SOFTWARE UPGRADE GUIDE

Cloudpath Enrollment System Upgrade Guide, 5.8

Supporting Cloudpath Software Release 5.8

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Product Upgrade Overview

This document describes how to upgrade your Cloudpath virtual appliance to a newer version of the application.

The intended audience for this publication is a Network Administrator.

The Cloudpath Enrollment System (ES) product upgrades are released periodically, both in the form of a new OVA file (for new installs) and as an update for existing virtual appliances. Each Cloudpath update contains updates and patches for the application and the operating system. The list of available updates is visible on the **Administration** > **System Updates** tab.

FIGURE 1 System Updates

If you do not see an upgrade version on your **System Updates** page, click the **Check for Updates** button.

NOTE
If you are upgrading replicated servers, refer to the release notes and to the *Cloudpath Enrollment System Replication Configuration Guide*.

Upgrade Process

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Upgrade Process Overview

This section describes the processes for upgrading the Cloudpath system.

NOTE
Certain upgrades, such as those with major operating system changes, require a database import instead of a normal System Update using the Cloudpath Admin UI. Refer to the *Release Notes* for your upgrade version for additional instructions.

Upgrades for Hosted Deployments

After a release, Cloudpath updates the hosted system (onboard.cloudpath.net) to the most current Cloudpath version. You can begin to make use of new Cloudpath features immediately. After making configuration changes on the updated Cloudpath, you must publish your existing workflows. Go to **Configuration** > **Workflows**, and click the **Publish** icon in the top left of the workflows table.

Taking a VM Snapshot of On-Premise Deployments

It is strongly recommended that you take a Virtual Machine (VM) snapshot of your deployment before upgrading Cloudpath.

NOTE
For Hyper-V deployments, refer to the *Cloudpath Enrollment System Microsoft Hyper-V Deployment Guide*.

To take a snapshot of the VM:

1. From the virtualization software client (VMware vSphere Client), select your virtual image, right-click and select **Snapshot** > **Take Snapshot**.
2. Enter the **Name** and **Description** of the snapshot. Provide enough details in the description so that other administrators can understand what is in each snapshot.
3. Select **Snapshot machine's virtual memory**.
4. (Optional) If VMware Tools is installed, you can also select **Quiesce guest file system** to pause running processes before you take a snapshot.

   See How to Increase the Virtual Appliance Memory on page 13, if needed.

Upgrades for On-Premise Deployments

There are two methods for upgrading your Cloudpath virtual appliance.

- Update your existing system from the Cloudpath Admin UI (**Administration** > **System Updates**). See Upgrading Cloudpath Using the Admin UI on page 8.
- Set up a virtual appliance using the new OVA and import the database from the existing system. See How to Import the Database From An Existing System on page 8.

Upgrading Cloudpath Using the Admin UI

We recommend that you have at least 6GB RAM before you upgrade. Refer to the *Cloudpath virtual appliance configuration* document on the **Support** tab before checking and changing memory.

1. Go to **Administration** > **System Updates**
2. Expand the **Update** section for the upgrade version.
3. **NOTE**
   Depending on your current version (especially, if you are running a very old version), you might be required to upgrade one version at a time instead of going directly to the new version. This is typically required if there were extensive database changes between versions.

   Click the icon on the right side for the selected update. The button is green for the active build version, and clear for available build version.
4. After several minutes the server restarts. During the initial login, you might be prompted for information.
5. Go to **Administration** > **System Updates** to confirm the update.

   If the Cloudpath Admin UI login page does not appear after you upgrade, try rebooting the system.
6. After upgrading Cloudpath, go to **Administration** > **System Updates**, expand the current update, and click the **Resync** button.
7. After upgrading Cloudpath, you must republish each workflow. Navigate to **Configuration** > **Workflows**, and select the workflow, and click the **Publish** icon in the top left corner of the workflows table.

When you publish your workflow on the Cloudpath system, we recommend that you select the Newest available Wizard version.

How to Import the Database From An Existing System

To import the database from an existing system, you must first deploy a new VM and then import the database of the old system using the CLI.

NOTE
It is recommended to perform a database import during slow network periods. While the RADIUS server can authenticate enrollments during database import, these enrollments will not be migrated over to the new system.

Deploying a New Virtual Machine

Use the following steps to deploy and set up a virtual appliance using the new OVA.

