



Switch 4500G

SWITCH 4500G, VERSION 5.01.03 RELEASE NOTES

<http://www.3com.com/>

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Contents

Chapter 1 Introduction	4
1.1. Scope	4
1.2. Online Resources.....	4
Chapter 2 Enhancements and Changes to the Switch 4500G V5.01.03	5
2.1. Enhancements to V5.01.03.....	5
2.1.1. 1-Port 10 Gigabit Ethernet Module 3C17768.....	5
2.1.2. Support for the 100BASE-FX SFP Dual Mode Transceivers	5
2.1.3. Support for IPv6.....	5
2.2. Changes in V5.01.03.....	5
2.2.1. Link Aggregation – LACP (IEEE 802.3ad)	5
Chapter 3 Known Issues in the Switch 4500G V5.01.03	6
3.1. Clustering	6
3.2. CPU Usage Message.....	6
3.3. File System.....	6
3.4. IGMP Snooping and Querying	6
3.5. MAC Authentication.....	6
3.6. Power over Ethernet.....	7
3.7. Spanning Tree Ignore per VLAN.....	7
3.8. Web Interface	7
Chapter 4 Upgrading the Switch 4500G Software.....	8
4.1. Important Notes.....	8
4.2. Dynamic LACP Aggregated Links.....	8
4.3. The Contents of the Executable File	8
4.4. Upgrading from the Command Line Interface	9
4.5. Backing up the File System.....	10
4.6. Upgrading Using TFTP.....	12
4.6.1. Configuring the Boot loader and Updating the BootROM	13
4.7. Upgrading Using FTP.....	15
4.8. Upgrading from the Boot Menu Interface	17
4.9. Upgrading Using TFTP from the Boot Menu.....	19
4.10. Upgrading the BootROM Using TFTP from the Boot Menu	21
4.10.1. Example of a BootROM update thru the Boot Menu.....	22
4.11. Downloading the Application Files to Flash Using FTP from the Boot Menu.....	23
4.12. Upgrading the BootROM Using FTP from the Boot Menu	24
4.12.1. Example of updating the boot ROM from the Boot Menu	25
4.13. Downloading the Application File Using XModem from the Boot Menu.....	26
4.14. Upgrading the BootROM Using XModem from the Boot Menu.....	30
4.14.1. Example of Updating the BootROM using XModem	32
4.15. Activating the New Application File Using the Boot Menu	37

Chapter 5 Configuring SSH 2.0 with a PuTTY Client	39
5.1. Overview	39
5.2. Importing a Client Public Key using FTP.....	43
5.3. Importing the Client Public Key using sshkey.exe	45
5.4. Creating a SSH User ID and Assigning the RSA Key.....	47
5.5. Configuring PuTTY.....	48
Chapter 6 Converting dynamic aggregated links to static aggregated links.	52
6.1. Determining if Dynamic LACP Link Aggregations Used	52
6.2. Converting Dynamic Aggregated Links to Static Aggregated Links.....	53
Chapter 7 Configuring the SFP Dual Mode Transceivers.....	62
7.1. Configuring a Dual Mode SFP Transceiver Example.....	62

Chapter 1 Introduction

1.1. Scope

This document contains the release notes for the Switch 4500G V5.01.03 software. These release notes summarize operational requirements and issues for the Switch 4500G products:

- Switch 4500G 24-Port (3CR17761-91)
- Switch 4500G 48-Port (3CR17762-91)
- Switch 4500G 24-Port PWR (3CR17771-91)
- Switch 4500G 48-Port PWR (3CR17772-91)

Table 1 Software Release Numbers Addressed in These Release Notes

Software	Description
s3q05_01_03s56.app	Application version 5.01.03s56 weak encryption for the Switch 4500G
s3q05_01_03s168.app	Application version 5.01.03s168 strong encryption for the Switch 4500G
s3r01_20.btm	Boot code version 120 for the Switch 4500G

1.2. Online Resources

Use these notes in conjunction with the following documents:

- *Switch 4500G Family Getting Started Guide*, part number 10014899
- *Switch 4500G Family Configuration Guide*, part number 10014900
- *Switch 4500G Family Command Reference Guide*, part number 10014901
- *Switch 4500G Family Quick Reference Guide*, part number 10014902
- *Switch 4500G Family 10GE Interface Module Installation Guide*, part number 10014904

These documents are located at www.3Com.com. You can obtain the latest technical information for your switch, including a list of known problems and solutions, from the 3Com Knowledgebase: <http://knowledgebase.3com.com>

Chapter 2 Enhancements and Changes to the Switch 4500G V5.01.03

2.1. Enhancements to V5.01.03

2.1.1. 1-Port 10 Gigabit Ethernet Module 3C17768

The V5.01.03 software now supports the 1-Port 10 Gigabit Ethernet module, 3C17768.

