete for a successful cluster upgrade. Each of these tasks is discussed in detail in the following sections:

1. "Preparing for the Upgrade" on page 5
2. "Clearing the Standby Publisher Configuration" on page 5
3. "Upgrading the Publisher Node" on page 7
4. "Upgrading the Subscriber Nodes" on page 8
5. "Recovering from a Failed Upgrade" on page 11

Preparing for the Upgrade

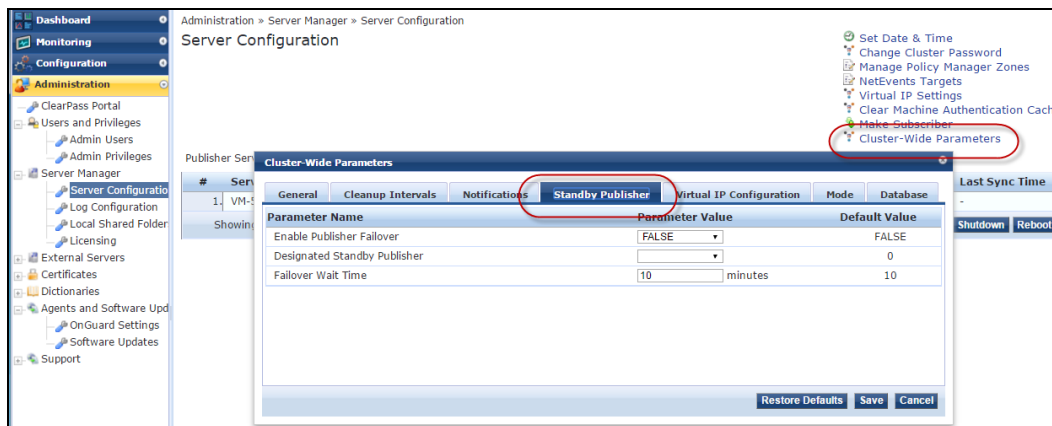
For details on the tasks you need to complete to prepare for the upgrade, see "Before You Upgrade ClearPass Policy Manager" on page 1.

Clearing the Standby Publisher Configuration

If you have configured a standby publisher, clear the Standby Publisher configuration:

1. Navigate to **Administration > Server Manager > Server Configuration > Cluster-Wide Parameters**.
2. From the **Cluster-Wide Parameters** page, select the **Standby Publisher** tab.

Figure 3 Standby Publisher Tab



3. To clear the Standby Publisher configuration:
 - a. *Enable Publisher Failover*: Set to **FALSE**.
 - b. *Designated Standby Publisher*: Leave the field blank.
 - c. *Failover Wait Time*: N/A
 - d. Click **Save**.



When the upgrade is complete, manually reconfigure the Standby Publisher configuration (see "[Reconfiguring the Standby Publisher Configuration](#)" on page 9).

Upgrading the Publisher Node

You must upgrade the publisher node in the ClearPass cluster first, before any of the subscriber nodes are upgraded.

To upgrade the publisher node:

1. Initiate an upgrade from the Software Updates Portal or from the CLI interface.
2. After the upgrade completes, click **Reboot** in the Software Updates Portal.
 - a. Alternately, if you performed the upgrade from the CLI, run the **system restart** command to reboot the appliance.

After rebooting, the appliance restores and initializes the configuration database in the new version.



Based on the size of the configuration database, the upgrade process on the publisher can take up to one or two hours or more, depending on the database size, node type, and VM disk I/O activity. If the number of audit records in your network is in the hundreds of thousands (typically due to Mobile Device Management (MDM) integration with ClearPass), this can significantly increase upgrade times by several hours.

3. To confirm that the upgrade is still in progress, log in to the CLI as username *appadmin*.

The following banner message is displayed:

CPPM upgrade in progress. Please do not modify configuration.



The ClearPass Administration user interface will not be available during the upgrade process. *Do not* attempt to start the Administration service from the CLI.



If the upgrade is in progress, do not perform any CLI operations, such as stopping or starting services, configuring networking, or powering off the appliance. This will interrupt the upgrade and leave the server in an inconsistent state.

4. The upgrade is complete only when all of the following conditions are true:
 - a. When you log in to the CLI as *appadmin*, the message "CPPM upgrade in progress..." is not displayed.
 - b. You can access the Policy Manager Administration user interface.
 - c. In the Event Viewer, an "Upgrade complete" event is registered.
 - d. All system services are running.
5. Verify a successful upgrade by performing several test authentications against the publisher.

