PANDUIT™

infrastructure for a connected world

Active Control Installation Guide

Release 7.1
Issue 1

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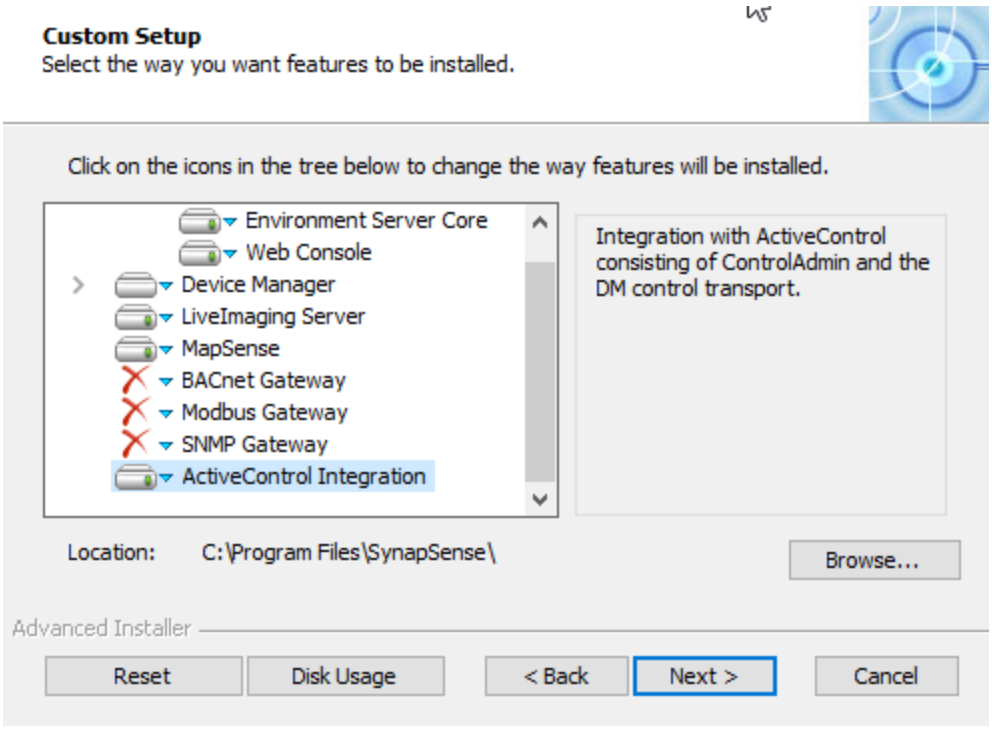
SynapSense Active Control Installation Guide

These Active Control installation instructions are an extension of the main SynapSense Software Installation Guide. It is assumed that the core product installation and configuration is complete and working as designed, including the following:

- SynapSense Database
- JBoss™
- SynapSense Environment Server
- SynapSense Web Console
- SynapSense Device Manager
- SynapSense MapSense
- SynapSense LiveImaging™
- Optional components, as required

In addition, the Active Control Integration feature must also be selected. This will install the SynapSense ControlAdmin Tool.



Please refer to the SynapSense Software Installation Guide or contact SynapSense Technical Support for questions not answered in this document.
Note: It is important that you log in with Administrator Rights and disable any active virus scanning software before starting the installation process. If SynapSense Environment

Server is using Windows® Server 2012, the system may require login as the local “Administrator” user to enable installation of Active Control to the Program Files directory.

Panduit Technical Support

Severity 1 & 2 Issues:

Americas: 1-866-721-5302 x86810 during normal Central Standard Time business hours

EMEA: 44-1291-674-661 x22761 during normal U.K. business hours

APAC: 65-8200-3931 or 65-8200-3932 between 8 a.m. and 5 p.m. local time

Severity 3 & 4 Issues, Email - normal business hours:

systemsupport@panduit.com

Active Control Hardware

Panduit provides the customer with two appliances on which Active Control will be installed. The customer:

- Finds locations for the appliances and installs them.
- Plugs in the network cables
- Plugs in the power cables
- Runs the SynapSense ControlAdmin Tool to configure the appliances for use

The two appliances:

- Run nanoBSD, a version of FreeBSD.
- Are accessed via an SSH connection via the configuration tool
- Run in active mode

The data center rooms are balanced across the appliances. If one appliance fails, the other will pick up the rooms that were running on the failed appliance. When the failed appliance comes back up, the rooms will once again be balanced across the appliances.

Installing SynapSense Active Control

SynapSense Active Control adjusts the CRAC/CRAH temperature set point and fan speed settings to optimize cooling energy use in the data center. This application requires the installation of additional CRAH/fan control hardware. Once installed, additional functionality is enabled in the Web Console to configure and monitor Active Control parameters.

For redundancy and high availability, Active Control is installed on two appliances, which come pre-configured with an IP address and Active Control installed. To complete installation, the configuration tool must be run. See "Active Control Configuration" on the facing page.

Note: There is no need to back up appliances. Appliances only perform Active Control calculations such as determining setpoints and identifying the area-of-effect for CRAH/CRAC units. They do not store data or states.

Gather Data Required During Install

Collect the following information prior to installation:

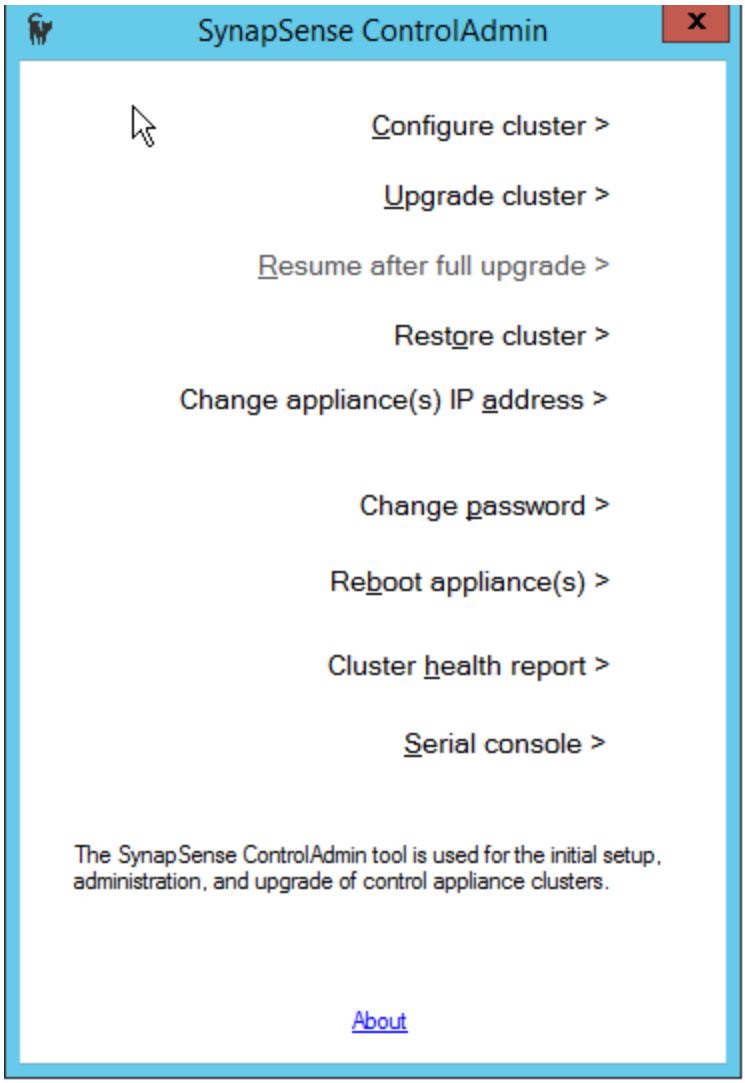
- Host name for Primary Active Control server.
- Host name for Sibling (secondary) Active Control server

The host name and IP address for the Active Control appliances will be needed. This information will be assigned by a network administrator.

All of the necessary information will be gathered by the SynapSense ControlAdmin Tool when it is run. The tool must be run on the machine hosting the Environmental Server.

Active Control Configuration

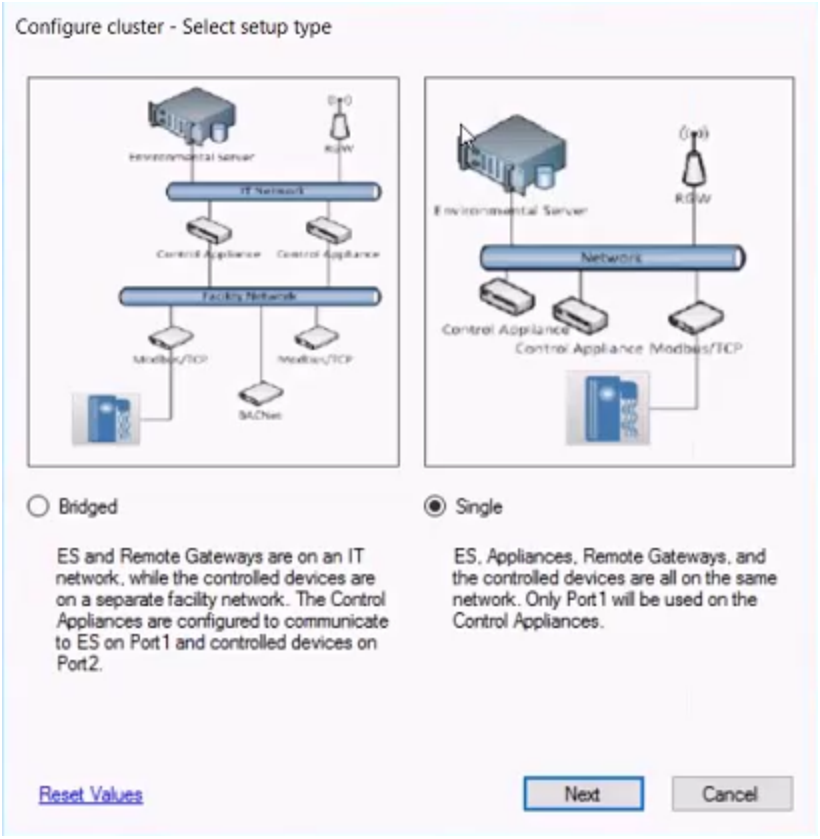
The SynapSense ControlAdmin Tool allows the user to configure two Control Appliances so that they can communicate with IT and Facilities, without requiring a serial interface connection.



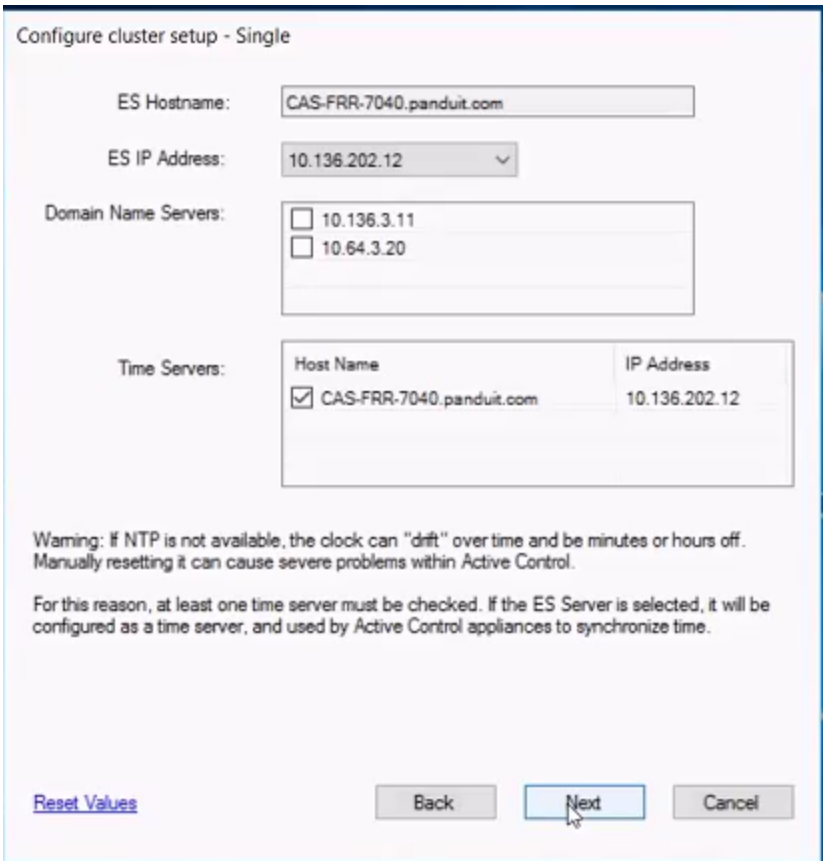
For Active Control, each customer gets two control appliances, which have replaced VMs to ensure sufficient processing, disk space, and memory. The SynapSense ControlAdmin Tool allows you to change the IP Address, so the serial interface connection is no longer mandatory. If a serial connection exists, you can select the Serial Console and select the COM port you are on and change the IP Address. See "Serial Connection " on page 20 below for details.