1. Open the VMware client.
2. Select **File** > **Deploy OVF Template**.

3. Enter the file path or URL where the OVA file resides.
4. Accept the EULA.
5. Enter a unique name for the virtual appliance.
6. Select one of the following deployment configurations:
   - Non-Production POC - Deploys using 6GB RAM and 2 vCPUs x 1 Core. Recommended for software trials, feature testing, and other non-production systems.
   - 4,000 or Fewer Users - Deploys using 8GB RAM and 2 vCPUS x 2 Cores. Recommended for production systems with fewer than 4,000 users.
   - 8,000 or Fewer Users - Deploys using 12GB RAM and 2 vCPUS x 4 Cores. Recommended for production systems with fewer than 8,000 users.
   - More than 8,000 Users - Deploys using 16GB RAM and 2 vCPUS x 4 Cores. Recommended for production systems with more than 8,000 users.
   - More than 20,000 Users - Deploys using 20GB RAM and 2 vCPUS x 4 Cores. Recommended for production systems with more than 20,000 users.
7. If you are using VMware vCenter™ Server to manage your virtual environment, select the appropriate data center, cluster, host, and destination storage, as needed.
8. Select one of the following disk formats:
   - Use *Thick* provisioning for a production environment. For a thick provision, the total space required for the virtual disk is allocated during creation.

     NOTE
     If you are using Fault Tolerance, you must select *Thick* provisioning.

   - Use *Thin* provisioning for testing, or if disk space is an issue. A thin provisioned disk uses only as much datastore space as the disk initially needs. If the thin disk needs more space later, it can grow to the maximum capacity allocated to it.

Continue with the OVA deployment.

For more information about VM settings, refer to the *Cloudpath Enrollment System VMware™ Server Deployment Guide*.

Database Import Command

After the OVA has been deployed, network configuration is completed, and the system has rebooted, log into the system command line.

NOTE
It is no longer necessary to log into the Admin UI and bind the system before importing the database.

Use the following command from the new system CLI shell:

```
# maintenance cannibalize [IP address or hostname of existing system]
```

For example:

```
# maintenance cannibalize 172.16.4.20
```

Example of DB Import Process

The following is an example of the server messages during the db import process.

```
------------------------------------------------------------------------
```

```
Cloudpath Configuration Console

Use of this system signifies your agreement to the Cloudpath EULA.
Portions of this system utilize open source software. See
www.cloudpath.net/opensource for related licenses and information.

--------------------------------------------------------------------------

Type '?' For Help

# maintenance cannibalize servername.cloudpath.net

------------------------------------------------------------------------------

  WARNINGS:
  1. Before proceeding, create a VM snapshot of ob5clone.cloudpath.net.
  2. Data on the localhost will be deleted and replaced with
     the data currently on ob5clone.cloudpath.net.

------------------------------------------------------------------------------

  The data will be retrieved from:
    Remote VM: servername.cloudpath.net:8022
    Remote Username: cpn_service
    * You will be prompted for the password of the remote VM.

  This process may take several minutes.

  Do you want to continue? [y/n] y

  When prompted, enter the password for the remote VM.
  The authenticity of host '[servername.cloudpath.net]:8022 ([17.16.4.20]:8022)'
  can't be established.

RSA key fingerprint is b5:4e:ae:a5:98:b6:b3:84:fb:da:49:13:36:a7:53:6c.
Are you sure you want to continue connecting (yes/no)? yes
cpn_service@ob5clone.cloudpath.net's password:

  Connection established. Processing...
  Will prepare remote system for export...
  Will begin shrinking remote system...
  Will export configuration of remote server...
  Will stop application on local system...
  Will prepare local system for import...
  Will transfer data from remote system to local system...
  [For large tables, this step may take a considerable amount of time.]
    Transferring table 1 (ac)...
    Transferring table 2 (ac)...
    Transferring table 3 (ac)...
    Transferring table 4 (ac)...
    Transferring table 5 (ac)...
    Transferring table 6 (au)...
    Transferring table 7 (au)...
    Transferring table 8 (au)...
    Transferring table 9 (au)...
    Transferring table 10 (ce)...
    Transferring table 11 (ce)...
    Transferring table 12 (ce)...
    Transferring table 13 (ce)...
    Transferring table 14 (co)...
    Transferring table 15 (co)...
    Transferring table 16 (co)...
    Transferring table 17 (cp)...
    Transferring table 18 (cu)...
    Transferring table 20 (de)...
    Transferring table 21 (de)...
    ....
    ....
    Transferring table 103 (wo)...
    Completed transfer of 100 tables.

Will export config file from remote server...
```

```
--------------------------------------------------------------------------------
Data from servername.cloudpath.net has been imported into the local VM.
--------------------------------------------------------------------------------

Do you want to move the IP to this VM and shutdown the other VM? [y/n] y

Will wait for other system to shutdown completely...

Will apply network settings and reboot...
```

Reconfigure New Server With Production IP Address and Hostname

When the database import is finished, you are prompted to move the IP address and shut down the old system.

```
Do you want to move the IP to this VM and shutdown the other VM? [y/n]
```

Enter **y** to have the system automatically move the network configuration to the new server and shut down the old one.

