



NETGEAR[®]

Managed Switch Software Setup Manual

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Managed Switch

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Getting Started

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This manual includes software configuration tasks that are most commonly used when new switches are installed. To configure the switch software, connect a terminal to the switch.

Note: Some products have Release Notes that detail the platform specific functionality of the switching, routing, SNMP, config, management, and other features. It is a good idea to read the Release Notes before setting up the switch.

A number of other publications are available for your switch, including the following:

- The *NETGEAR Quick Installation Guide* for your switch
- The *Hardware Installation Guide* for your switch
- *NETGEAR ProSafe M5300 Managed Switch Software Administration Manual for 10.0*
- *ProSafe Managed Switch Command Line Interface (CLI) User Manual*. Refer to this document for information about the command structure. This manual provides information about the CLI commands used to configure the switch and the stack. It provides CLI descriptions, syntax, and default values.

These documents can be found at <http://www.NETGEAR.com>.

In-Band and Out-of-Band Connectivity

Ask the system administrator to determine whether you will configure the switch for in-band or out-of-band connectivity.

Configuring the Switch for In-Band Connectivity

In-band connectivity allows you to access the switch from a remote workstation using the Ethernet network. To use in-band connectivity, you must configure the switch with IP information (IP address, subnet mask, and default gateway).

Configure for in-band connectivity using one of the following methods:

- BootP or DHCP
- EIA-232 port

Using BootP or DHCP

You can assign IP information initially over the network or over the Ethernet service port through BootP or DHCP. Check with your system administrator to determine whether BootP or DHCP is enabled. The DHCP protocol mode is enabled on the switch by default.

You need to configure the BootP or DHCP server with information about the switch—obtain this information through the serial port connection using the `show network` command. Set up the server with the following values:

- **IP Address:** Unique IP address for the switch. Each IP parameter is made up of four decimal numbers, ranging from 0 to 255. If there is no DHCP server available to assign an IP address to the switch through DHCP, the default IP address for the switch is 169.254.100.100.
- **Subnet:** Subnet mask for the LAN. For example, "255.255.255.0"
- **gateway:** IP address of the default router, if the switch is a node outside the IP range of the LAN.
- **MAC Address:** MAC address of the switch.

When you connect the switch to the network for the first time after setting up the BootP or DHCP server, it is configured with the information you supplied (IP address, subnet, and so on). The switch is ready for in-band connectivity over the network.

If you do not use BootP or DHCP, access the switch through the mini-USB port or EIA-232 port, and configure the network information as described in the following section.

Console port

The switch EIA-232 console port can be accessed via either mini-USB port or DB9 port. A 'mini-USB to USB' cable is provided that can be used to connect the computer USB port to the switch mini-USB console port. There is a mode selection slide switch either in the front or the back of the switch depending on the model. The slide switch is preset to mini-USB. In order to use the mini-USB port, install the Windows USB driver (provided on the *Resource CD* that came with the switch) on the Windows computer used to manage the switch. If you have a DB9 cable (not provided) and wish to use DB9 mode instead, change the slide switch to the "DB9" setting. Notice that only one of the media port can be used at a time. If the wrong mode is selected, switch does not respond to the input.

Using the EIA-232 Port

You can use a locally or remotely attached terminal to configure in-band management through the EIA-232 port.

1. To use a locally attached terminal, attach one end of a null-modem serial cable to the EIA-232 port of the switch and the other end to the COM port of the terminal or workstation. For remote attachment, attach one end of the serial cable to the EIA-232 port of the switch and the other end to the modem.
2. Set up the terminal for VT100 terminal emulation.
 - a. Set the terminal to ON.
 - b. Launch the VT100 application.
3. Configure the COM port as follows:
 - a. Set the data rate to 115200 baud. The speed is preset to 115200 baud at the factory. There should be a label next to the EIA-232 port indicating the speed.
 - b. Set the data format to 8 data bits, 1 stop bit, and no parity.
 - c. Set the flow control to none.
 - d. Select the correct mode under **Properties**.
 - e. Select Terminal keys.

The Log-in User prompt displays when the terminal interface initializes.

4. Enter an approved user name and password. The default is **admin** for the user name, and the password is blank.

The switch is installed and loaded with the default configuration.

5. Disable the default DHCP client mode in order to assign an IP address manually. Enter the following command:

```
configure network protocol none
```

6. Set the IP address, subnet mask, and gateway address by issuing the following command:

```
config network parms ipaddress netmask gateway
```

- **IP Address:** Unique IP address for the switch. Each IP parameter is made up of four decimal numbers, ranging from 0 to 255. The default IP address is 169.254.100.100.
 - **Subnet:** Subnet mask for the LAN. The default value is 255.255.255.0.
 - **Gateway:** Gateway address for the subnet. There is no default.
7. To enable these changes to be retained during a reset of the switch, type **save** at the main menu prompt, and type **y** to confirm the changes.
 8. To view the changes and verify in-band information, issue the command: **show network**.
 9. The switch is configured for in-band connectivity and ready for Web-based management.

Configuring the Switch for Out-of-Band Connectivity

To monitor and configure the switch using out-of-band connectivity, use the console port to connect the switch to a terminal desktop system running terminal emulation software. The

console port connector is a male DB-9 connector, implemented as a data terminal equipment (DTE) connector.

The following hardware is required to use the console port:

- VT100-compatible terminal, or a desktop, or a portable system with a serial port running VT100 terminal emulation software.
- An RS-232 crossover cable with a female DB-9 connector for the console port and the appropriate connector for the terminal.

To connect a terminal to the switch console port using out-of-band connectivity:

1. Connect an RS-232 crossover cable to the terminal running VT100 terminal emulation software.
2. Configure the terminal emulation software as follows:
 - a. Select the appropriate serial port (serial port 1 or serial port 2) to connect to the console.
 - b. Set the data rate to 115200 baud. The speed is set to 115200 baud at the factory. The setting is also printed on the front panel under the RS-232 port.
 - c. Set the data format to 8 data bits, 1 stop bit, and no parity.
 - d. Set the flow control to none.
 - e. Select the correct mode under **Properties**.
 - f. Select Terminal keys.

Note: When using HyperTerminal with Microsoft Windows 2000, make sure that you have Windows 2000 Service Pack 2 or later installed. With Windows 2000 Service Pack 2, the arrow keys function properly in HyperTerminal's VT100 emulation. Go to www.microsoft.com for more information about Windows 2000 service packs.

3. Connect the mini-USB cable (provided) or the female connector of the RS-232 crossover cable (not provided) directly to the switch console port, and tighten the captive retaining screws.

Start the Switch

1. Locate an AC power receptacle.
2. Deactivate the AC power receptacle.
3. Connect the switch to the AC receptacle.
4. Activate the AC power receptacle.

