Configure Dynamic Host Configuration Protocol (DHCP) Image Upgrade Settings on a Switch

Objective

The Dynamic Host Configuration Protocol (DHCP) image upgrade feature on a switch can be used to configure a DHCP server to download both a new image and a new configuration file to one or more switches in a network. Simultaneous image and configuration upgrade for all switches in the network helps ensure that each new switch added to a network are synchronous with the network.

The DHCP Image Upgrade on your switch works in two ways: DHCP Auto Configuration and Image Auto Update. Configuring these features could be very beneficial in managing more than one switch or stacked switches in the network.

- DHCP Auto Configuration — The process by which the network device receives its configuration file from a Secured Copy Protocol (SCP) over Secure Shell (SSH) or Trivial File Transfer Protocol (TFTP) server identified by the DHCP server when it has provided or renewed the IP address on that device. This functions properly only when the DHCP server is configured to assign the host IP address dynamically. By default, the switch is enabled as a DHCP client when the Auto Configuration feature is enabled.
- DHCP Auto Image Update — Used with DHCP Auto Configuration, this allows you to download both a configuration and a new image to one or more switches in the network. If Image Auto Update is enabled, the flash image is downloaded and updated. If the new configuration is downloaded to a switch that already has a configuration, the downloaded configuration is appended to the configuration file stored on the switch.

This article provides instructions on how to configure DHCP image upgrade on your switch in two ways: DHCP Auto Configuration and Image Auto Update.

Applicable Devices

- Sx200 Series
- Sx250 Series
- Sx300 Series
- Sx350 Series
- SG350X Series
- Sx500 Series
- Sx550X Series

Software Version

- 1.4.5.02 – Sx200 Series, Sx300 Series, Sx500 Series
- 2.2.0.66 – Sx250 Series, Sx350 Series, SG350X Series, Sx550X Series

# Configure DHCP Image Upgrade on a Switch

Important: Before you start the configuration, an active DHCP server must be set up in the network with the locations and names of the configuration file and firmware image of your devices. The devices in the network are configured as DHCP clients by default. When the devices are assigned their IP addresses by the DHCP server, they also receive information about the configuration file and firmware image.

Make sure your TFTP or SCP server is configured. If the configuration file and/or firmware image are different from the ones currently used on the device, the device reboots itself after downloading the file and/or image. Place a configuration file in the working directory. This file can be created by copying a configuration file from a device. When the device is booted, this becomes the Running Configuration file.