Configure Cluster

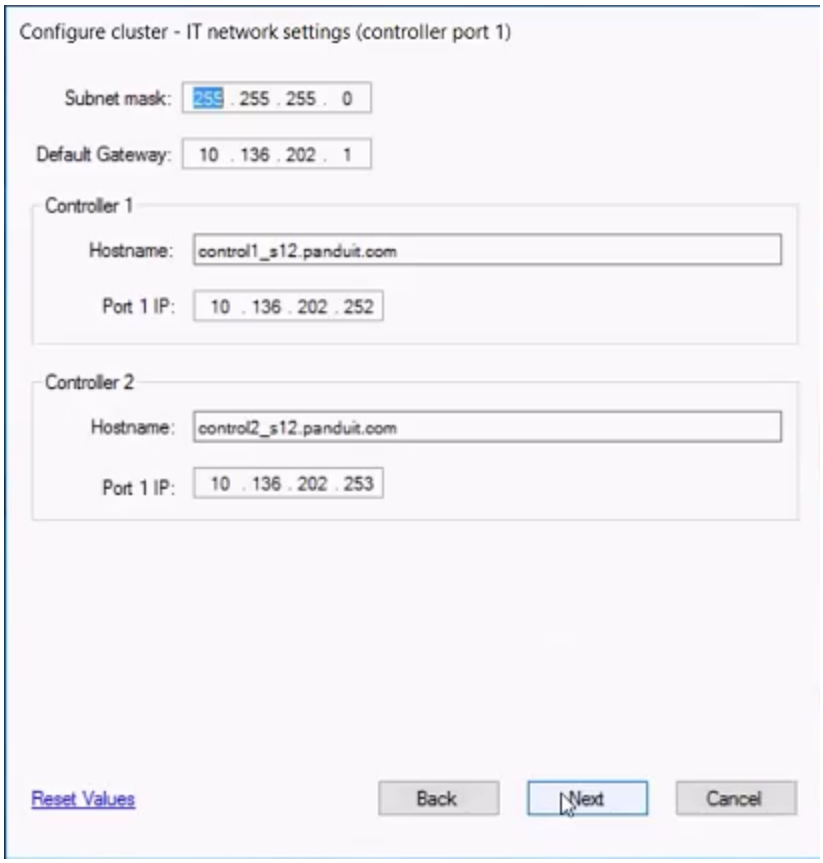
1. Select **Configure Cluster**. The Select setup type dialog box displays.



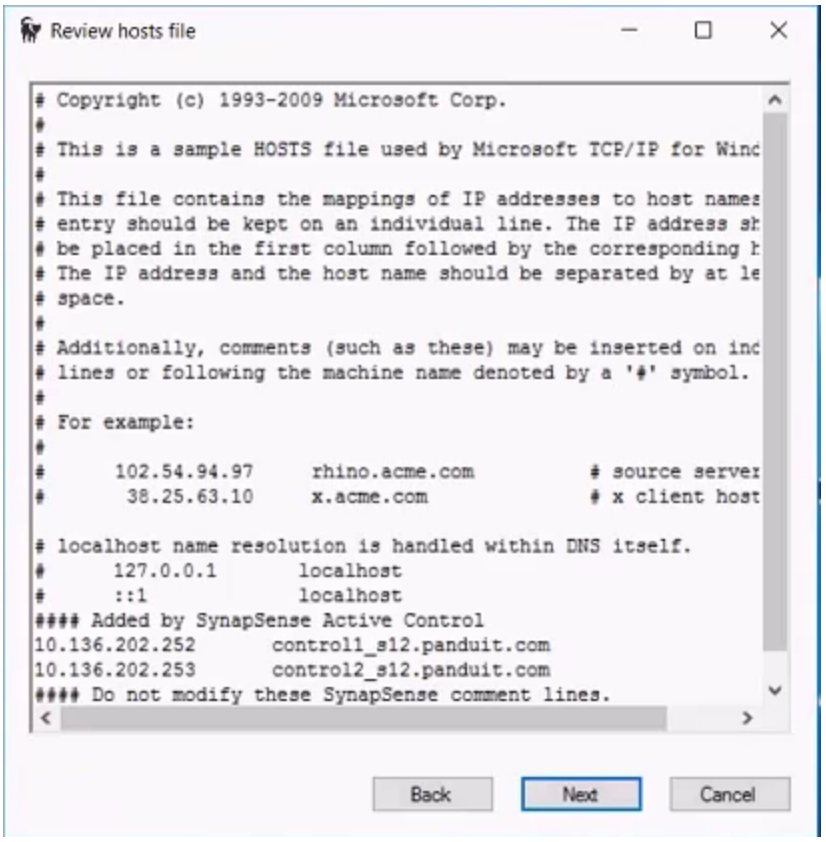
2. Select either **Bridged** or **Single** setup.
   a. Select **Bridged** if the Facilities subnet is isolated from the IT subnet, with no pathway from one to the other. Choosing this allows you to use the tool appliance as a pathway, not for normal traffic, but for getting ports on each subnet so you can get data from the IT side and control the Facilities side.
   b. Select **Single** if IT and Facilities are on the same network. The Configure Cluster Setup - Single window displays.