When the power is turned on with the local terminal already connected, the switch goes through a power-on self-test (POST). POST runs every time the switch is initialized and checks hardware components to determine if the switch is fully operational before completely booting. If POST detects a critical problem, the startup procedure stops. If POST passes successfully, a valid executable image is loaded into RAM. POST messages display on the terminal and indicate test success or failure. The boot process runs for approximately 60 seconds.

Initial Configuration

The initial simple configuration procedure is based on the following assumptions:

- The switch was not configured before and is in the same state as when you received it.
- The switch booted successfully.
- The console connection was established and the console prompt displays on the screen of a VT100 terminal or terminal equivalent.

The initial switch configuration is performed through the console port. After the initial configuration, you can manage the switch either from the already-connected console port or remotely through an interface defined during the initial configuration.

The switch is not configured with a default user name and password.

All of the following settings are necessary to allow the remote management of the switch through Telnet (Telnet client) or HTTP (Web browser).

Before setting up the initial configuration of the switch, obtain the following information from your network administrator:

- The IP address to be assigned to the management interface that will manage the switch
- The IP subnet mask for the network
- The IP address of the default gateway

Initial Configuration with the Easy Setup Wizard (ezconfig)

You can perform the initial configuration using the Easy Setup Wizard or by using the command line interface (CLI).

Note: For information about CLI initial configuration, see the ProSafe Managed Switch Command Line Interface (CLI) User Manual.

The Setup Wizard sets up the following configuration on the switch:

- Establishes the initial privileged user account with a valid password. Sets up the IP address for the management interface.
- Allows you to specify the management IP address.
- Configures the default gateway IP address.

- Set up system Name and Location information for identifying the switch in the network.

Software Installation

This section contains procedures to help you become acquainted quickly with the switch software. Before installing switch software, you should verify that the switch operates with the most recent firmware.

Quick-Starting the Networking Device

1. Configure the switch for in-band or out-of-band connectivity. In-band connectivity allows access to the software locally or from a remote workstation. You must configure the device with IP information (IP address, subnet mask, and default gateway).
2. Turn the power on.
3. Allow the device to load the software until the login prompt displays. The initial state of the device is called the default mode.
4. When the prompt asks for operator login, perform the following steps:
 - Type **admin** at the login prompt. Since a number of the Quick Start commands require administrator account rights, login to an administrator account.
 - Do not enter a password because the default mode does not use a password.
 - Check that the CLI User EXEC prompt is displayed.
 - Enter `enable` to switch to the Privileged EXEC mode from User EXEC.
 - Enter `configure` to switch to the Global Config mode from Privileged EXEC.
 - Enter `exit` to return to the previous mode.
 - Enter `?` to show a list of commands that are available in the current mode.

System Information and System Setup

This section describes the commands you use to view system information and to set up the network device. The following table contains the Quick Start commands that allow you to view or configure the following information:

- Software versions
- Physical port data
- User account management
- IP address configuration
- Uploading from a networking device to out-of-band computer (only XMODEM)
- Downloading from an out-of-band computer to networking device (only XMODEM)
- Downloading from a TFTP server
- Restoring factory default settings

Managed Switches

If you configure network parameters, you should execute one of the following commands:

```
copy system:running-config nvram:startup-config
```

or

```
save
```

These commands copy or save the changes to the configuration file in the switch permanent memory. You must be in the correct mode to execute the command. If you do not save the configuration, all changes are lost when a you power down or reset the networking device. In a stacking environment, the running configuration is saved in all units of the stack.

Command	Mode	Description
<code>show hardware</code>	Privileged EXEC	Shows hardware version, MAC address, and software version information.
<code>show users</code>	Privileged EXEC	<ul style="list-style-type: none">• Displays all users who are allowed to access the networking device.• Access mode shows whether you can change parameters on the networking device (Read/Write) or can only view them (Read Only).• As a factory default, the admin user has Read/Write access, and the guest user has Read Only access. There can be only one Read/Write user. There can be up to five Read Only users.
<code>show login session</code>	User EXEC	Displays all of the login session information.
<code>Username <username></code>	Global Config	<ul style="list-style-type: none">• Set the password or change the password for the user name. You are prompted to enter the user's old password. In the absence of an old password, leave the area blank.• The password should not be more than eight characters in length.
<code>copy system:running-config nvram:startup-config</code> or <code>save</code>	Privileged EXEC	Copy or save passwords and all other changes to the device. If you do not save the configuration, all changes are lost when you power down or reset the networking device. In a stacking environment, the running configuration is saved in all units of the stack.
<code>logout</code>	User EXEC Privileged EXEC	Logs the user out of the networking device.

Managed Switches

Command	Mode	Description
<code>show network</code>	User EXEC	<p>Displays the following network configuration information:</p> <ul style="list-style-type: none"> • IP Address: IP address of the interface (default: 0.0.0.0). • Subnet Mask: IP subnet mask for the interface (default: 0.0.0.0). • Default Gateway: The default gateway for this interface (default: 0.0.0.0). • IPv6 Administrative mode: Indicates whether IPv6 is enabled. • IPv6 Prefix: The prefix/prefix length of the IPv6 address. • Burned in MAC Address: The burned in MAC address used for in-band connectivity. • Locally Administered MAC Address : Can be configured to allow a locally administered MAC address. • MAC Address Type: Specifies which MAC address should be used for in-band connectivity. • Network Configurations Protocol Current: Indicates which network protocol is being used (default: none). • Configured IPv6 Protocol: Indicates which network protocol is being used (default: none) for IPv6. • Management VLAN Id: Specifies VLAN ID.
<code>network parms <ipaddr> <netmask> [gateway]</code>	Privileged EXEC	Sets the IP address, subnet mask, and gateway of the router. The IP address and the gateway must be on the same subnet. The IP address range is from 0.0.0.0 to 255.255.255.255.
<code>copy nvram:startup-config</code>	Privileged EXEC	<p>Starts the configuration file upload, displays the mode and type of upload, and confirms that the upload is progressing. The URL must be specified as:</p> <p style="text-align: center;"><code>xmodem:<filepath>/<filename></code></p> <p>For example, if you are using HyperTerminal, you must specify where the file will be received by the computer.</p>
<code>copy nvram:errorlog</code>	Privileged EXEC	<p>Starts the error log upload, displays the mode and type of upload, and confirms that the upload is progressing. The URL must be specified as:</p> <p style="text-align: center;"><code>xmodem:<filepath>/<filename></code></p>
<code>copy nvram:traplog</code>	Privileged EXEC	<p>Starts the trap log upload, displays the mode and type of upload, and confirms that the upload is progressing. The URL must be specified as:</p> <p style="text-align: center;"><code>xmodem:<filepath>/<filename></code></p>
<code>copy nvram:startup-config</code>	Privileged EXEC	<p>Sets the destination (download) datatype to be an image (<code>system:image</code>) or a configuration file (<code>nvram:startup-config</code>). The URL must be specified as:</p> <p style="text-align: center;"><code>xmodem:<filepath>/<filename></code></p> <p>For example, if you are using Hyper Terminal, you must specify which file is to be sent to the networking device. The networking device restarts automatically once the code has been downloaded.</p>