If the Upgrade Did Not Complete Successfully

- If the upgrade process did not complete successfully, or you notice problems in sanity tests after the upgrade has completed, follow the steps to recover the publisher that are described in ["Recovering from a Failed Upgrade" on page 11](#).
- If possible, collect and download logs for analysis.
- This is also the best time to stop the cluster upgrade procedure and recover from a failed upgrade.



Do not upgrade any subscriber nodes until the publisher node upgrade failure is resolved.

Upgrading the Subscriber Nodes

After the publisher has upgraded completely and is fully operational, begin upgrading subscriber nodes, one node at a time.

When the subscriber node upgrade is completed, the cluster relationship is re-established automatically, and the subscriber node rejoins the cluster.

1. Initiate the upgrade for the first subscriber node from the Software Updates Portal or from the CLI interface.

While the upgrade is in progress, the publisher node's Dashboard / Server Configuration screen might indicate that the subscriber node is "down." This is normal and the status will be restored after the upgrade process is completed.

2. After the subscriber node upgrade completes, click **Reboot** in the Software Updates Portal.
 - a. Alternatively, if you performed the upgrade from the CLI, run the **system restart** command to reboot the appliance.

Upon reboot, the node is added back to the cluster as a subscriber. Depending on the size of the configuration database, this could take an hour or more.



Do not upgrade multiple subscriber nodes and restart them at the same time. Subscriber nodes must be upgraded and restarted one at a time.

3. To confirm that the upgrade is still in progress, log in to the CLI with the following username: *appadmin*.
The following banner message is displayed:

CPPM upgrade in progress. Please do not modify configuration.



The ClearPass Administration user interface will not be available during the upgrade process. *Do not* attempt to start the Administration service from the CLI.



If the upgrade is in progress, do not perform any CLI operations, such as stopping or starting services, configuring networking, or powering off the appliance. This will interrupt the upgrade and leave the server in an inconsistent state.

4. The upgrade is complete only when all of the following are true:
 - a. When you log in to the CLI as *appadmin*, the message "CPPM upgrade in progress..." is not displayed.
 - b. You can access the ClearPass Administration user interface.
 - c. In the Event Viewer, an "Upgrade complete" event is registered.
 - d. All system services are running.
5. From the publisher user interface, verify that the subscriber node **Cluster Sync** status is enabled.
6. Repeat these steps for each subscriber node.

Restoring Configurations Lost During the Upgrade Process

Some configuration elements are not carried over during the upgrade process. You might need to restore the following configurations:

- Standby publisher
- Custom values configured for logs

After a Successful Upgrade

This section describes the tasks that you might need to perform in order to restore configuration elements that were not migrated during the successful upgrade to Policy Manager 6.6.

This section contains the following topics:

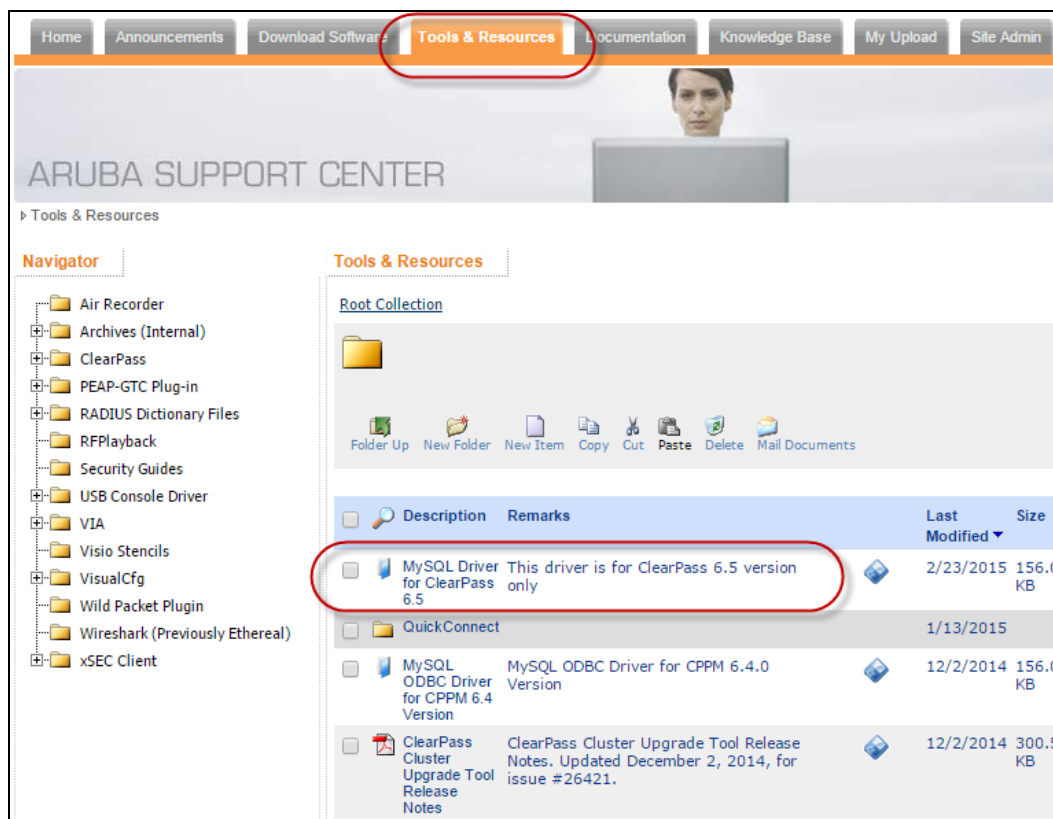
- "Reinstalling the MySQL Driver" on page 9
- "Reconfiguring the Standby Publisher Configuration" on page 9
- "Restoring Custom Modifications" on page 10
- "Restoring the Session Log Database" on page 10

Reinstalling the MySQL Driver

If you are using MySQL and have installed the MySQL driver from Aruba Networks, the MySQL driver needs to be reinstalled after the upgrade is complete. A driver patch for your specific version of ClearPass is available from the [Aruba Support Center](#).

1. Log in to the Aruba Support Center and select **Tools & Resources**.
2. Open the ClearPass folder.

Figure 4 ClearPass Folder in the Tools & Resources Tab



3. Choose the appropriate MySQL driver.

Reconfiguring the Standby Publisher Configuration

If you cleared the configuration of the Standby Publisher (see "Clearing the Standby Publisher Configuration" on page 5), you must manually reconfigure the Standby Publisher configuration.

1. Go to **Administration > Server Manager > Server Configuration > Cluster-Wide Parameters**.

- From the Cluster-Wide Parameters page, select the **Standby Publisher** tab.

Figure 5 Cluster-Wide Parameters: Standby Publisher Page

Parameter Name	Parameter Value	Default Value
Enable Publisher Failover	FALSE	FALSE
Designated Standby Publisher		0
Failover Wait Time	10 minutes	10

- Reset the Standby Publisher parameters to the desired settings, then click **Save**.

Restoring Custom Modifications

Any custom modifications performed on the ClearPass Server during the course of its operation, such as changing system-level parameters while logged in as *arubasupport* by Aruba TAC, are not carried over during the upgrade process.

- You can incorporate custom changes into the ClearPass configuration after the upgrade is complete. In this scenario, you should apply these custom configuration parameters via the ClearPass configuration process.
- User modifications on default services (for example, dynamically received data, such as Guest SSIDs) are not carried forward after the upgrade. You must reconfigure these inputs after you upgrade.

Restoring the Session Log Database

To reduce downtime during the upgrade process, the default upgrade behavior backs up the Session Log Database and Access Tracker records, but they are not restored as part of the upgrade. If required, you can manually restore them after the upgrade through the user interface.



The Insight databases are automatically restored as part of the upgrade process.

The Session Log Database contains the following components:

- Access Tracker and Accounting records
- Event Viewer
- ClearPass Guest Application Log



Do not restore the Session Log Database on the Publisher node while any node in the cluster is still undergoing the upgrade process.



Depending on the size of your Session Log Database, the restoration process could take several hours. All services are accessible and the services can handle requests during the restoration, but there is a performance impact while the restoration is in progress. Aruba recommends that you perform this operation during a planned change window.

To restore the Session Log Database after the upgrade through the user interface:

- Go to **Administration > Server Manager > Local Shared Folders**.
- Restore the Session Log Database from the auto-generated **upgradebackup.tar.gz** file.
- Repeat this process on each server in the cluster that should retain the Session Log Database.