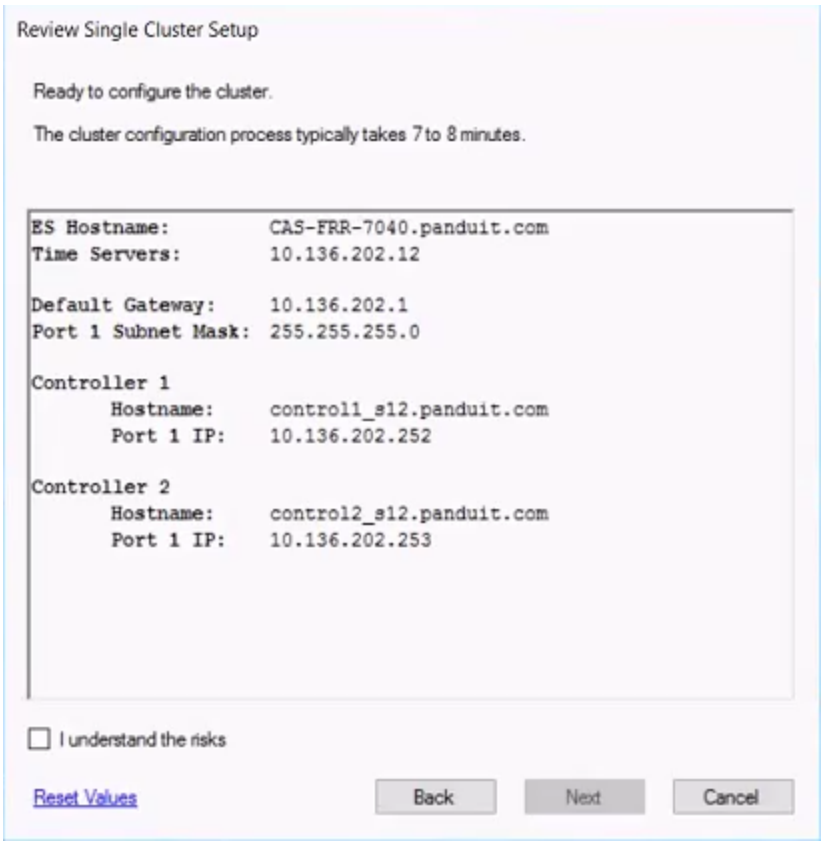
3. Here, you can review your Environmental Server Hostname and select the **IP Address** if multiple IP Addresses are available. The IP Address is used by the control appliances to communicate back to the environmental server. (The configuration tool must be run from the system that has the Environmental Server installed.) Hostname is discovered through a Windows call and cannot be edited.
4. (*Optional*) Select a **Domain Name Server**, which allows the system to use hostnames instead of IP Addresses. **Note**: The appliance hostnames and IP Addresses will have to have been registered to the selected Domain Name Server.
5. Select the **Time Server**. The control appliances need to be time-synched with each other, and they should be time-synched with the Environmental Server as well.
6. Click **Next**. The Configure Cluster - IT Network Settings dialog box displays.



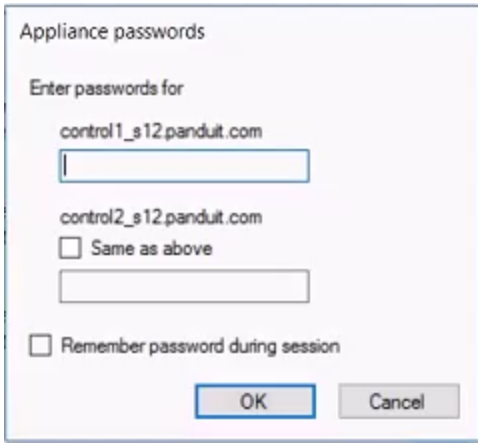
7. Make any necessary changes to the values in the dialog box (or click **Reset Values**, which will take you back to the first screen). If the **Domain Name Server** option was selected in Step 4 above, the Port IP fields in this step are not necessary. Cluster configuration will use hostnames.
8. Click **Next**. The Review Hosts File window displays.



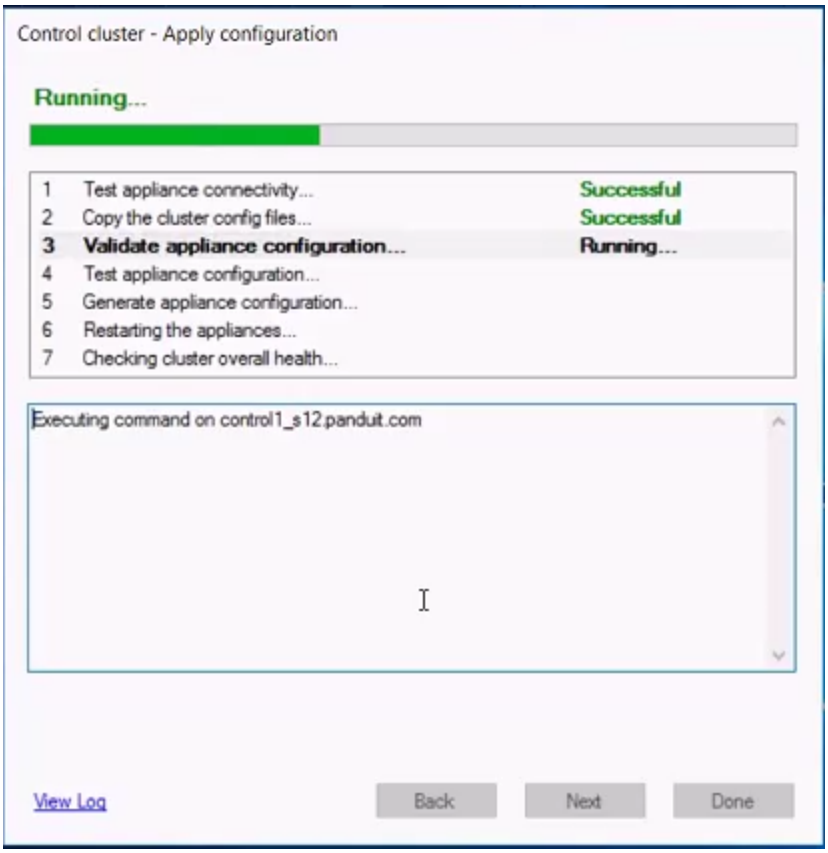
9. This window shows how the host file on the server will be modified so that the system can access control appliances by a name. Click **Next** to open the Review Single Cluster Setup dialog box.