Using Ezconfig for Switch Setup

Ezconfig is an interactive utility that provides a simplified procedure for setting up the following switch parameters:

- Switch management IP address
- Switch admin user password
- Switch name and location

Ezconfig can be entered either in Global Config mode (#) or in Display mode (>). The utility displays the following text when you enter the **ezconfig** command:

```
(Switch) >ezconfig
NETGEAR EZ Configuration Utility
-----
Hello and Welcome!

This utility will walk you through assigning the IP address for the
switch management CPU. It will allow you to save the changes at the
end. After the session, simply use the newly assigned IP address to
access the Web GUI using any public domain Web browser.

Admin password not defined. Do you want to assign the admin password
(password length should vary in a range of 8 - 64 characters)?
(Y/N/Q)
```

Note: At any point in the setup, you can type **Q** to abort the program. At this point, Ezconfig checks to see if there is any change, and prompts you if the changes should be saved.

Changing the Password

As shown in the the following example, you are prompted to change the admin password. For security reasons, you should change the default password by typing **Y**. If you have already set the password and do not wish to change it again, type **N**.

```
Enter new password:*****
Confirm new password:*****
Password Changed!

The 'enable' password required for switch configuration through the command
line interface is currently not configured. Do you wish to change it
(Y/N/Q)? y
Enter new password:*****
Confirm new password:*****
Password Changed!
```

Setting Up the Switch IP Address

After the password for both Admin and Enable mode is changed, you are prompted to set up the IP address of the switch.

```
Assigning an IP address to your switch management
Current IP Address Configuration
-----
IP Address Assignment Mode: None
IP Address: 0.0.0.0
Subnet mask: 0.0.0.0
Default Router IP: 0.0.0.0
IP address is not assigned. What do you want to do?
C - Configure IP address manually.
D - Assign IP address for the switch using DHCP mode(current IP address will be
lost).
N - Do nothing and go to the next question.
Q - Quit.
? - Help.
(C/D/N/Q/?)?
```

Ezconfig displays the current IP address and subnet mask. By default, the network DHCP server assigns IP addresses automatically according to DHCP protocol. However, you can overwrite the DHCP client mode by assigning a fixed IP address here. Once a fixed IP address is assigned, Ezconfig automatically disables DHCP client mode and assigns the static IP address to the management VLAN.

If an IP address is already assigned, and you do not wish to change the IP address again, simply type **N**.

Assigning a Switch Name and Location Information

Ezconfig proceeds to the next step in the setup:

```
Assigning System Name, System Location and System Contact to your
switch management
Current Configuration
-----
System Name:
System Location:
System Contact:
Do you want to assign switch name and location information? (Y/N/Q)
```

Managed Switches

Note: The **System Name**, **System Location** and **System Contact** fields accept only alphanumeric characters. Characters such as # \$ are not supported. The value cannot be larger than 31 bytes.

Saving the Configuration

After the name and location values are entered, Ezconfig asks if you would like to have the changes be saved in flash (permanent storage). Enter `Y` to save the configuration.

```
There are changes detected, do you wish to save the changes permanently (Y/N)?
```

```
Y
```

```
The configuration changes have been saved successfully.
```

```
Please enter 'show running-config' to see the final configuration.
```

```
Thanks for using EzConfig!
```

If the switch loses its power during the session, the setup information is lost if Ezconfig does not have the chance to save the changes before power-down.

Using the Web Interface

This section is a brief introduction to the Web interface; for example, it explains how to access the Web-based management screens to configure and manage the system.

Tip: Use the Web interface for configuration instead of the CLI. Web configuration is quicker and easier than entering the multiple required CLI commands. There are equivalent functions in the Web interface and the terminal interface—that is, both applications usually employ the same commands to accomplish a task. For example, when you log in, there is a main menu with the same functions available.

You can manage your switch through a Web browser and Internet connection. This is referred to as Web-based management. For you to use Web-based management, the system must be set up for in-band connectivity.

To access the switch, the Web browser must support:

- HTML version 4.0, or later
- HTTP version 1.1, or later
- JavaScript™ version 1.6, or later

There are several differences between the Web and terminal interfaces. For example, on the Web interface the entire forwarding database can be displayed, while the terminal interface displays only 10 entries starting at specified addresses. To terminate the Web login session, close the Web browser.

Configuring for Web Access

To enable Web access to the switch:

1. Configure the switch for in-band connectivity. (See *Configuring the Switch for In-Band Connectivity* on page 5.)
2. Web access is enabled by default.

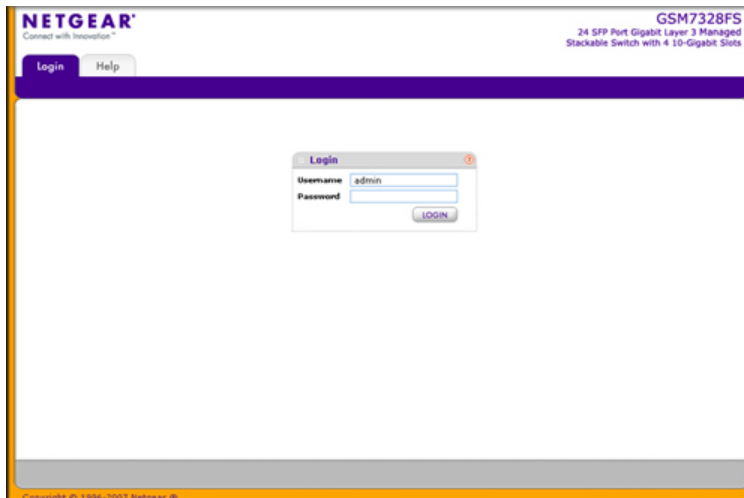
Starting the Web Interface

Follow these steps to start the switch Web interface:

1. Enter the IP address of the switch in the Web browser address field.
2. When the Login screen displays, click **Login**.
3. Enter the appropriate user name and password. The user name and associated password are the same as those used for the terminal interface. Click the **Login** button.
4. A menu displays, with selections on the left.
5. Make a selection by clicking it.