2.1.2. Support for the 100BASE-FX SFP Dual Mode Transceivers

The transceiver is installed in a Gigabit SFP port. This SFP can be used only for 100 Mbps connections.

- 3CSFP9-81:100Base-FX SFP Transceiver – Dual Mode. 50u or 62.5u multimode fiber supports a link length of up to two kilometers. LC connector.
- 3CSFP9-82:100Base-LX10 SFP Transceiver – Dual Mode. 9u single-mode fiber supports a link length of up to 10 kilometers. LC connector.

See the section entitled [Configuring a Dual Mode SFP Transceiver Example](#) for more information on how to configure the transceivers.

2.1.3. Support for IPv6

Beginning with V5.01.03 software, IPv6 functionality is now officially supported by 3Com.

2.2. Changes in V5.01.03

2.2.1. Link Aggregation – LACP (IEEE 802.3ad)

Dynamic LACP has been removed. LACP is only supported with static link-aggregation groups. There is more information on this in the “Chapter 4- Upgrading Software”, sections [Dynamic LACP Aggregated Links](#) and “Chapter 6- Converting dynamic aggregated links to static aggregated links”.

Chapter 3 Known Issues in the Switch 4500G

V5.01.03

3.1. Clustering

If more than one cluster will be configured in a network, each cluster must be configured with a different IP pool or each cluster must be configured on a different management VLAN.

Web management of clusters is not supported in this release.

3.2. CPU Usage Message

When the Switch 4500G is rebooted, the unit will experience high CPU usage for a very short period of time during the initialization process. If CPU usage reaches 100%, a trap message is generated on the console. This is normal behavior, and CPU usage will return to normal levels once the unit completes its initialization.

3.3. File System

When using the User view command *dir* to display file system information, there is no indication as to which files are main files and which files are backup files. Use the *display startup* command to view file attributes.

3.4. IGMP Snooping and Querying

The Switch 4500G supports IGMP snooping. Additionally, the switch has a feature called igmp-snooping querier. Note that this querier feature is a Layer 2 feature only and has no multicast and no IGMP Querier election capabilities. It should not be used where true IGMP queriers are present.

3.5. MAC Authentication

When a MAC address is sent to a RADIUS server for authentication, the Switch 4500G sends the MAC addresses without dashes (e.g. 00301bae794a rather than 00-30-1b-ae-79-4a).

When authenticating MAC Addresses, the Switch 4500G sends user names and passwords to the RADIUS server in lower case, regardless of how the user enters it (upper or lower case) on the Switch 4500G.

3.6. Power over Ethernet

On the PWR models, when displaying the Current Power and Peak Power on the CLI, the values may be above the expected Maximum Power 802.3ad standard of 15.4W.

3.7. Spanning Tree Ignore per VLAN

The Spanning Tree Ignore per VLAN feature is not supported on the Switch 4500G.

3.8. Web Interface

When a Redundant Power Supply (RPS) is connected to the Switch 4500G, supported on the PWR models only, there is no change to the Web Interface to indicate the presence of a DC RPS. In addition, when the AC is disconnected, the "Back Panel" area only displays a color change around the plug from green to red and the "AC" disappears.

Chapter 4 Upgrading the Switch 4500G Software

4.1. Important Notes

This chapter describes how to upgrade software on your Switch 4500G. This section covers the following topics:

- The contents of the executable file
- Upgrading from the Command Line Interface (CLI) and the Boot menu

FTP and TFTP are much quicker on the CLI than using the boot menu procedure or Xmodem. Xmodem is slower because the download speed is that of the serial port. Normally Xmodem is used in a recovery process because the application cannot be loaded during the startup process, and/or there is no access to an FTP/TFTP server to load the new application or bootROM files on.