Configure DHCP Auto Configuration Settings

DHCP autoconfiguration downloads a configuration file to one or more switches in your network from a DHCP server. The downloaded configuration file becomes the running configuration of the switch. It does not overwrite the bootup configuration saved in the flash, until you reload the switch.
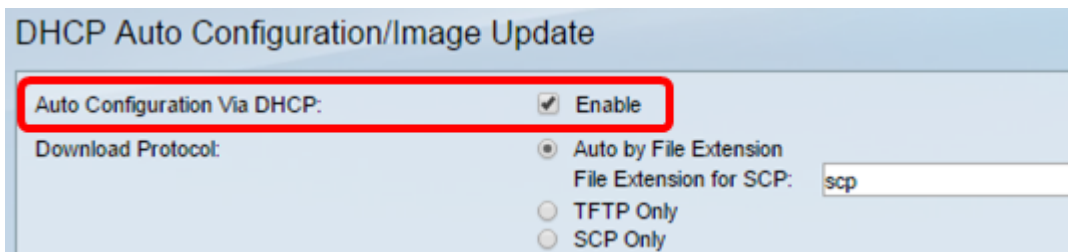
Step 1. Log in to the web-based utility then choose **Administration > File Management > DHCP Auto Configuration/Image Update**.
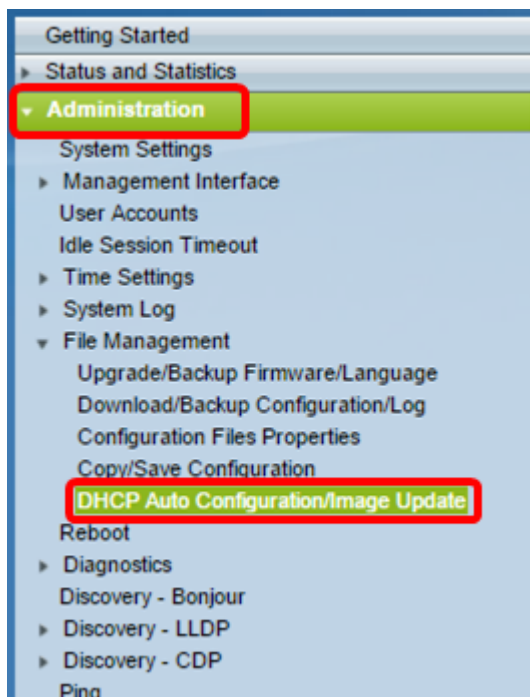
Note: If you have an Sx250, Sx350, SG350X, or Sx550X, switch to Advanced mode by choosing Advanced from the Display Mode drop-down list.
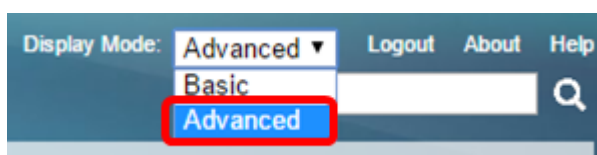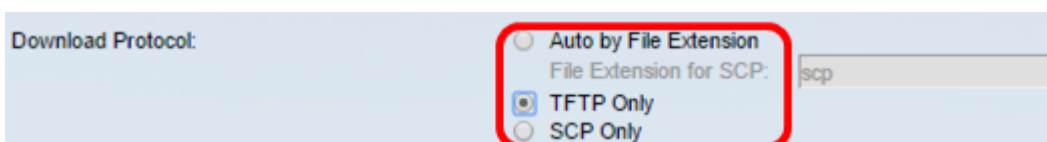

Step 2. Make sure the Auto Configuration Via DHCP **Enable** check box is checked.

Note: Auto Configuration Via DHCP is enabled by default.

Step 3. Choose an option from the Download Protocol area. Configuration files and firmware images can be downloaded from either a TFTP or an SCP server.

The available options are:

- Auto by File Extension — If this option is chosen, a user-defined file extension indicates that files with the specific extension are downloaded using SCP over SSH, while files with other extensions are downloaded using TFTP. For example, if the file extension specified is .xyz, all files with the .xyz extension are downloaded using SCP, and files with the other extensions are downloaded using TFTP. The default extension is .scp and this option is chosen by default.
- TFTP Only — The download is done through TFTP regardless of the file extension of the configuration file name.
- SCP Only — The download is done through SCP (over SSH) regardless of the file extension of the configuration file name.

Note: In this example, TFTP Only is chosen.

Configure DHCP Image Auto Update

Auto image download is done using an indirect image file. The indirect image file is a text file that contains the path to the actual image file (for example: Root\xx01-41022.ros) which is uploaded on a TFTP or SCP server. The device compares the file name of the requested flash image with the image stored in flash. If the file names are different, then the device will download the new image from a TFTP or SCP server, write the downloaded image to flash, and then reload the device or stack.

**Important:** Make sure that the DHCP server is configured with the following options:

- DHCPv4 — Option 125 (indirect file name)
- DHCPv6 — Options 60 (name of configuration file plus indirect image file name, separated by a comma)

Step 4. Make sure the Image Auto Update via DHCP **Enable** check box is checked.