Web Interface Layout

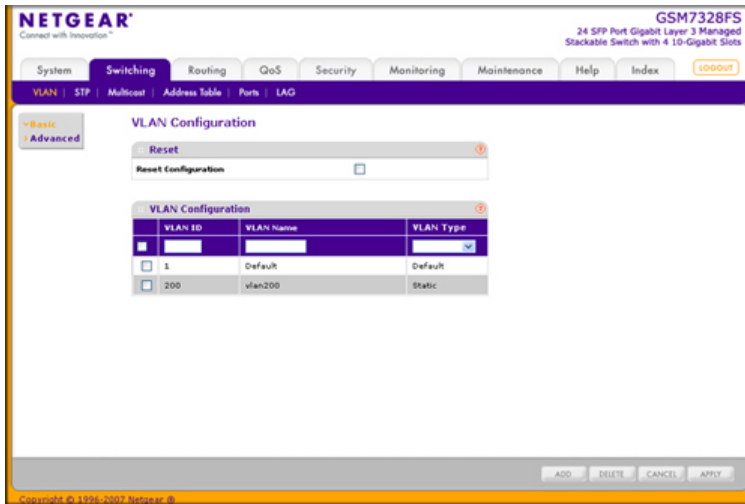
The Web interface is called the Prosafe Control Center (PCC). When you use the switch's IP address to log in to the switch, the following screen displays:



Managed Switches

The switch can accommodate two types of users: administrative users and guests. An administrative user can configure the switch for network application, but a guest cannot. The guest can only view the settings and status of the network. As shipped from the factory, both users can log in without a password. NETGEAR strongly recommends that the network administrator create a unique password for the administrative user before placing the switch into production.

The following screen shows an example of the PCC:



The PCC Web interface has the following four significant features:

1. **Layout:** The navigation pane has two rows of tabs, as shown in the following screen:

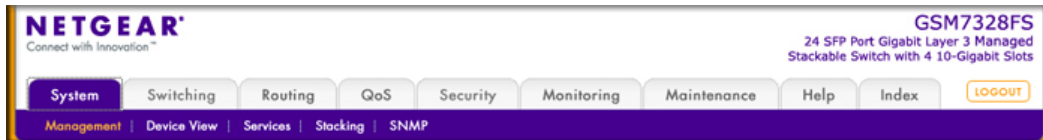


Table 1. PCC Web Interface Tabs

Tabs		Tab Contents
Main tabs	System	Configuration and status information for system features and services such as the timer, DNS server, IP address, and system resource usage.
	Switching	Features that relate to Layer 2 services such as VLANs, link aggregation, spanning tree protocol, port configuration, and the MAC address table.
	Routing	Layer 3 services such as VLAN routing, port routing, and protocols such as RIP, OSPF, VRRP, and other protocols.
	QoS	Quality of Service features such as DiffServ and CoS queue assignment.
	Security	Security services such as 802.1x port authentication, traffic control with various forwarding controls, and ACLs.
	Monitoring	Ethernet port statistics, various system logs, and port mirroring.

Table 1. PCC Web Interface Tabs (Continued)

Tabs		Tab Contents
Main tabs	Maintenance	Services to perform a firmware upgrade, to save the configuration, and to perform a backup of the configuration.
	Help	Access to the NETGEAR product support website and documentation.
	Index	The site index that allows direct access to any of the screens under the main tabs and sub tabs.
Sub tabs		The sub tab content changes depending on the selected main tab. In turn, each sub tab provides further sub categories of functions.

- 2. Unified Web Control Buttons:** Depending on the selected main tab and sub tab, in the lower right corner, buttons enable you to perform various screen-dependent operations:

 - **Add:** Add a new class, group, ACL, or VLAN.
 - **Apply:** Apply all changes that you made to a screen.
 - **Cancel:** Cancel all changes that you made to a screen.
 - **Delete:** Delete an existing list or group that was created by using an Add operation.
 - **Refresh:** Refresh the data on the screen such as log entry, port statistics, and other data.
- 3. Index Screen:** One of the unique features of the PCC is the Index screen. This screen provides links to all available screens on the PCC, allowing you to connect to each screen directly. On the Index screen, you can use your Web browser's search function to locate a particular feature, and then connect directly to the screen that enables you to view or configure that feature. Note that when you access a screen directly from the Index screen, the navigation pane does not adjust as it normally would when you navigate to the screen by using a main tag and sub tab.
- 4. Saving the Configuration:** When you click the **Apply** button to save the changes, the changes are applied to the switch but not saved in the permanent memory of the switch. When you reboot the switch, the changes are lost. To save the changes in the permanent memory of the switch, use the Save Configuration function under the Maintenance tab and then click the Save Config tab.

Configuring an SNMP V3 User Profile

Configuring an SNMP V3 user profile is a part of user configuration. Any user can connect to the switch using the SNMPv3 protocol, but for authentication and encryption, additional steps are needed. Use the following steps to configure an SNMP V3 new user profile.

1. Select **System>Configuration>User Accounts** from the hierarchical tree on the left side of the Web interface.
2. In the **User** field, select **Create** to create a new user.
3. Enter a new user name in the **User Name** field.
4. Enter a new password in the **Password** field and then retype it in the **Confirm Password** field.

Note: If SNMPv3 authentication is to be used for this user, the password must be eight or more alphanumeric characters.

5. If you do not need authentication, go to Step 9.
6. To enable authentication, in the Authentication Protocol field select either **MD5** or **SHA** for the authentication protocol.
7. If you do not need encryption, go to Step 9.
8. To enable encryption select **DES** for the encryption scheme in the **Encryption Protocol** field. Then, in the **Encryption Key** field, enter an encryption code of eight or more alphanumeric characters.
9. Click **Apply**.

Auto Install Configuration

2

Auto Install is a software feature that provides for the configuration of a switch automatically when the device is initialized and no configuration file is found on the switch. The downloaded configuration file is not distributed across a stack. When an administrator saves configuration, the config file is distributed across a stack.

The Auto Install process requires DHCP to be enabled by default in order for it to be completed. The downloaded config file is not automatically saved to startup-config. An administrator must explicitly issue a save request in order to save the configuration. The Auto Install process depends on the configuration of other devices in the network, including a DHCP or BOOTP server, a TFTP server and, if necessary, a DNS server.

There are three phases to Auto Install:

1. Configuration or assignment of an IP address for the device.
2. Assignment of a TFTP server.
3. Obtaining a configuration file for the device from the TFTP server.

Switch IP Address Assignment

If BOOTP or DHCP is enabled on the switch and an IP address has not been assigned, the switch issues requests for an IP address assignment. The behavior of BOOTP or DHCP with respect to IP address assignment is unchanged by the addition of the Auto Install feature. That is, the following information returned from the server is recognized.

- The IP address (yiaddr) and subnet mask (option 1) to be assigned to the switch
- The IP address of a default gateway (option 3), if needed for IP communication. Some network configurations require the specification of a default gateway through which some IP communication can occur. The default gateway is specified by Option 3 of a BOOTP or DHCP response.