The log restoration process continues in the background even if the user interface is closed or the session times out. When the log restoration is complete, a “Restore complete” event is logged in the Event Viewer.

1. Go to **Administration > Server Manager > Server Configuration**.
2. Select the appropriate server, then click **Restore**.
3. In the Restore Policy Manager Database window:
 - a. Select the **File is on server** option.
 - b. Select the **upgrade-backup.tar.gz** file.
4. Also select (enable) the following options:
 - **Restore CPPM session log data (if it exists on the backup)**
 - **Ignore version mismatch and attempt data migration**
 - **Do not back up the existing databases before this operation**
5. Uncheck (disable) the **Restore CPPM configuration data** option.
5. Click **Start**.

Recovering from a Failed Upgrade

The upgrade process can fail due to multiple reasons. When there is an upgrade failure, you can recover the ClearPass appliance to the earlier version using the following steps:

1. If the ClearPass Administration user interface is accessible after the upgrade, collect logs on the upgraded version so that Aruba Support can analyze them.
2. Log in to the CLI of the appliance as user *appadmin*.
3. You can view the list of ClearPass versions currently installed on the appliance by running the following command:

```
system boot-image -l
```

The screen shown in [Figure 6](#) appears:

Figure 6 System Command Boot-Image Screen

```
[appadmin@rr-dell-eval]# help
ad          Domain Controller set of commands
alias       Create aliases
backup      Backup Policy Manager data
cluster     Policy Manager cluster related commands
configure   Configure the system parameters
dump        Dump Policy Manager information
exit        Exit the shell
help        Display the list of supported commands
krb         Kerberos authentication commands
ldapsearch  Search entries in the LDAP repository
network     Network troubleshooting commands
quit        Exit the shell
restore     Restore Policy Manager database
service     Control Policy Manager services
show        Show configuration details
system      System commands

[appadmin@rr-dell-eval]# system boot-image -l
ClearPass Platform 6.2.1.56137 on SCSI (0:1)
Aruba ClearPass 6.3.0.61700 [Active] on SCSI (0:0)

[appadmin@rr-dell-eval]# _
```

4. To select the previous version to boot up on restart, run the command:

```
system boot-image -a <version number>
```

For example:

```
system boot-image -a 6.5.0.54353
```

5. Then restart the system by issuing the following command:

system restart

The system boots into the earlier version of ClearPass.

6. Take care to revert the publisher node *before* you revert any Subscriber nodes that might have been upgraded.
7. Verify that all subscriber nodes continue to be part of the cluster and are replicating correctly.
8. If a subscriber node is disabled in the publisher, manually add the node back into the cluster.

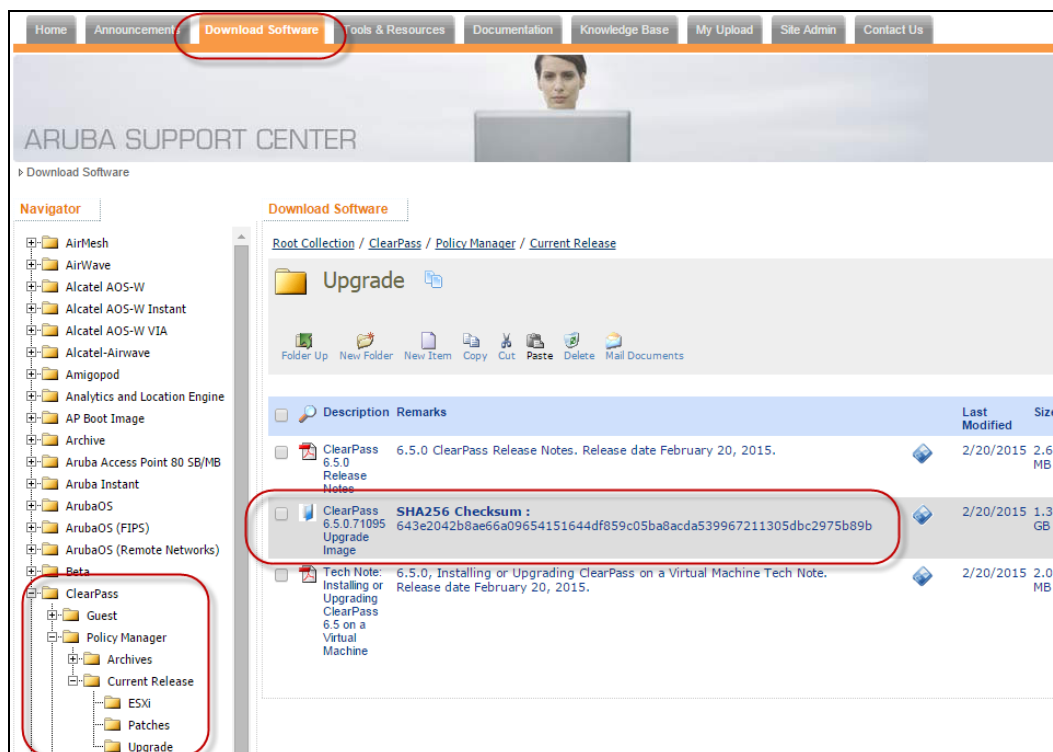
Appendix A: Performing an Offline Upgrade