If you need an FTP or TFTP server, there are FTP/TFTP servers on the www.3Com.com website. Search for “tftp server”. They are located in “3Com Software Library- Utilities for 32 bit Windows”.

Note: For those familiar with the operation of the 3Com Switch 5500/5500G, 4500, and 4200G products, note that with the Switch 4500G there are no associated web interface files or 3comoscfg.def files to initially load. Unlike with these earlier noted switches, these files are not necessary to bring up the Switch 4500G.

4.2. Dynamic LACP Aggregated Links

Dynamic LACP (IEEE 802.3ad) has been removed from V5.01.03. LACP (IEEE 802.3ad) can be used with static aggregated links. If dynamic links are configured, convert them to static aggregated links **before** updating to V5.01.03. This link to [3KB Document ID: 3KB21594](#), alias “Chapter 6- Converting dynamic aggregated links to static aggregated links” provides information on how to determine if dynamic link aggregation groups are configured and how to convert a dynamic link aggregation group to a static link aggregation group.

4.3. The Contents of the Executable File

The self-extracting executable file s3q05_01_03s56.exe or s3q05_01_03s168.exe contains the following:

- End User License
- Release Notes
- Application Software
- BootROM Software
- Bundled File used with 3ND upgrade wizard — e.g. s3q05_01_03s56NetMan.zip

Use the bundled files with the extension **NetMan.zip** to upgrade your switch using the 3Com Network Director Agent Update (Device>Agent Import and Device>Agent Update). Any attempt to upgrade individual .btm or .app files using 3Com Network Director will fail. Any attempt to upgrade

the switch directly with s3q05_01_03s56.exe or s3q05_01_03s168.exe and/or s3q05_01_03s56NetMan.zip or s3q05_01_03s168NetMan.zip will fail.

4.4. Upgrading from the Command Line Interface

This section describes how to upgrade files to your Switch 4500G from the Command Line Interface (CLI).

When using FTP or TFTP to do updates, the switch must have an IP address configured. If not already configured, refer to the “3Com® Switch 4500G Family Getting Started Guide”, chapter on “Setting Up for Management”.

Before you upgrade, verify that:

- There is a connection between the FTP or TFTP server and the Switch 4500G (use the **ping** command).
- The FTP or the TFTP server is set up according to the manufacturer’s instructions and that it is enabled and pointing to the correct upload/download directory.

Perform the following steps:

1. Logon to the switch either through the console port or using telnet. Press Enter and the “Login authentication” and “Username:” prompts appear. The default username is **admin** and the default password is a carriage return/Enter key.

Before upgrading the software to your Switch 4500G from the CLI, it is important to check the contents of the flash to ensure that there is enough space to download the new files.

The flash space needed for the new files for the Switch 4500G is approximately 5.5 MB. The size of flash:/ is approximately 15 MB.

2. To check the contents of the flash, in the User View in the CLI, enter the following:

```
<4500G>dir
```

A file list similar to the following is displayed:

```
Directory of flash:/
  0  -rw-   5213253  Apr 27 2000 12:49:41   s3q05_01_00s56c05.app
15240 KB total (10145 KB free)
```

The file system listing may also contain files called topology.top, configurations files (file suffix .cfg) and/or boot ROM file (file suffix .btm).

3. Any additional files should be considered for deletion to allow maximum space for downloading the new files. To delete a file from the list enter:

```
delete /unreserved flash:/(filename)
```

Caution: Do not delete the **topology.top** file or any configuration files that are currently in use (file suffix .cfg).

The **/unreserved** option deletes the file from both the flash and the recycle-bin. This can take minutes depending on the size of the file being deleted.

To check that deleted files have been removed from the recycle-bin, enter the following:

```
reset recycle-bin flash:/
```

A prompt is displayed for every file that is in the recycle-bin. Answer **Y** to remove the file from the recycle bin. If you do not want to verify the files for deletion, use the command **reset recycle-bin flash:/ /force**

Answer **y** to the prompt “Clear files in recycle-bin directly?[Y/N]:y”

This can take minutes depending on how many bytes are in the recycle bin.