After an IP address is assigned to the switch, if a host name is not already assigned, then Auto Install issues a DNS request for the corresponding host name. This host name is also displayed as the CLI prompt the same as if the `hostname` command was used.

TFTP IP Address and the Configuration File Name

The following information is also processed, any of which can be returned by a BOOTP or DHCP server:

- The name of the configuration file (bootfile or option 67) to be downloaded from the TFTP server.
- The identification of the TFTP server from which to obtain the bootfile. This is given by any of the following fields:
 - The host name of the TFTP server (option 66 or sname). Either the TFTP address or name is specified, not both, in most network configurations. If a TFTP host name is given, a DNS server is required to translate the name to an IP address.
 - The IP address of the TFTP server (option 150).
 - The address of the TFTP server (siaddr) to be used for Auto Install requests.

No configuration assigned by BOOTP or DHCP is saved in startup-config.

Handling Conflicting TFTP Server Configurations

The TFTP server IP address can be deduced from the multiple sources. It is selected from one of the following fields, listed from the highest priority to the lowest:

- The **sname** field of a DHCP or BOOTP reply.
- The TFTP server name (option 66) of a DHCP reply.
- The TFTP server address (option 150) field of a DHCP reply.
- The **siaddr** field of a DHCP or BOOTP reply.

DNS Server Requirements

A DNS server is needed to resolve the IP address of the TFTP server only if the sname or option 66 values are used.

Obtaining a Config File

After obtaining IP addresses for both the switch and the TFTP server, the Auto Install process attempts to download a configuration file. A host-specific configuration file is downloaded, if possible. Otherwise, a network configuration file is used as a bridge to get the final configuration. The methods are described in the following sections.

Host-Specific Configuration File

The switch attempts to download a host-specific configuration file if a bootfile name was specified by the DHCP or BOOTP server. The switch makes three unicast TFTP requests for

the specified bootfile. If the unicast attempts fail, or if a TFTP server address was not provided, Auto Install process stops. No Broadcast attempts are made.

Note: The bootfile is required to have a file type of *.cfg. The bootfile cannot have the following names: fastpath.cfg, startup-config and hpc_broad.cfg. These are reserved

Default Network Configuration File

Attempts are made to download a default network configuration file with the name fp-net.cfg if the specified bootfile cannot be found, a failure occurs in the download, or the switch was not provided a specific bootfile name by the DHCP server. The switch issues TFTP requests for a network configuration file in the same manner as it attempts to download a host-specific configuration file.

The default network configuration file should have IP address to host-name mappings using the command **ip host <hostname> <address>**. If the default network configuration file does not contain the switch IP address, the switch uses DNS to attempt to resolve its host name.

A sample fp-net.cfg file follows:

```
config
...
ip host switch_to_setup 192.168.1.10
ip host another_switch 192.168.1.11
... <other hostname definitions>
exit
```

Once a host name has been determined, the switch then issues a TFTP request for a file named **<hostname>.cfg** file, where <hostname> is the first eight characters of the switch's host name.

If the switch is unable to map its IP address to a host name, Auto Install sends TFTP requests for the default configuration file host.cfg.

The following table summarizes the config files that can be downloaded, and the order in which they are sought.

Order Sought	File Name	Description	Final File Sought
1	<bootfile>.cfg	Host-specific config file, ending in a *.cfg file extension	Yes
2	fp-net.cfg	Default network config file	No

Managed Switches

Order Sought	File Name	Description	Final File Sought
3	<hostname>.cfg	Host-specific config file, associated with host name	Yes
4	host.cfg	Default config file	Yes

The following table displays the determining factors for issuing unicast TFTP requests.

TFTP Server Address Available	Host-Specific Router Config File Name Available	TFTP Request Method
Yes	Yes	Issue a unicast request for the host-specific router config file to the TFTP server.
Yes	No	Issue a unicast request for a default network or router config file to the TFTP server.

Monitoring and Completing the Auto Install Process

Upon boot-up in the absence of a saved config file, a message displays on the console stating that the Auto Install procedure is beginning. A message subsequently displays when Auto Install is complete. The message also indicates that configuration must be saved to avoid performing Auto Install on the next reboot.

When Auto Install has been successfully completed, the messages are in buffered log, not on the console. You can execute a **show running-config** command to validate the contents of configuration. You must be logged in as administrator.

Saving Configuration

An administrator must explicitly save the downloaded configuration in nonvolatile memory so that the configuration will be available on the next reboot. If you are using the CLI, first make sure the configuration is correct, then issue a `copy running-config startup-config` command.

Host-Specific Config File Not Found

If the Auto Install process fails to download any configuration file, a message is logged. If a “final” configuration file is not downloaded, as described above, the entire process continues every 10 minutes.

Terminating the Auto Install Process

You can terminate the Auto Install process at any time prior to the downloading of the config file. This is most optimally done when the switch is disconnected from the network, or if the

requisite configuration files have not been configured on TFTP servers. Termination of the Auto Install process ends further periodic requests for a host-specific file.

Managing Downloaded Config Files

The configuration files downloaded through Auto Install are stored in the nonvolatile memory. The files can be managed (viewed, displayed, deleted) along with files downloaded through the configuration scripting utility.

A file is not automatically deleted after it is downloaded. However, the file does not take effect upon a reboot. If you opt to save the config file, the saved configuration takes effect upon reboot. If you do not opt to save the config file, the Auto Install process occurs again on a subsequent reboot. This might result in a previously downloaded files being overwritten.

Restarting the Auto Install Process

The Auto Install process is automatically started on a subsequent reboot if the configuration file is not found on the switch. This can occur if configuration has not ever been saved on the switch, or if the administrator has issued a command to erase the configuration file.

During a particular session, the Auto Install process can be restarted if the administrator has previously stopped the Auto Install process, and then chooses to restart it. This action re-initiates the process for this login session only. NETGEAR recommends that this action be performed only when the administrator is certain that configuration is clear in order to have predictable results.

Reinitialization of the switch after a clear config automatically activates the Auto Install process if there is no configuration file stored on the switch.

Logging

A message is logged for each of the following events:

- The Auto Install component receiving a config file name and other options upon resolving an IP address by DHCP or BOOTP client. The boot option values are logged.
- The Auto Install component initiating a TFTP request for a boot (config) file, receiving the file, or timing out of that request. File names and server IP addresses and host names are logged.
- The Auto Install component initiating a request for a host name. The IP address and resolved hostname are logged.
- The Auto Install component initiating a TFTP request for a <hostname>.cfg file, receiving the file, or timing out of that request. File names and server IP addresses and host names are logged.
- The beginning of applying a config script.
- The failure of the CLI scripting utility to apply a config file.
- The completion of AutoInstall.
- A conflict in the name of a config file to be downloaded with a reserved config file name.