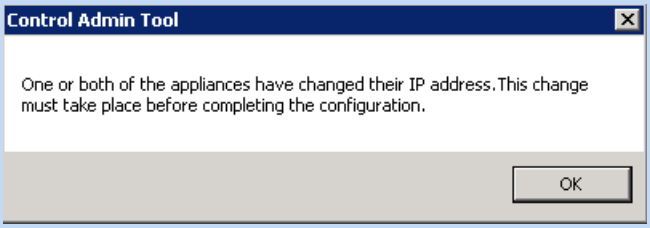
10. The Review Single Cluster Setup window displays the information to be sent to the control appliances. If the IP Addresses are correct, click **I understand the risks**. (The risk being that the box won't work if the wrong IP Addresses are sent.)
11. Click **Next**. The Appliance Passwords dialog box displays.



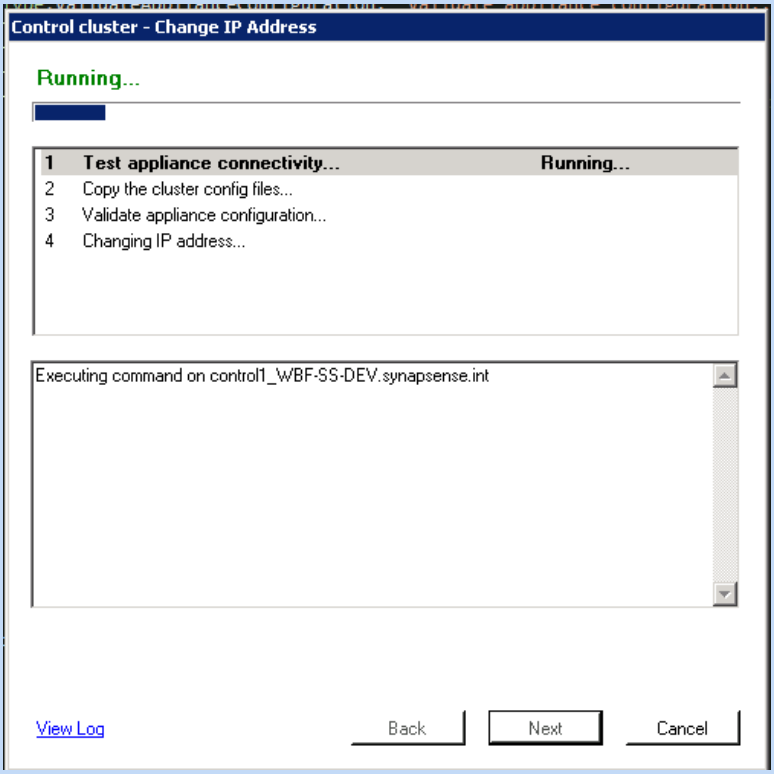
12. Type in the passwords.
13. Click **Next**. The Apply Configuration screen displays the progress of the configuration.



Note: If the tool detects that an appliance's IP Address has changed since the last configuration, a "Change IP Address" screen will display.



This screen executes the steps needed to change the IP address. It first tests the connection to the appliance, then copies the configuration information to the appliance, validates it, and updates the IP address and reboots the appliance.

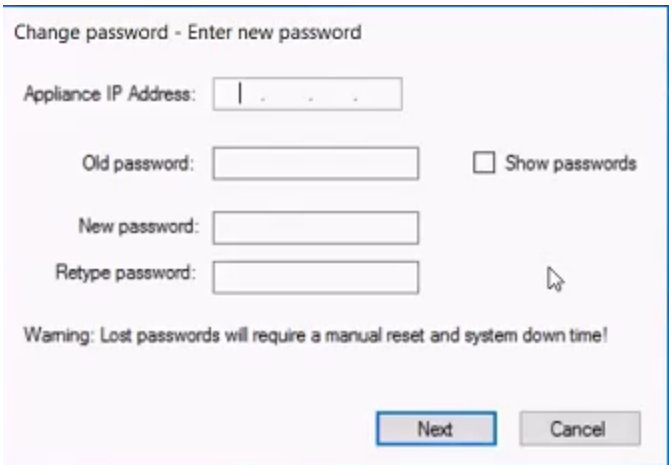


When it is done, the user can click on the **Next** button to go to the Apply Configuration screen shown above this note.

14. During the configuration, the tool checks to make sure the appliances and the Environmental Server can communicate with each other. The tool will find any incorrect information and report it. If the configuration fails, a red box will display describing the reason for the failure. When the configuration completes successfully, click **Done**.

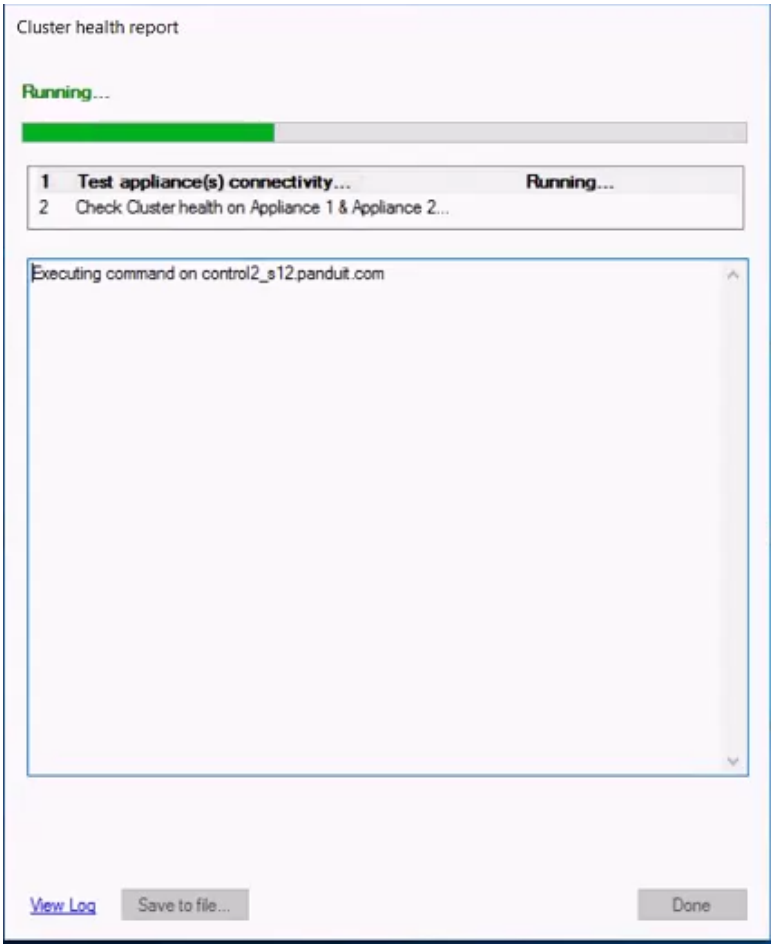
Change Password

Select this option to change the password used for an appliance for making a connection to the box.