If the recycle-bin is empty the following is displayed:

```
The recycle-bin is empty
```

4.5. Backing up the File System

The following steps enable you to backup the Switch 4500G’s file system:

The flash:/ file system files can be saved to an external TFTP,FTP or SFTP server or to the flash:/ on the switch. If there are not enough free records available on the flash:/ or you prefer to keep a backup copy of the files around more permanently, save the files to an external TFTP,FTP or SFTP server. The steps below demonstrate how to back up the file system using flash:/ or to a TFTP server. In the examples below, the TFTP server’s IP address is 10.0.1.100. Your TFTP servers IP address is probably different.

1. Configuration files, .cfg file(s): If the Switch 4500G is brand new and the configuration has never been saved there will not be a .cfg file. The first time you save a configuration, you are prompted for the filename. If you do not enter a filename, the filename defaults to 3comoscfg.cfg. The configuration file can be any name, provided it ends in the extension .cfg. 3Com recommends that you give each unit a unique configuration file name so that when the file is saved to an external TFTP, FTP or SFTP server, it is clear which unit the configuration file belongs to.

If you make changes to the switch’s configuration issue the **save** command or the changes will be lost when the switch is rebooted. The **save** command can be issued in the system or the user view.

In this example, the unit is new and does not have an existing configuration file. The default file name, 3comoscfg.cfg, is accepted. The **display startup** command displays which configuration file will be used the next time the Switch 4500G is rebooted. The **display boot-loader** displays the application (.app) file that will be used after a reboot. The current .app file is s3q05_01_00s168.app. Your current .app file maybe different. It will *probably* be s3q05_01_00s56.app or s3q05_01_00s168.app. These files must reside locally on the flash:/ file system.

```
<4500G>save
The current configuration will be written to the device.
Are you sure?[Y/N]:y
Please input the file name(*.cfg)[flash:/3comoscfg.cfg](To leave the
existing filename unchanged, press the enter key):(Hit the enter key or
specify the filename you desire. It must have a .cfg extension)

Validating file. Please wait...
Now saving current configuration to the device.
Saving configuration flash:/3comoscfg.cfg. Please wait...
```

```

..
Configuration is saved to flash successfully.
<4500G>dir
Directory of flash:/

   0  -rw-   5287307  Oct 18 2006 10:20:20  s3q05_01_00s168.app
   1  -rw-     7247   Apr 27 2000 07:05:44   3comoscfg.cfg

15240 KB total (10053 KB free)
<4500G>dis startup
Current startup saved-configuration file:      NULL
Next main startup saved-configuration file:    flash:/3comoscfg.cfg
Next backup startup saved-configuration file:  NULL
<4500G>dis boot-loader
The current boot app is:  flash:/s3q05_01_00s168.app
The main boot app is:    flash:/s3q05_01_00s168.app
The backup boot app is:  NULL

```

To back up the default configuration file to the switch's flash:/ file system, enter:

```

<4500G>copy flash:/3comoscfg.cfg flash:/Sw4500g.cfg
Copy flash:/3comoscfg.cfg to flash:/sw4500g.cfg?[Y/N]:y
..
%Copy file flash:/3comoscfg.cfg to flash:/sw4500g.cfg...Done.

```

To save the active configuration file to a TFTP server in User View enter:

```

tftp (IP address of the TFTP server) put flash:/( configuration filename)

```

Example:

```

<4500G>tftp 10.0.1.100 put flash:/3comoscfg.cfg

File will be transferred in binary mode
Sending file to remote tftp server. Please wait... |
TFTP:      7247 bytes sent in 0 second(s).
File uploaded successfully.

```

2. To back up the application file to the switch's flash:/ file system, enter:

```

copy flash:/ s3q05_01_00s168.app flash:/ s3q05_01_00s168bac.app

```

Two application images usually fit in the flash:/ file system. Three images will not fit. It is a better idea to back up the application file to a TFTP/FTP server, otherwise there will not be enough room to fit the new application file. To backup to a TFTP server, enter:

```
tftp (IP address of the TFTP server) put flash:(.app filename)
```

Example:

```
<4500G>tftp 10.0.1.100 put flash:/ s3q05_01_00s168.app

File will be transferred in binary mode
Sending file to remote tftp server. Please wait... |
TFTP: 5287307 bytes sent in 289 second(s).
File uploaded successfully.
```

This takes approximately four minutes with no traffic on the switch.