Auto Install Configuration

Stacking

The downloaded configuration file is not distributed across a stack. When an administrator saves configuration, the config file is distributed across a stack.

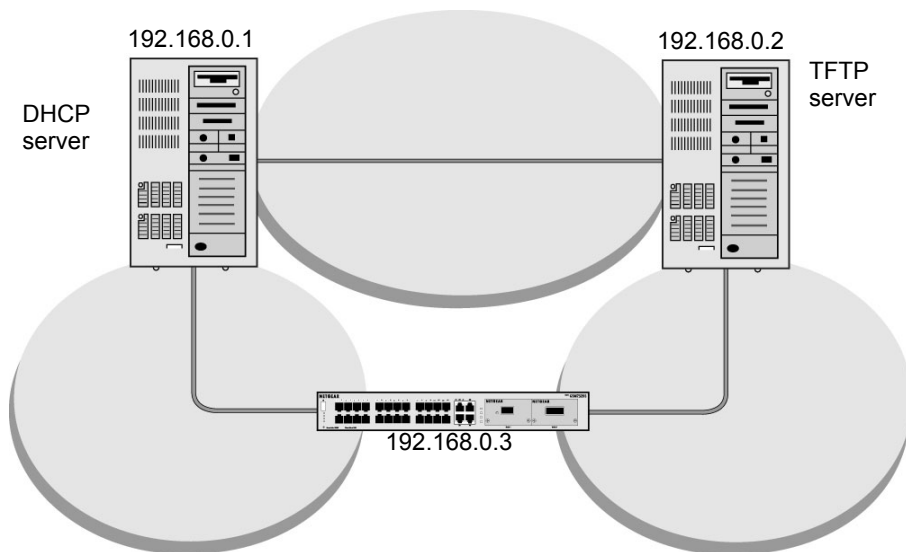


Figure 1. Configuration File Distributed across a Stack

DHCP Server Configuration

The following information is configured on the DHCP or BOOTP server:

- The IP address (yiaddr) and subnet mask (option1)
- The name of the configuration file (bootfile or option 67)
- The IP address of the TFTP server (option 150)

TFTP Server Configuration

The configuration file is on the TFTP server (for example, switch.cfg).

CLI: Switch Configuration

1. Have the configuration file saved after download from the TFTP server.

```
(Netgear Switch) #boot autoinstall auto-save
```

```
(Netgear Switch) #boot autoinstall start
```

Autoinstall starts and waits for the boot options from the DHCP server.

```
(Netgear Switch) #network protocol dhcp
```

Changing protocol mode will reset ip configuration.

```
Are you sure you want to continue? (y/n)y
```

2. Request an IP address, configuration file name, and TFTP IP address from the DHCP server.

```
(Netgear Switch) #
```

```
Config file 'startup-config' created successfully.
```

AutoInstalled configuration is saved.

```
(Netgear Switch) #show autoinstall
```

```
AutoInstall Mode..... Stopped
```

```
AutoInstall Persistent Mode..... Enabled
```

```
AutoSave Mode..... Disabled
```

```
AutoInstall Retry Count..... 3
```

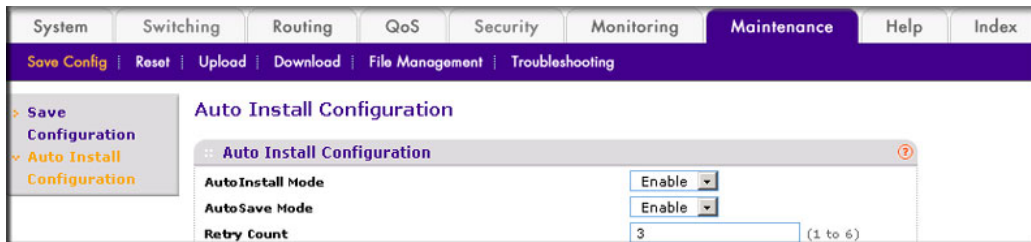
```
AutoInstall State..... AutoInstall is completed.
```

Autoinstall is now completed.

Web Interface

To use the Web interface to configure the Auto Install:

1. From the main menu, select Maintenance > Save Config >Auto Install Configuration. A screen similar to the following displays.



2. Select **Start** in the **AutoInstall Mode** field.
3. Select **Enable** in the **AutoSave Mode** field.
4. Click **Apply**.

Software License Activation

3

This chapter describes how to activate software licenses. The software licenses allow some layer 2 switches to support IPv4/IPv6 routing and Multicast routing. Not all layer 2 switches support this feature. Support depends on the model.

Create an Account at mynetgear

You can create an account at mynetgear, which allows you to view your registered products.

1. Use an Internet browser to go to <https://my.netgear.com>. A screen similar to the following displays.

NETGEAR
Connect with Innovation®

[Change Language](#)

[Products](#) | [Services](#) | [Solutions](#) | [Learning](#) | [Where to Buy](#) | [Support](#) | [Partners](#) | [Community](#) | [About](#)

NETGEAR Product Registration

Thank you for buying a NETGEAR product! By registering your product, we can help you have a better experience using our products.

First-time registration There are several benefits to registering your NETGEAR products which includes: <ul style="list-style-type: none">• Access to telephone support for your NETGEAR products• Special offers from NETGEAR only for registered customers• An online list of all of your registered NETGEAR products• Activate your support contract(s) <input type="button" value="Continue"/>	Returning users If you already registered a product with NETGEAR, log in to your account E-mail address: <input type="text"/> Password: <input type="password"/> <input type="button" value="Log in"/> Forgot your password?
---	--

2. Click **Continue** if you not registered a product before or **Log in** if you are a returning user.
3. Enter the the product registration information.
 - a. Enter your contact information and click **Next**.

NETGEAR Product Registration

Step 1 of 4 - Tell us who you are

First name: * Required

Last name: *

Country: *

Telephone: *

You must enter a valid telephone (numbers only)

Email: *

We will send your password to your e-mail address.

- b. Enter your switch serial number, date, and other information about your purchase, then click **Next**

NETGEAR Product Registration

Step 2 of 4 - Tell us about your NETGEAR product

Serial number: *



Sample:
Serial number is printed on the product

Date purchased: *

Purchase from : *

Where do you generally purchase your products : *

Was this product supplied by your ISP : *

- c. Answer the questions listed here, and click **Next**.

NETGEAR Product Registration

Step 3 of 4 - Tell us if we can count you in

I wish to receive email communication from NETGEAR :

I wish to be a part of the NETGEAR beta program :

- d. Answer the questions about your experience and then click **Finish**.

