



# Managing Controller Software and Configurations

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This chapter describes how to manage configurations and software versions on the controllers. It contains these sections:

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# Transferring Files to and from a Controller

Controllers have built-in utilities for uploading and downloading software, certificates, and configuration files.

Use these **transfer** commands:

- **transfer download datatype**
- **transfer download filename**
- **transfer download mode**
- **transfer download path**
- **transfer download serverip**
- **transfer download start**
- **transfer upload datatype**
- **transfer upload filename**
- **transfer upload mode**
- **transfer upload path**
- **transfer upload serverip**
- **transfer upload start**

## Upgrading Controller Software

When a controller is upgraded, the code on its associated access points is also automatically upgraded. When an access point is loading code, each of its lights blinks in succession.

**Note**

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In release 4.0.206.0, up to 10 access points can be concurrently upgraded from the controller.

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**Caution**

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Do not power down the controller or any access point during this process; otherwise, you might corrupt the software image! Upgrading a controller with a large number of access points can take as long as 30 minutes, depending on the size of your network. However, with the increased number of concurrent access point upgrades supported in software release 4.0.206.0, the upgrade time should be significantly reduced. The access points must remain powered, and the controller must not be reset during this time.

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Cisco recommends the following sequence when performing an upgrade:

1. Upload your controller configuration files to a server to back them up.
2. Turn off the controller 802.11a and 802.11b/g networks.
3. Upgrade your controller to the latest software release, following the steps in the [“Updating Controller Software”](#) section on page 8-3.
4. Re-enable your 802.11a and 802.11b/g networks.

**Note**

Controllers can be upgraded from one release to another. However, should you require a downgrade from one release to another, you may be unable to use the higher release configuration. The workaround is to reload the previous controller configuration files saved on the backup server or to reconfigure the controller.

## Updating Controller Software

Follow these steps to upgrade the controller software using the CLI.

**Note**

You can also update the controller software using the GUI or through a wireless connection. However, in these cases, you will lose your connection to the controller sometime during the update process. For this reason, Cisco recommends that you use a direct CLI console port connection to update controller software.

- Step 1** Make sure you have a TFTP server available for the Operating System software download. Keep these guidelines in mind when setting up a TFTP server:
- If you are downloading through the service port, the TFTP server must be on the same subnet as the service port because the service port is not routable.
  - If you are downloading through the distribution system network port, the TFTP server can be on the same or a different subnet because the distribution system port is routable.
  - A third-party TFTP server cannot run on the same computer as the Cisco WCS because the WCS built-in TFTP server and the third-party TFTP server require the same communication port.
- Step 2** Download the desired Operating System software update file from the Cisco website to the default directory on your TFTP server.
- Step 3** Log into the controller CLI.
- Step 4** Enter **ping** *server-ip-address* to verify that the controller can contact the TFTP server.
- Step 5** Enter **transfer download start** and answer **n** to the prompt to view the current download settings. This example shows the command output:

```
>transfer download start
Mode..... TFTP
Data Type..... Code
TFTP Server IP..... xxx.xxx.xxx.xxx
TFTP Path..... <directory path>
TFTP Filename..... AS_2000_3_0_x_x.aes --OR--
                   AS_4100_3_0_x_x.aes --OR--
                   AS_4400_3_0_x_x.aes
```

```
Are you sure you want to start? (y/n) n
Transfer Canceled
>
```

- Step 6** Enter these commands to change the download settings:

```
transfer download mode tftp
transfer download datatype code
transfer download serverip tftp-server-ip-address
transfer download filename filename
```

**transfer download path** *tftp-server-path-to-file*



**Note** Pathnames on a TFTP server are relative to the server's default or root directory. For example, in the case of Solarwinds TFTP server, the path is "/".

**Step 7** Enter **transfer download start** to view the updated settings, and answer **y** to the prompt to confirm the current download settings and start the Operating System code download. This example shows the download command output:

```

transfer download start
Mode..... TFTP
Data Type..... Code
TFTP Server IP..... xxx.xxx.xxx.xxx
TFTP Path..... <directory path>
TFTP Filename..... AS_2000_3_0_x_x.aes --OR--
                   AS_4100_3_0_x_x.aes --OR--
                   AS_4400_3_0_x_x.aes

Are you sure you want to start? (y/n) y
TFTP Code transfer starting.
TFTP receive complete... extracting components.
Writing new bootloader to flash.
Making backup copy of RTOS.
Writing new RTOS to flash.
Making backup copy of Code.
Writing new Code to flash.
TFTP File transfer operation completed successfully.
Please restart the switch (reset system) for update to complete.

```

**Step 8** The controller now has the code update in active volatile RAM, but you must enter **reset system** to save the code update to non-volatile NVRAM and reboot the Cisco Wireless LAN Controller:

```

reset system
The system has unsaved changes.
Would you like to save them now? (y/n) y

```

The controller completes the bootup process.

## Saving Configurations

Controllers contain two kinds of memory: volatile RAM and NVRAM. At any time, you can save the configuration changes from active volatile RAM to non-volatile RAM (NVRAM) using one of these commands:

- Use the **save config** command. This command saves the configuration from volatile RAM to NVRAM without resetting the controller.
- Use the **reset system** command. The CLI prompts you to confirm that you want to save configuration changes before the controller reboots.
- Use the **logout** command. The CLI prompts you to confirm that you want to save configuration changes before you log out.

## Clearing the Controller Configuration

Follow these steps to clear the active configuration in NVRAM.

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- Step 1** Enter **clear config** and enter **y** at the confirmation prompt to confirm the action.
  - Step 2** Enter **reset system**. At the confirmation prompt, enter **n** to reboot without saving configuration changes. When the controller reboots, the configuration wizard starts automatically.
  - Step 3** Follow the instructions in the [“Using the Configuration Wizard” section on page 4-2](#) to complete the initial configuration.
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## Erasing the Controller Configuration

Follow these steps to reset the controller configuration to default settings:

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- Step 1** Enter **reset system**. At the confirmation prompt, enter **y** to save configuration changes to NVRAM. The controller reboots.
  - Step 2** When you are prompted for a username, enter **recover-config** to restore the factory default configuration. The controller reboots and the configuration wizard starts automatically.
  - Step 3** Follow the instructions in the [“Using the Configuration Wizard” section on page 4-2](#) to complete the initial configuration.
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## Resetting the Controller

You can reset the controller and view the reboot process on the CLI console using one of the following two methods:

- Turn the controller off and then turn it back on.
- On the CLI, enter **reset system**. At the confirmation prompt, enter **y** to save configuration changes to NVRAM. The controller reboots.

When the controller reboots, the CLI console displays the following reboot information:

- Initializing the system.
- Verifying the hardware configuration.
- Loading microcode into memory.
- Verifying the Operating System software load.
- Initializing with its stored configurations.
- Displaying the login prompt.