3. To back up the boot ROM file to the switches flash:/ file system, enter:

```
copy flash:/s3r01_15.btm flash:/s3r01_15boot.btm
```

4. To back up the boot ROM file to a TFTP server, enter:

```
tftp (IP address of the TFTP server) put flash:(boot ROM filename)
```

4.6. Upgrading Using TFTP

To upgrade software to your Switch 4500G using TFTP, do the following:

1. Make sure there is connectivity to the TFTP server by pinging the server. The application filename is s3q05_01_03s168.app or s3q05_01_03s56.app. In the example below, the filename is **s3q05_01_03s56.app**. To download the application file, enter:

```
tftp (IP address of the TFTP server) get s3q05_01_03s56.app
```

Example:

```
<4500G >tftp 10.0.1.100 get s3q05_01_03s56.app
...
File will be transferred in binary mode
Downloading file from remote TFTP server, please
wait.....
TFTP: 5345380 bytes received in 64 second(s)
File downloaded successfully.

<4500G >
```

The file names for the Switch 4500G **are** described in the following table.

Filename Prefix / Suffix	3Com Switch 4500G Model
s3q / .app	Switch 4500G application software
s3r / .btm	Switch 4500G boot ROM software

Unlike the 3Com Switch 5500, Switch 4500, and Switch 4200G, there is no .web file for the web interface. It is not required for the Switch 4500G's Web interface.

The BootROM firmware may not require upgrading for every software upgrade. The BootROM version for V5.01.03 is 120. The BootROM version did change between V5.01.00 and v5.01.03.

To display the BootROM firmware version, in any view enter:

```
display version
```

The following should be displayed within the returned output:

```
Bootrom Version is 120
```

The number 120 matches the version number in the BootROM file, which is s3r01_20.btm. If the version number of the file matches the displayed version, there is no need to download the BootROM (.btm) file. If the version displayed on your Switch 4500G is earlier, install the newer version. V5.01.03 comes with an updated BootROM.

To download the BootROM file, enter:

```
tftp (IP address of the TFTP server) get s3r01_20.btm
```

To activate the application and BootROM, follow the procedure in the following section, "Configuring the Boot loader and Updating the BootROM".

4.6.1. Configuring the Boot loader and Updating the BootROM

Use the following procedure to activate the application file and update the BootROM.

1. To set the switch to boot from the new application code (.app file), enter the following (your .app file name maybe different):

```
boot-loader file flash:/s3q05_01_03s56.app main
```

Answer **y** to the prompt. Example:

```
<4500G>boot-loader file flash:/s3q05_01_03s56.app main
  This command will set boot file, Continue? [Y/N]:y
  The specified file will be used as a main boot file at the next time!
<4500G>dis boot-loader
The current boot app is:  flash:/s3q05_01_00s56.app
The main boot app is:    flash:/s3q05_01_03s56.app
```

```
The backup boot app is:  NULL
```

You can optionally configure a backup boot application file. You can then use this file if the main boot application file cannot load during the restart/boot process.

2. To update the new BootROM firmware, enter:

```
bootrom update file flash:/s3r01_20.btm
```

Answer **y** to the prompt. Example:

```
<4500G>bootrom update file flash:/s3r01_20.btm
  This command will update bootrom file, Continue? [Y/N]y
  Now updating bootrom, please wait...

<4500G>
```

3. If you made changes to the switch's configuration that you wish to keep, **save** the configuration before rebooting the switch:

```
4500G>save
```

Example:

```
<4500G>save
The current configuration will be written to the device.
Are you sure?[Y/N]:y
Please input the file name(*.cfg)[flash:/3comoscfg.cfg](To leave the
existing filename unchanged, press the enter key):
flash:/3comoscfg.cfg exists, overwrite?[Y/N]:y

Validating file. Please wait...
Now saving current configuration to the device.
Saving configuration flash:/3comoscfg.cfg. Please wait...
.....
Configuration is saved to flash successfully.

<4500G>
```