Cluster Health Report

The Cluster Health Report tests the appliance connectivity. Run this report if you have any issues with the appliances.



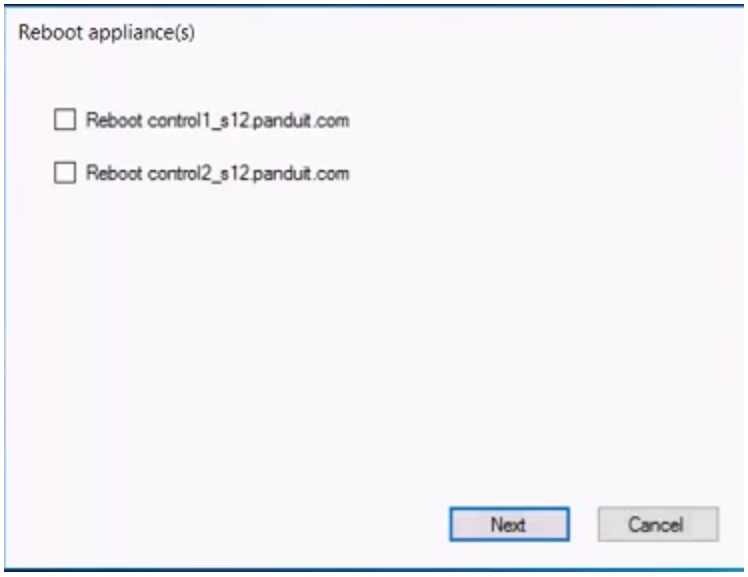
Panduit Technical Support can then examine the log files to identify the issue. The report includes:

- Time
- Version and name of appliance
- Build date
- Cluster configuration information
- Environmental Server information
- Nodes used for load balancing
- Log files

You can save the information file and send it to Panduit Technical Support.

Reboot Appliance

You can reboot one or both of the appliances. This may be necessary if there is network latency.



A reboot allows the cluster to balance loads correctly across the two appliances.

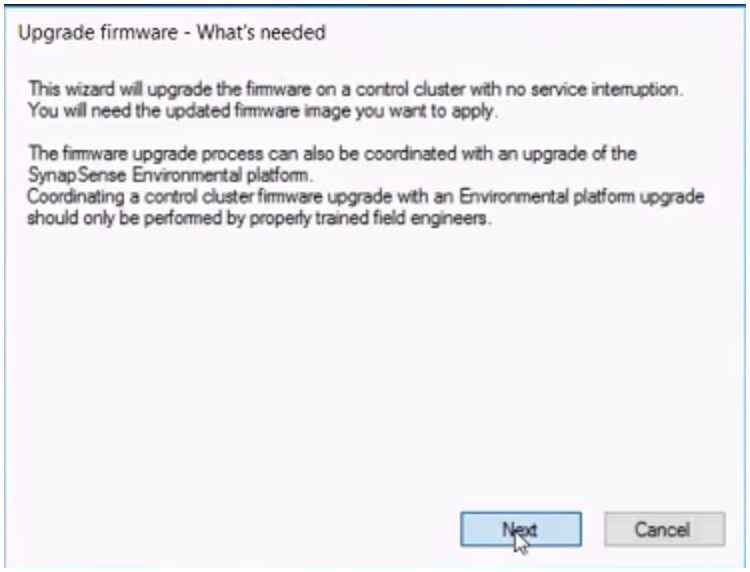
Upgrade Cluster

Follow these steps when an upgrade is required for the appliances or for the appliances and the Environmental Server.

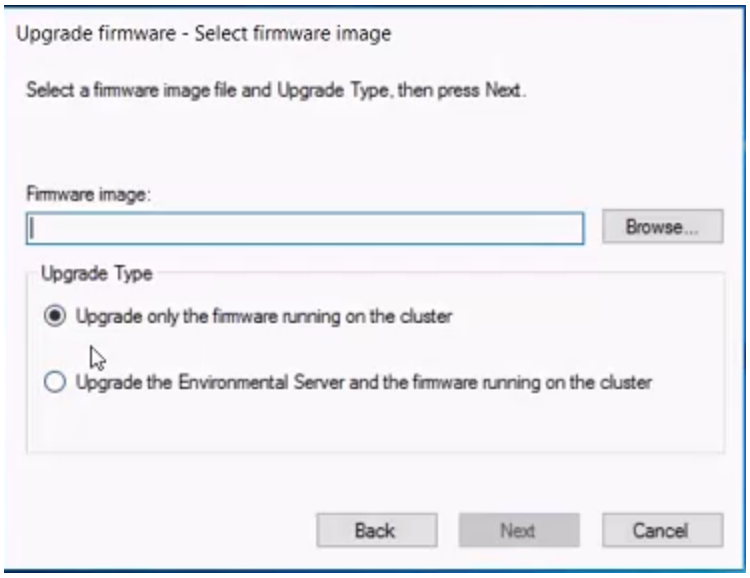
The operation is done or executed through the ControlAdmin Utility (CAT). Expect the following during the update:

- The upgrade operation should finish in less than 15 minutes (typically 6-8 minutes).
- Expect two 'Controller went offline..' alerts in Web Console.
- Active Control will be down only when the appliance unit reboots, typically for less than 60 seconds. Otherwise, Active Control components in Web Console are accessible and functional.
- A browser refresh of WebConsole is recommended.
- Upgrade log will be in C:\ProgramData\SynapSense Corporation\ShadowwCat\1.0.