Note: This feature is enabled by default.
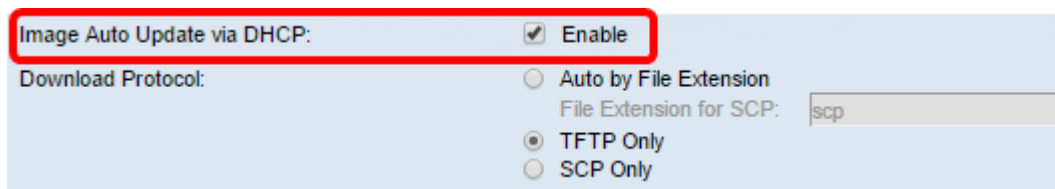
Step 5. Choose an option from the Download Protocol area.
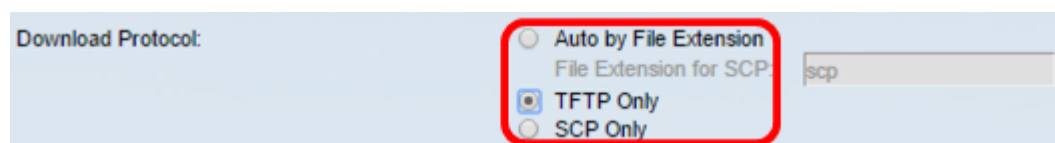
The available options are:

- Auto by File Extension — If this option is chosen, a user-defined file extension indicates that files with the specific extension are downloaded using SCP over SSH, while files with other extensions are downloaded using TFTP. For example, if the file extension specified is .xyz, all files with the .xyz extension are downloaded using SCP, and files with the other extensions are downloaded using TFTP. The default extension is .scp.
- TFTP Only — The download is done through TFTP, regardless of the file extension of the configuration file name.
- SCP Only — The download is done through SCP (over SSH), regardless of the file extension of the configuration file name.

**Note:** In this example, TFTP Only is chosen.

Configure SSH Settings For SCP

SCP is SSH-based. The remote SSH server authentication feature is disabled by default, and the switch accepts any remote SSH servers. You can enable remote SSH server authentication so that only servers found in the trusted server list can be used.

Note: Configuring the SSH Settings for SCP is only applicable if the chosen download protocols in steps 3 and 5 involves SCP. If TFTP Only is chosen, proceed to Step 8.

Step 6. (Optional) In the SSH Settings For SCP area of the DHCP Auto Configuration/Image Update page, click **Disabled** to enable and configure the Remote SSH Server Authentication feature of the switch.

Note: To learn how to configure this feature, click here for instructions.
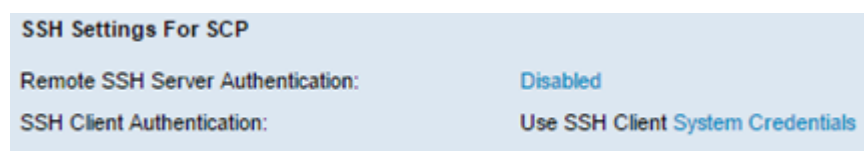
Step 7. (Optional) Click **System Credentials** to configure the SSH Client Authentication feature of the switch.

Note: To learn how to configure this feature, click here for instructions.

Configure Backup Server Settings

Step 8. In the Backup Server Definition area, choose whether to specify the TFTP server by

IP address or domain name.

Backup Server Definition:	◉ By IP address ○ By name
IP Version:	○ Version 6 ◉ Version 4
IPv6 Address Type:	◉ Link Local ○ Global
Link Local Interface:	VLAN 1 ▾

The options are:

- By IP address — The backup server is identified by its IP address.
- By name — The backup server is identified by the name.

Note: In this example, By IP address is chosen. If By name is chosen, skip to Step 12.

Step 9. (Optional) If the TFTP server is identified by IP address, choose an IP version.

Backup Server Definition:	◉ By IP address ○ By name
IP Version:	○ Version 6 ◉ Version 4
IPv6 Address Type:	◉ Link Local ○ Global
Link Local Interface:	VLAN 1 ▾

The options are:

- Version 6 — The IPv6 address type.
- Version 4 — The IPv4 address type.

Note: In this example, IPv4 is chosen. If this version is chosen, skip to Step 12.

Step 10. (Optional) If the IPv6 address type is chosen, click the desired IPv6 Address Type.

Backup Server Definition:	◉ By IP address ○ By name
IP Version:	◉ Version 6 ○ Version 4
IPv6 Address Type:	◉ Link Local ○ Global
Link Local Interface:	VLAN 1 ▾

- Link Local — The IPv6 address uniquely identifies hosts on a single network link. A link local address has a prefix of FE80, is not routable, and can be used for communication only on the local network. Only one link local address is supported. If a link local address exists on the interface, this entry replaces the address in the configuration.
- Global — The IPv6 address is a global unicast that is visible and reachable from other networks.