4. **Reboot** the switch to load the new bootROM and application code. The Switch 4500G boots from the specified application .app file and configuration file .cfg as displayed in the **display boot-loader** and **display startup** commands.
5. To verify that the new application version and bootROM version are active, when the reboot process is complete, issue the **display version** (abbreviated **dis ver**) command. They are displayed in ***bolded and italicized*** text below.

```
< 4500G>dis ver
3Com Corporation
3Com Switch 4500G 48-Port Software Version 3Com OS V5.01.03s56
```

```
Copyright (c) 2004-2007 3Com Corporation and its licensors. All rights reserved.

3Com Switch 4500G 48-Port uptime is 0 week, 2 days, 20 hours, 8 minutes

3Com Switch 4500G 48-Port with 1 Processor
128M bytes SDRAM
16384K bytes Flash Memory

Hardware Version is REV.B
CPLD Version is 004
Bootrom Version is 120

[SubSlot 0] 48GE+4SFP Hardware Version is REV.B
[SubSlot 1] 2 XFP Hardware Version is REV.B
[SubSlot 2] 1 XFP Hardware Version is REV.B
```

You can delete the files that you saved during the backup process once you are satisfied that the upgrade was successful and that there are no problems. It is good idea to keep a copy of these files on a TFTP, FTP or SFTP server in case of a disaster or you need to replace the Switch 4500G.

4.7. Upgrading Using FTP

To upgrade software on your Switch 4500G using FTP, perform the following steps:

- 1. Enter the **ftp** command from User View:

```
ftp (IP address of the FTP server)
```

If the FTP server is successfully located, the following information is displayed:

```
Trying... Press CTRL+K to abort Connected
Connected to (IP address of the FTP server).
```

Information about your FTP server is displayed. Logon with your username and password.

- 2. Change the transfer mode to binary and get the file by entering:

```
binary
get s3q05_01_03s56.app
```

The following information is displayed if the download is successful:

```
200 PORT command successful.
150 File status OK ; about to open data connection
.....226 File transfer successful.
FTP: 5345380 byte(s) received in 57.152 second(s), 93.00K byte(s)/sec.
```

3. The BootROM firmware may not require upgrading for every software upgrade. The bootROM version did change between V5.01.00 and v5.01.03. Display the BootROM firmware version in the user or system view, by entering (**quit** from the FTP view first):

```
display version
```

The following information is displayed within the returned output:

```
Bootrom Version is 120
```

The number 120 matches the version number in the BootROM file, which is s3r01_20.btm. If the file's version number matches the displayed version, there is no need to download the bootROM (.btm) file. If the version displayed on your Switch 4500G is earlier, download and install the newer version.

4. Download the BootROM file entering:

```
get s3r01_20.btm
```

Note: If the following message is displayed when issuing a command within FTP, it means that Passive mode is the default mode for the FTP client on the switch:

```
202 Command PASV not implemented
```

5. Disable passive mode by entering:

```
undo pas
```

% Passive is off is displayed. Issue the `get s3r01_20.btm` command again.

6. Enter **quit** or **bye** to exit.

Below is an example update using FTP . The FTP server's IP address is **10.0.1.100**. The application to be loaded is **s3q05_01_03s56.app** and the bootROM file is **s3r01_20.btm**.

```
<4500G>ping 10.0.1.100
  PING 10.0.1.100: 56  data bytes, press CTRL_C to break
    Reply from 10.0.1.100: bytes=56 Sequence=1 ttl=128 time=3 ms
    Reply from 10.0.1.100: bytes=56 Sequence=2 ttl=128 time=2 ms
    Reply from 10.0.1.100: bytes=56 Sequence=3 ttl=128 time=2 ms
    Reply from 10.0.1.100: bytes=56 Sequence=4 ttl=128 time=2 ms
    Reply from 10.0.1.100: bytes=56 Sequence=5 ttl=128 time=5 ms

  --- 10.0.1.100 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 2/2/5 ms
<4500G>ftp 10.0.1.100
Trying 10.0.1.100 ...
Press CTRL+K to abort
Connected to 10.0.1.100.
220 3Com FTP Server Version 1.1
```

```
User(10.0.1.100:(none)) :(FTP User ID)
331 User name ok, need password
Password:(password for the FTP user ID)
230 User logged in
[ftp]bin
200 Type set to I.

[ftp]get s3q05_01_03s56.app

202 Command PASV not implemented
FTP: Error Writing Local File(Screen).

[ftp]undo pas
FTP: passive is off

[ftp]get s3q05_01_03s56.app

200 PORT command successful.
150 File status OK ; about to open data connection
.....226 File transfer
successful.
FTP: 5345380 byte(s) received in 57.152 second(s), 93.00K byte(s)/sec.

[ftp]bye
221 Service closing control connection

<4500G>
```

- 7. Activate the application and BootROM files by following the instructions in **“Configuring the Boot loader and Updating the BootROM”**.