NETGEAR Product Registration

Step 4 of 4 - Tell us about your experience so far

Has your NETGEAR product been successfully installed :

How easy was the installation procedure :

How much time did the installation procedure take :

Did you use the CD during initial setup or configuration? Please select most appropriate response :

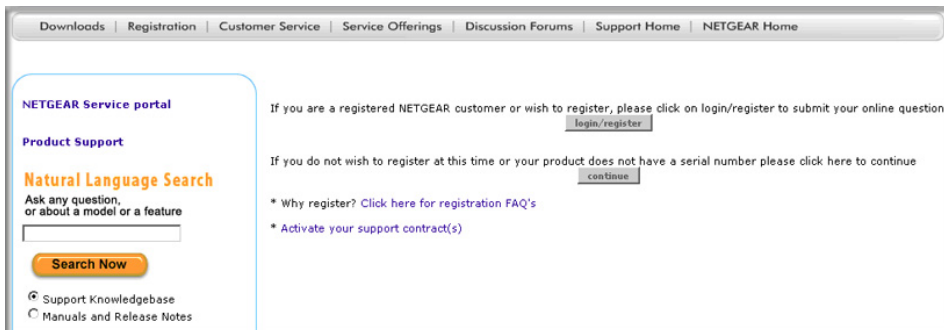
Would you recommend NETGEAR to friends and family :

Which of the following best describes your level of computer experience :

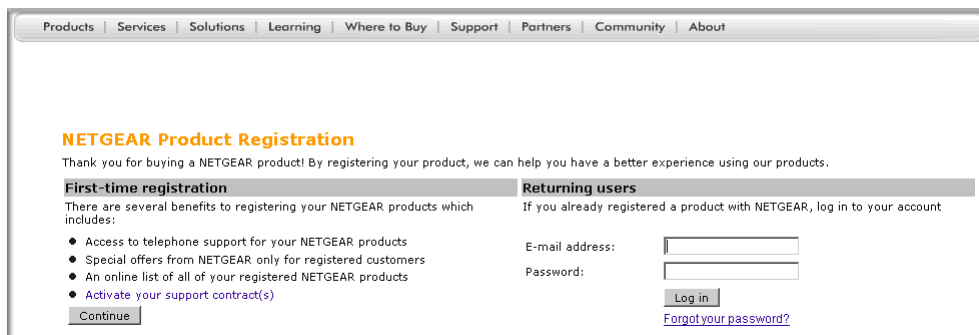
Registering Your Product

Before you can activate your license, you must register your product.

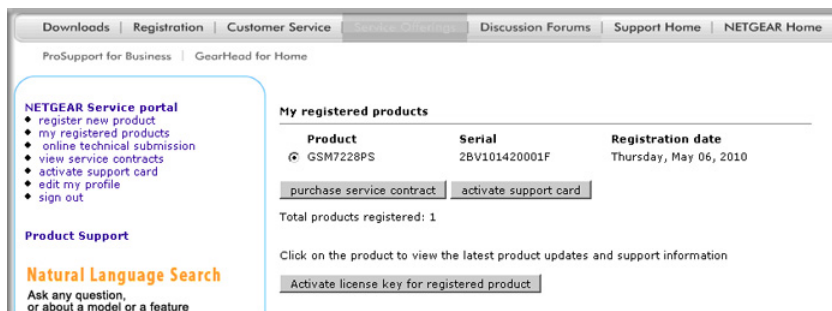
1. Use your Internet browser to go to <https://my.netgear.com> and click **login/register**.



2. Click **login/register**, and the following screen displays:



3. If you have an account, enter your email address and password, and click **Login**. A screen similar to the following displays:



Note: If you have previously registered products, you can click **my registered products** to see all the products you registered.

4. For a new switch, click **register new product** on the left hand pane to register the switch. NETGEAR recommends that you register all new products (switches).

Activating a License Key for a Switch

1. Obtain a license key from your VAR or NETGEAR authorized e-commerce portal.
2. Register your switch as described in *Registering Your Product* on page 31.
3. With the license key at hand and the serial number of the switch, go to the NETGEAR product registration website, <https://my.netgear.com>.
4. Click **Activate license key for registered product**.

You are directed to the Software License Registration website:



Because the license key has not yet been activated for this product, the **License Key** field shows **Activate**.

5. Click **Activate**, and a screen displays for entering the license key.



6. NETGEAR suggests you cut and paste the license key you received into the **License Key** field to avoid potential typing errors.