To do this operation manually, at a later time, follow these instructions:

1. Power down the old server to avoid duplicate IP addresses.
2. Enter the following commands:

   ```
   # config hostname [FQDN hostname of old server]
   # config network STATIC ip [IP address of old server] [netmask] [gateway]
   # system restart
   ```

   After the system restarts, you can begin using the new system.

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Troubleshooting Overview

Most upgrade issues revolve around memory and disk space.

To troubleshoot and address memory or disk space upgrade issues, see the following sections.

NOTE
For Hyper-V deployments, refer to the *Deploying Cloudpath as a Virtual Appliance Using Microsoft Hyper-V Manager* document.

How to Increase the Virtual Appliance Memory

Use these instructions if you want to change the memory configuration of a virtual machine's hardware.

1. From the vCenter client, power off the virtual appliance.
2. Select the VM, and right-click to **Edit Settings**.
3. With the **Hardware** tab selected, select **Memory**.
4. On the right window pane, increase the **Memory Size**.
5. Click **OK**.
6. Power on and reboot the VM.

How to Expand the MySQL Partition Size Using the vCenter Client

Use these instructions to expand size of the partition used for MySQL database operations. using the vCenter Client.

1. With the VM running, select the **VM** and right-click to **Edit Settings**.
2. With the **Hardware** tab selected, select **Hard disk 2**.
3. On the right pane, in the **Disk Provisioning** section, increase the **Provisioned Size** to the desired size and click **OK**.

   If the **Provisioned Size** cannot be selected, try restarting the server using the **sudo halt** command.

How to Expand the MySQL Partition Size from the Console

Use these instructions to expand size of the partition used for MySQL database operations. using the vCenter Client.

1. View the amount of free disk space available.

   ```
   [root@localhost cpn_service]# df -h
   ```

2. Signal to the OS that there has been a hardware change to the disk.

   ```
   [root@localhost cpn_service]# echo '1' > /sys/class/scsi_disk/2\:0\:1\:0/device/ rescan
   ```

3. Expand the physical volume.

   ```
   [root@localhost cpn_service]# pvresize /dev/sdb -v
   ```

4. Extend the size of the logical volume for MySQL operations.

   This example shows that we are extending the size of the logical volume by adding 25GB.

   ```
   [root@localhost cpn_service]# lvextend -L +25G /dev/mapper/application_vg-mysql
   ```

5. Resize the file system.

   This example resizes the file system, writes your changes to disk, and completes the partition expansion process.

   ```
   [root@localhost cpn_service]# resize2fs /dev/mapper/application_vg-mysql
   ```