4.8. Upgrading from the Boot Menu Interface

If you are unable to complete the update from the command line interface (described in the previous sections), you can perform the update from the Boot Menu. This section describes general information about upgrading your Switch 4500G from the Boot menu interface. Specific information about using tftp, FTP or XModem thru the Boot Menu is provided in the following sections. Both the application and BootROM code can be updated through the boot menu. You can also use the Boot Menu to configure the boot loader to boot from the new application file.

Once the new application code is loaded, and if necessary, the BootROM is updated, and the boot loader is configured to boot from the new application file, you can reboot the Switch 4500G using option **0** (zero) from the Boot Menu.

The Boot Menu options are displayed through the console port. The default console port connection is 19200 Baud, 8 Data Bits, Parity none, 1 Stop bit and None for flow control.

To make sure there are enough free records in the file system before the update, perform the following steps:

1. When the Switch 4500G is running the initial boot phase (when it is powered on or after a reboot), the console displays the following prompt with a five second countdown timer:

```
Press CTRL-B to enter Boot Menu... 4
```

Press CTRL-B within five seconds and then the password prompt is displayed:

```
password:
```

2. Press **Enter** (the default value is no password). The boot menu is displayed:

```
BOOT MENU
1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot
Enter your choice (0-9):
```

Before upgrading the software on your Switch 4500G from the BootROM interface, it is important to check the contents of the flash file system to ensure that there is enough space to download the new files.

The flash space needed for the new files is approximately 5.5 MB for Switch 4500G. The size of flash:/ is approximately 15 MB.

3. Select option **3** from the Boot Menu. A file list similar to the following is displayed:

```
Enter your choice(0-9): 3
File Number      File Size(bytes)      File Name
=====
1                4                      snmpboots
2                377424                 s3r01_15.btm
3(*)             5287307                s3q05_01_00s56.app
Free Space: 9935872 bytes
The current application file is s3q05_01_00s56.app
(*)-with main attribute
(b)-with backup attribute
```

This option displays all the files in flash. The file(s) from which the Switch 4500G is currently set to boot is also indicated by the attributes.

The new files that are required to update the Switch 4500G include:

```
s3r01_20.btm  
s3q05_01_03s56.app or s3q05_01_03s168.app
```

The s3q05_01_03s168.app or s3q05_01_03s56.app file is the application software. The name of this file will vary depending on the release version. If there are multiple .app files, and you need space on the flash:/ file system, delete the backup application file to make room for the updated application file. You can, if you wish, make the current main application file the “new” backup application file after you load the new main application file (s3q05_01_03s168.app or s3q05_01_03s56.app).

If the filename is in brackets, for example [test.cfg], it means that the file has been deleted from the flash:/ file system but is still present in the recycle-bin. If you do not need these files, delete them first. You may recover space in the flash:/ file system to continue with the update/upgrade.

The file system listing may also contain files called topology.top or configuration files (with the file suffix .cfg). Do not delete topology.top file. If there are multiple configuration files, do not delete the configuration file with the main attribute. Try to avoid deleting the configuration file with the backup attribute.

You should consider deleting any additional files to obtain maximum space for downloading the new files. For example, you can delete the old application files (those files without the main attribute indicated).

4. To delete a file from the list, select option 4 from the Boot Menu and specify the file number you wish to delete.

4.9. Upgrading Using TFTP from the Boot Menu

To upgrade software on your Switch 4500G using TFTP through the Boot Menu, perform the following steps:

1. From the Boot Menu, select option 1 (Download application file to flash) to display the following menu:

```
Enter your choice (0-9): 1  
  
1. Set TFTP protocol parameters  
2. Set FTP protocol parameters  
3. Set XMODEM protocol parameters  
0. Return to boot menu  
Enter your choice (0-3):
```

2. Select option 1. Enter the file name, switch IP address, and TFTP server IP address. The switch and the TFTP server must reside on the same IP subnet.

```
Load File name      :  
Switch IP address   :  
Server IP address   :
```