This section describes how to perform an offline upgrade to ClearPass 6.6. An offline upgrade is necessary when ClearPass is not connected to the Internet and so cannot download the upgrade image from the Software Updates Portal.

To download the ClearPass 6.6 Upgrade image file:

1. Log in to the [Aruba Support Center](#) and select the **Download Software** tab.
2. From the Navigator panel, choose the **ClearPass > Policy Manager > Current Release > Upgrade** folder.

Figure 7 Upgrade Folder for the Current Release



3. In the **Description/Remarks** section, click the link for the appropriate upgrade file.

The upgrade file is downloaded to your local system.

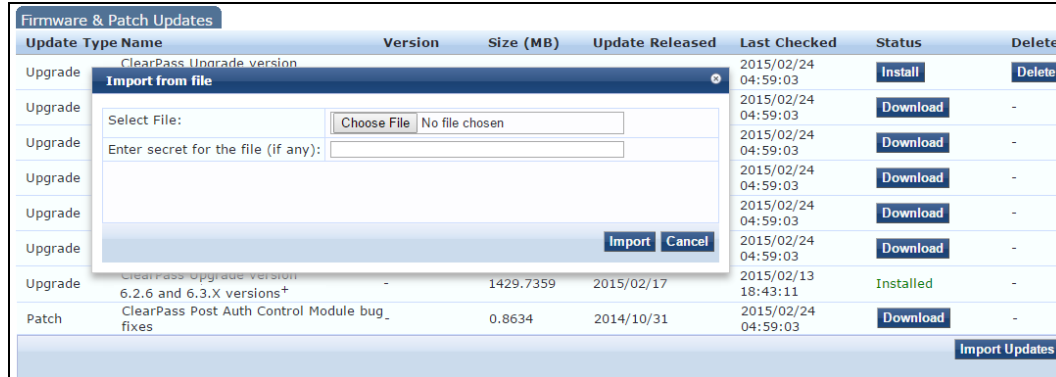
Be sure to note the location on your system where the downloaded file is saved.



- Go to the ClearPass Policy Manager Software Updates Portal at **Administration > Agents and Software Updates > Software Updates**.
- In the **Firmware & Patch Updates** section of the Software Updates Portal, click the **Import Updates** button.

The **Import from File** dialog opens.

Figure 8 *Import from File Dialog*



- Browse to the location of the upgrade file on your system.
- Click **Import**.

The selected upgrade file is uploaded to ClearPass. Once the upload completes, the upgrade image will be listed in the Firmware & Patch Updates section.

- In the **Firmware & Patch Updates** section of the Software Updates Portal, click **Install**.

The installation process for the selected ClearPass upgrade begins.

The **Install Update** dialog opens and displays the installation log messages that are generated during the installation process.

Upgrading from an SCP Server or Web Server

The **system upgrade** command also supports upgrading the ClearPass image from a Secure Copy Protocol (SCP) server and a Web server.

Upgrading from an SCP Server

To upgrade the ClearPass image from an SCP server:

- Upload the upgrade image to your SCP server.
- Use the following syntax to upload the upgrade image:

```
system upgrade user@hostname:/<filename> [-w] [-l] [-L]
```

Upgrading from a Web Server

To upgrade the ClearPass image from a Web server:

- Upload the upgrade image to a Web server.
- Use the following syntax to upload the upgrade image:

```
system upgrade http://hostname:/<filename> [-w] [-l] [-L]
```