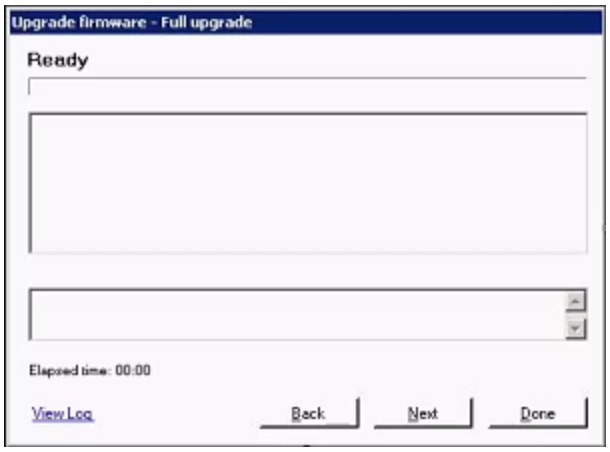
1. Click Upgrade Cluster to open the Upgrade Firmware wizard.



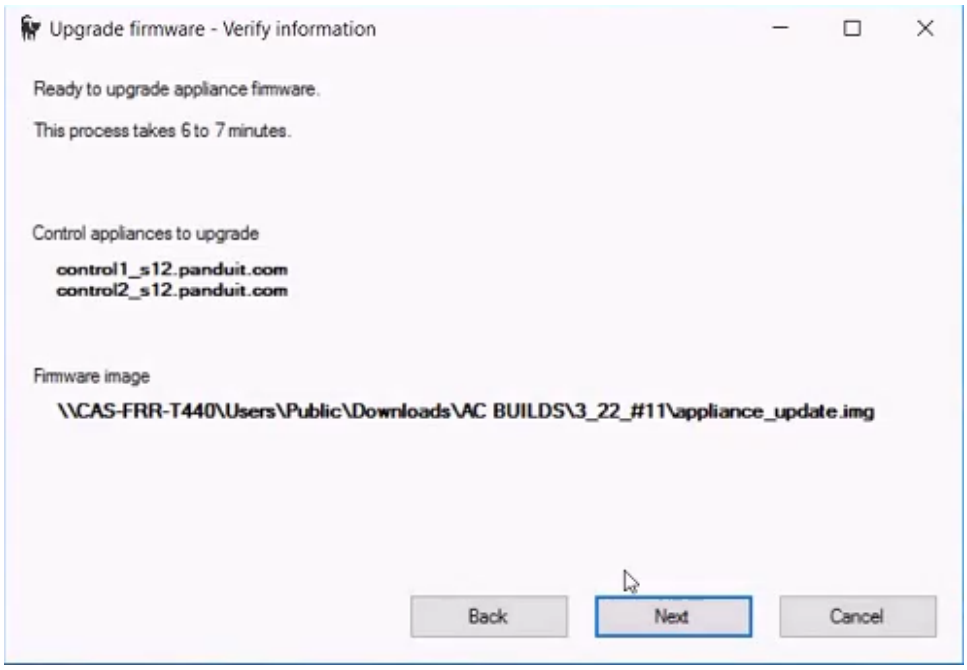
2. Click **Next** to select the firmware image.



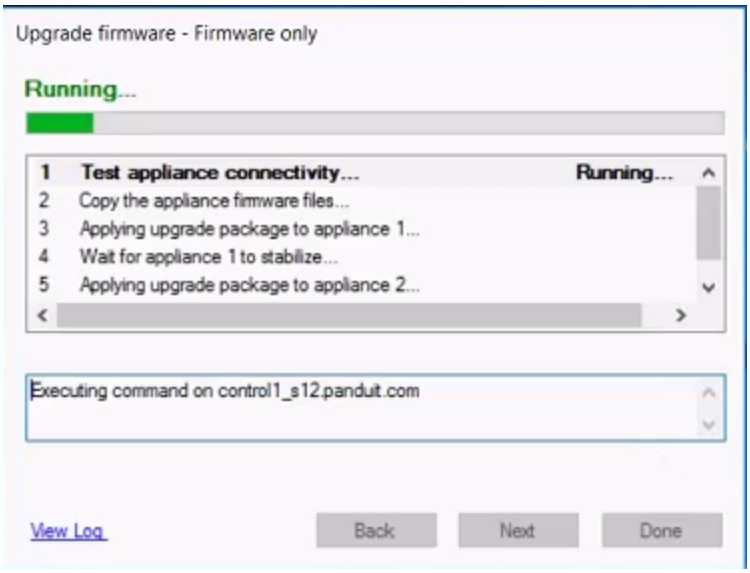
3. Use the radio buttons to choose whether to upgrade only the firmware on the appliances or to upgrade the firmware on appliances and the Environmental Server (full upgrade). If you just upgrade the cluster firmware, the tool will push the image over to both appliances and then reboot them. If you upgrade both the firmware and the Environmental Server:
    a. The tool upgrades one of the appliances, pauses, and then displays a message telling you to upgrade the Environmental Server.
    b. When the Environmental Server upgrade is done, return to the main menu and select **Resume After Full Upgrade**. The tool will then upgrade the second appliance to finish the full upgrade.



4. To upgrade only the cluster firmware, select the **Upgrade only the firmware** radio button. The Upgrade Firmware - Verify Information dialog box displays.