Note: If Global is chosen, skip to Step 12.

Step 11. (Optional) If the Link Local IPv6 Address Type is chosen, choose the link local interface from the Link Local Interface drop-down list.

Step 12. Enter the IP address or domain name of the backup server in the *Backup Server IP Address/Name* field. If no configuration file name is specified in the DHCP message, the switch will download the backup configuration file from the backup server.

Backup Server IP Address/Name:	192.168.1.3	
Backup Configuration File Name:		(0/160 characters used)
Backup Indirect Image File Name:		(0/160 characters used)

Note: In this example, the server IP used is 192.168.1.3 which is an IPv4 address. If you chose Version 6 in Step 9, enter the IPv6 address instead.

Step 13. In the *Backup Configuration File Name* field, enter the full file path and name of the configuration file on the backup server to be used if no configuration file name is specified in the DHCP message.

Backup Server IP Address/Name:	192.168.1.3	
Backup Configuration File Name:	C:\TFTP\running-config.txt	26/160 characters used)
Backup Indirect Image File Name:		(0/160 characters used)

Note: In this example, the configuration file name used is running-config.txt which is found at the C:\TFTP folder of the TFTP server.

Step 14. Enter the indirect image file name to be used in the *Backup Indirect Image File Name* field. This is a file that holds the path to the image. An example of an indirect image file name is: indirect-cisco.scp. This file contains the path and name of the firmware image.

Backup Server IP Address/Name:	192.168.1.3	
Backup Configuration File Name:	C:\TFTP\running-config.txt	(26/160 characters used)
Backup Indirect Image File Name:	C:\TFTP\firmware.txt	(20/160 characters used)
Last Auto Configuration / Image Server IP Address:		
Last Auto Configuration File Name:		

Note: In this example, the indirect image file name used is firmware.txt which is found at the C:\TFTP folder of the TFTP server.

- Last Auto Configuration / Image Server IP Address — Displays the IP address or domain name of the server that is currently using.
- Last Auto Configuration File Name — Displays the name of the configuration file located on the server that is currently using.

Step 15. Click **Apply** to save the changes to the running configuration file.

DHCP Auto Configuration/Image Update

Auto Configuration Via DHCP:	☑ Enable
Download Protocol:	○ Auto by File Extension
	File Extension for SCP: `scp`
	⦿ TFTP Only
	○ SCP Only
Image Auto Update via DHCP:	☑ Enable
Download Protocol:	○ Auto by File Extension
	File Extension for SCP: `scp`
	⦿ TFTP Only
	○ SCP Only

SSH Settings For SCP

Remote SSH Server Authentication:	Disabled
SSH Client Authentication:	Use SSH Client System Credentials
Backup Server Definition:	⦿ By IP address ○ By name
IP Version:	○ Version 6 ⦿ Version 4
IPv6 Address Type:	⦿ Link Local ○ Global
Link Local Interface:	VLAN 1 ▼
Backup Server IP Address/Name:	192.168.1.3
Backup Configuration File Name:	C:\TFTP\running-config.tx (26/160 characters used)
Backup Indirect Image File Name:	C:\TFTP\firmware.txt (20/160 characters used)
Last Auto Configuration / Image Server IP Address:	
Last Auto Configuration File Name:	

Note: DHCP Auto Configuration / Image is operational only when the IP Address configuration is dynamic.

Apply   Cancel

Step 16. (Optional) Click the **Save** button at the top portion of the page to save the changes to the startup configuration file.
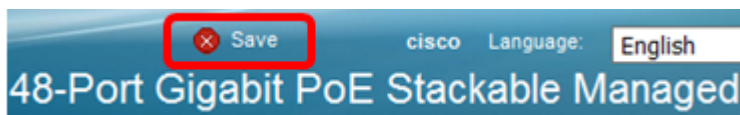
You should now have configured the DHCP image upgrade settings on your switch via DHCP Auto Configuration and Image Auto Update.