Managed Switches

7. After the key is entered, click **Submit** to display the following screen:

My registered products > GSM7252PS > Activate License Key

* Marked fields are required

Authentication and Hardware-specific Information

Serial Number * 2BW1044W00037

License Key * 29454FCD2B967F8220E430A779EA2

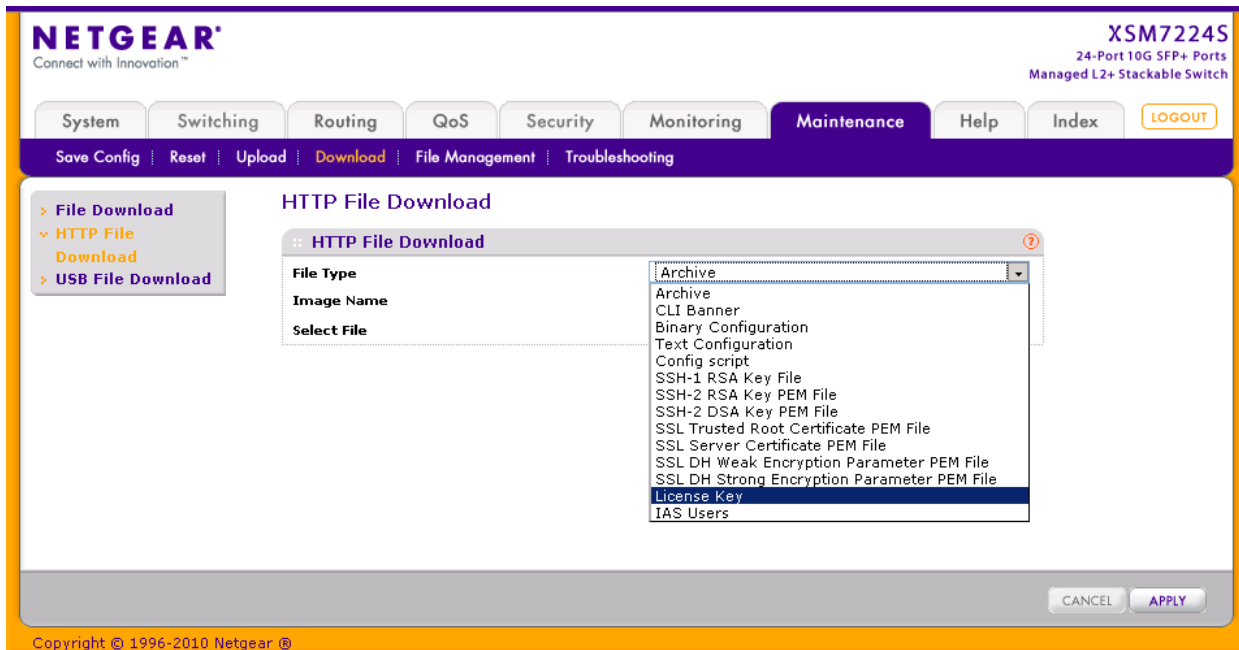
Submit

IPv4-Routing-IPv6-Routing-IPMulticast

DOWNLOAD

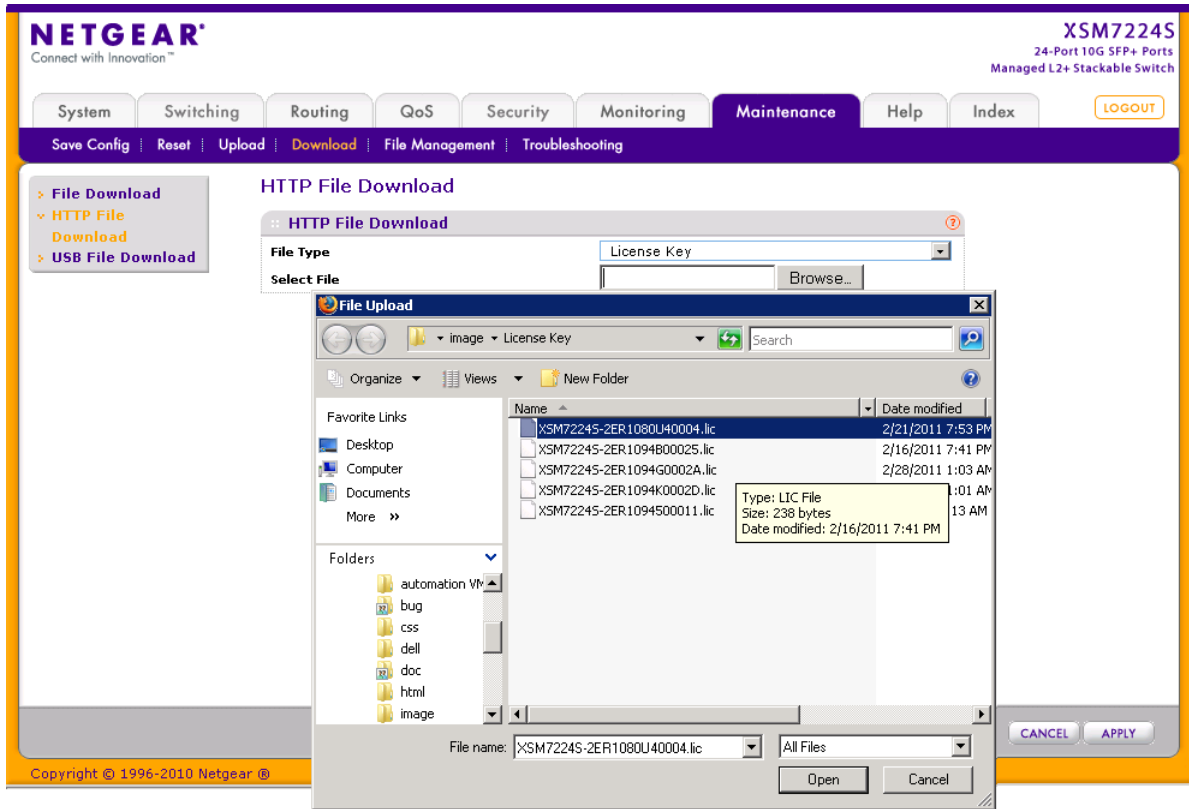
8. Click the **Download** button to save the license.dat file on your local drive.
9. Load the license.dat file onto the switch □□□□□□□□□□□□□□□□
 - a. Connect the computer with the license.dat file to the switch.
 - b. Go to the switch and use either the CLI copy command or the GUI to download the license.dat file to the switch.
 - If you are using the CLI, use the parameter `nvrn:license-key` when you download the license file. Assume ftp server is working on 10.100.5.13.

```
(Switch) #copy tftp://10.100.5.13/XSM7224S-2ER1080U40004.lic nvrn:license-key
```
 - If you are using the Web interface, be sure to select the file type as **license**.
10. Go to the Maintenance > Download > HTTP File Download
11. Select 'License Key' from the dropdown menu File Type.

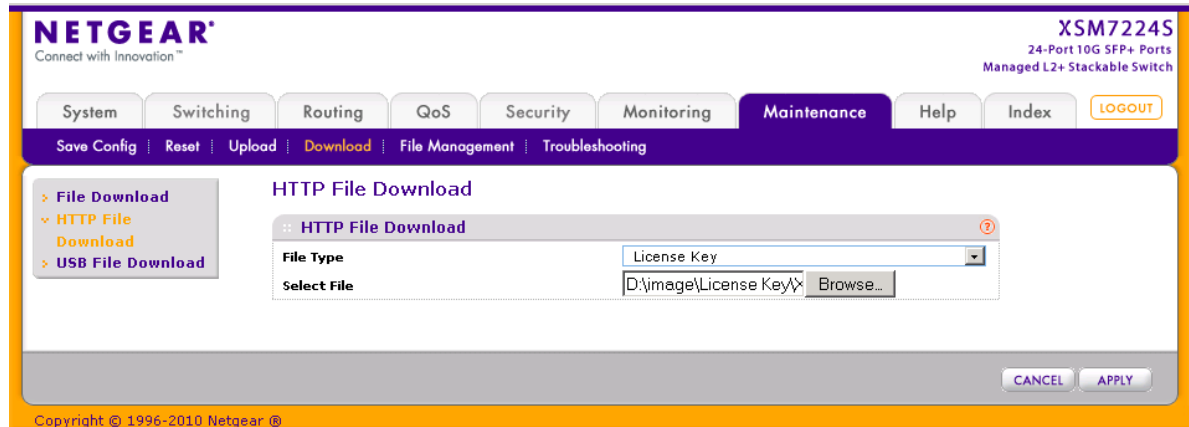


Managed Switches

1. Click the button **Browse...**



2. Select your license data file in the open dialog.



3. Click **Apply** to download the license key.

12. After the file is successfully downloaded, reboot the switch.

```
(Switch) #reload
Management switch has unsaved changes.
Would you like to save them now? (y/n) y
Config file 'startup-config' created successfully .
Configuration Saved!
Are you sure you want to reload the stack? (y/n) y
```

13. The switch now has the license software enabled.

```
(switch) #show license

License date   : July 5, 2012
License copy   : 1
License Status: Active
Description    : License key is present.
```

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