6. Verify the amount of free disk space available.

   ```
   [root@localhost cpn_service]# df -h
   ```

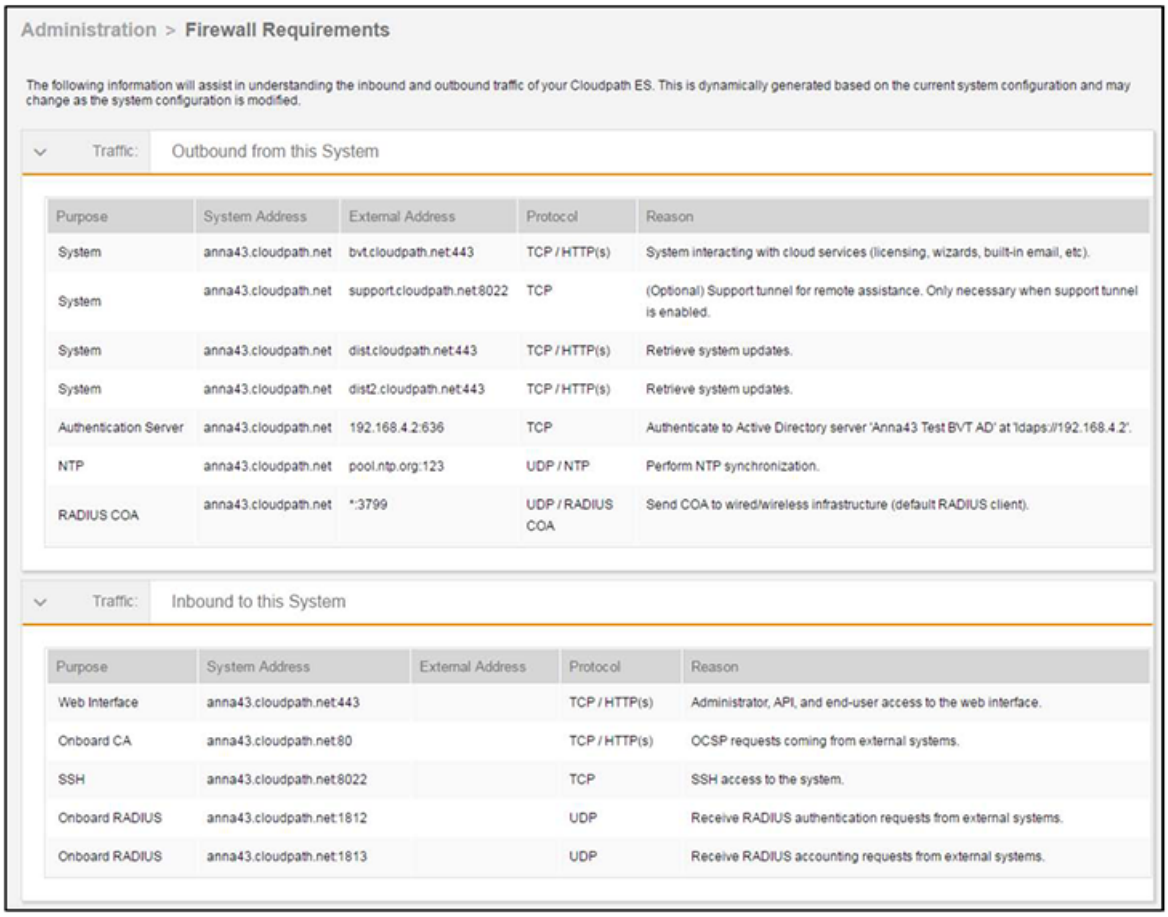
   The output should indicate the increased partition size.

Firewall Settings

The Cloudpath Admin UI provides a table that lists the inbound and outbound traffic of your Cloudpath. This information is dynamically generated based on the current system configuration and can changes as the system configuration is modified.

Go to **Administration** > **Firewall Requirements** to view the Cloudpath traffic for you network and ensure that your firewall ports have been correctly configured.

FIGURE 2 Firewall Requirements



Administration > Firewall Requirements

The following information will assist in understanding the inbound and outbound traffic of your Cloudpath ES. This is dynamically generated based on the current system configuration and may change as the system configuration is modified.

Traffic: Outbound from this System

Purpose	System Address	External Address	Protocol	Reason
System	anna43.cloudpath.net	bvt.cloudpath.net:443	TCP / HTTP(s)	System interacting with cloud services (licensing, wizards, built-in email, etc).
System	anna43.cloudpath.net	support.cloudpath.net:8022	TCP	(Optional) Support tunnel for remote assistance. Only necessary when support tunnel is enabled.
System	anna43.cloudpath.net	dist.cloudpath.net:443	TCP / HTTP(s)	Retrieve system updates.
System	anna43.cloudpath.net	dist2.cloudpath.net:443	TCP / HTTP(s)	Retrieve system updates.
Authentication Server	anna43.cloudpath.net	192.168.4.2:636	TCP	Authenticate to Active Directory server 'Anna43 Test BVT AD' at 'ldaps://192.168.4.2'.
NTP	anna43.cloudpath.net	pool.ntp.org:123	UDP / NTP	Perform NTP synchronization.
RADIUS COA	anna43.cloudpath.net	*:3799	UDP / RADIUS COA	Send COA to wired/wireless infrastructure (default RADIUS client).

Traffic: Inbound to this System

Purpose	System Address	External Address	Protocol	Reason
Web Interface	anna43.cloudpath.net:443		TCP / HTTP(s)	Administrator, API, and end-user access to the web interface.
Onboard CA	anna43.cloudpath.net:80		TCP / HTTP(s)	OCSP requests coming from external systems.
SSH	anna43.cloudpath.net:8022		TCP	SSH access to the system.
Onboard RADIUS	anna43.cloudpath.net:1812		UDP	Receive RADIUS authentication requests from external systems.
Onboard RADIUS	anna43.cloudpath.net:1813		UDP	Receive RADIUS accounting requests from external systems.