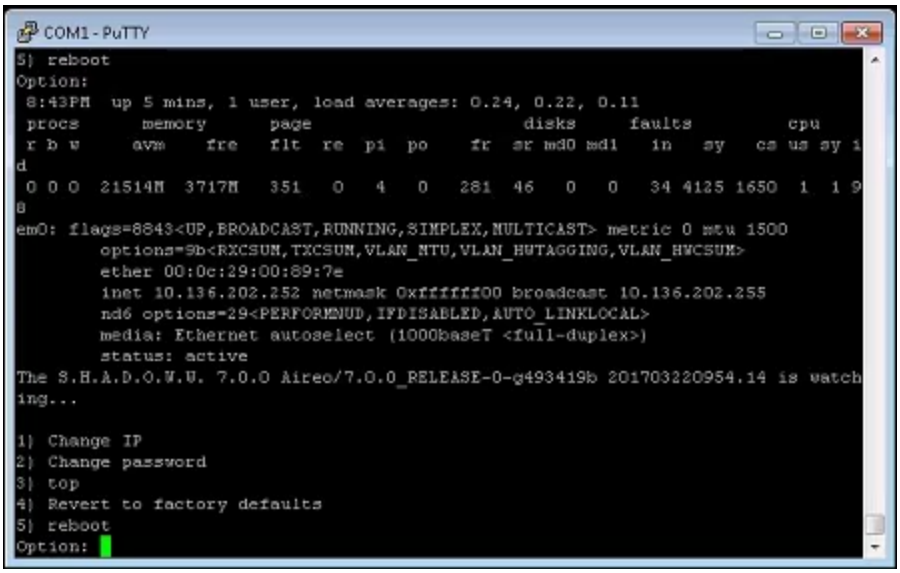
5. Confirm that the information displayed is correct and click **Next**. The firmware upgrade begins.



6. Click **Done** when the upgrade is finished.

Serial Connection

If you connect to the serial port, the following interface displays.



At this screen you can:

- Change the IP Address.

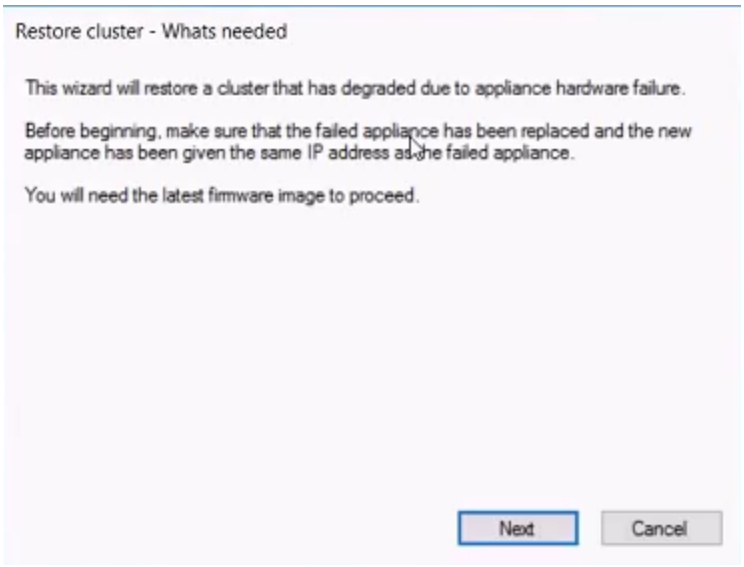
  Note: If you change an appliance's IP address, Panduit recommends that you update the IP address in the MapSense Project Options field as well. This MapSense setting is used to test communication and configuration of I/O expressions.

- Change the password.
- View the top 15 processes that are running currently
- Revert to factory defaults to wipe the appliance clean if the initial configuration was incorrect. (Only Panduit Services should do this.)
- Reboot the system.

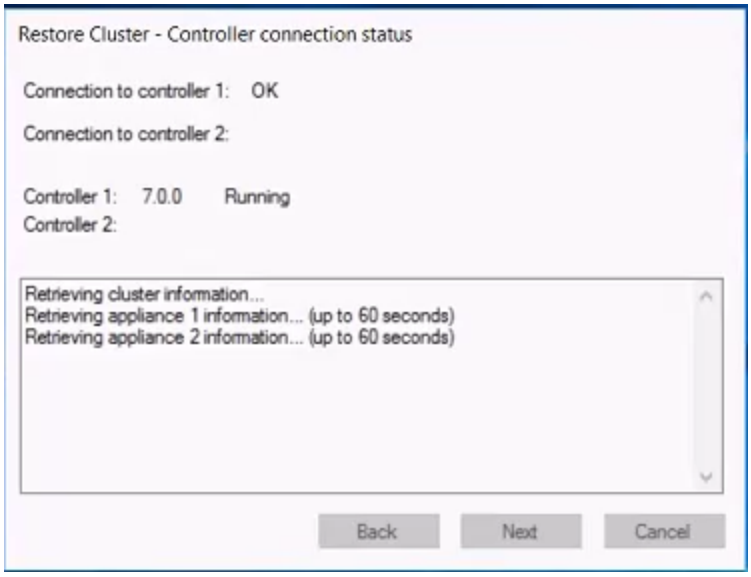
Restore Cluster

Use this option if one of your appliances has failed. First remove the failed appliance and replace it with new appliance. Make sure the new appliance has the same IP Address, password, and firmware image as the one you removed.

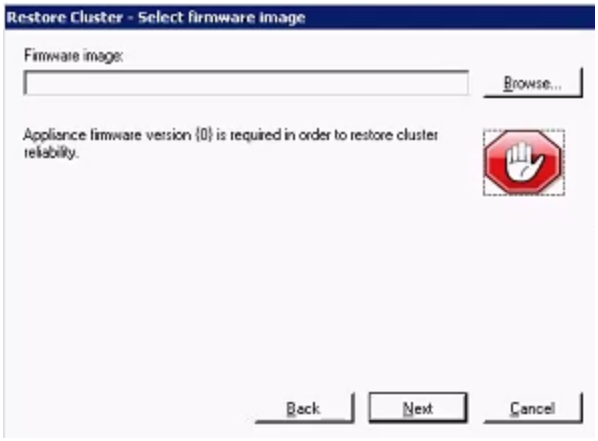
1. At the main menu, select **Restore Cluster**. The Restore Cluster wizard opens.



2. Click **Next**. The Controller Connection Status window displays.



3. The Controller Connection Status window retrieves appliance information and will tell you information about the two appliances. It will tell you if you need to upgrade the firmware version on an appliance. If no upgrade is required, click **Cancel** to end the process. If one or both appliances require an upgrade, click **Next** to restore the appliance or appliances. The Restore Cluster - Select Firmware Image window displays.



4. At the Firmware Image window, click **Browse** to select the firmware image that existed on the discarded appliance. Click **Next**. You will then go through the normal Upgrade Cluster procedure. See "Upgrade Cluster" on page 17, above.