3. The following prompt is displayed:

```
Are you sure you want to download this file to flash? Yes or No(Y/N)
```

4. Enter **y** and the following information is displayed to indicate that the file is downloading:

```
Attached TCP/IP interface to netdrv0.
Attaching network interface lo0... done.
Loading...(removed "... for ease of reading)....
.....done
Free flash Space: 9920512 bytes
Writing flash.....
.....
..done!
Please input the file attribute (main/backup/none): none
done!
```

The following example downloading the application file through the Boot Menu

```
BOOT MENU
1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot

Enter your choice(0-9): 1

1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter
0. Return to boot menu

Enter your choice(0-3): 1
Load File name          :all_flash.app  s3q05_01_03s168.app
Switch IP address       :192.168.0.1  10.101.28.223
Server IP address       :192.168.0.244  10.101.28.100
Are you sure you want to download this file to flash? Yes or No(Y/N) y
```

```
Attached TCP/IP interface to netdrv0.
Attaching network interface lo0... done.
Loading...(removed "\"" for ease of reading)....
.....done
Free flash Space: 9920512 bytes
Writing flash.....
.....
.....done!

Please input the file attribute (main/backup/none):main
The attribute of s3q05_01_00s56.app is changed from main to none!

done!
```

Note: *s3q05_01_00s56.app was the old existing application file .The application file s3q05_01_03s168.app will now be used when the switch is rebooted because **main** was specified. If you specify **backup** as the file attribute, this file will be used only if the main file is unavailable. If you specify **None** as the attribute, the file will only be added to the file system. You can change the attributes again following the procedure in the section entitled Activating the New Application File Using the Boot Menu*

The BOOT MENU is displayed.

5. If needed, repeat steps 1 through 4 for each remaining file (you can download the **.app** and **.cfg** files using this method). Do not use this method for updating the BootROM code. Use one of the BootROM procedures.
6. If needed, see the section entitled "Activating the New Application File Using the Boot Menu".

4.10. Upgrading the BootROM Using TFTP from the Boot Menu

To upgrade the BootROM using TFTP through the Boot Menu, perform the following steps:

1. From the Boot Menu, specify option **6** (Enter BootROM upgrade menu) to display the following:

```
Enter your choice (0-9): 6

BootROM update menu:
1. Set TFTP protocol parameters
2. Set FTP protocol parameters
3. Set XMODEM protocol parameters
0. Return to boot menu
Enter your choice (0-3):
```

- Specify option 1 to display the following:

```
Load File name:
Switch IP address:
Server IP address:
```

- Enter the file name (it has a .btm suffix, s3r01_20.btm), the Switch 4500G IP address and the TFTP server IP address. The switch and the TFTP server must reside on the same IP subnet. The following prompt is displayed:

```
Are you sure you want to update your bootrom? Yes or No(Y/N)
```

- Enter **y** to confirm the action. The following message indicates that the file is downloading:

```
Loading.....
.....
.....done
Bootrom updating.....done!
```

4.10.1. Example of a BootROM update thru the Boot Menu

```
BOOT MENU
1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot

Enter your choice(0-9): 6

Bootrom update menu:
1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter
0. Return to boot menu

Enter your choice(0-3): 1

Load File name           :s3q05_01_03s56.app  s3r01_20.btm
Switch IP address        :10.10.23.223  Note: the IP addresses where
correct, you may have to enter in different ones.
Server IP address        :10.10.23.100
```

```

Are you sure you want to update your bootrom? Yes or No(Y/N) y
Loading.....
.....
.....done
Bootrom updating.....done!

```

4.11. Downloading the Application Files to Flash Using FTP from the Boot Menu

To upgrade software on your Switch 4500G using FTP, do the following:

1. From the Boot Menu, select option 1 (Download application file to flash) to display the following:

```

1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter
0. Return to boot menu
Enter your choice(0-3):

```

2. Select option 2 to display the following:

```

Load File name:
Switch IP address:
Server IP address:
FTP User Name:
FTP User Password:

```

3. Enter the file name s3q05_01_03s168.app or s3q05_01_03s56.app, the Switch 4500G IP address, the FTP server IP address, and the FTP username and password. The switch and the FTP server must reside on the same IP subnet. The following prompt is displayed:

```

Are you sure you want to download this file to flash? Yes or No(Y/N)

```

4. Enter **y** to confirm the action. The following messages are displayed to indicate that the file is downloading:

```

Loading.....done
Free flash Space: 9935872 bytes
Writing flash...done!

```

5. Specify the file attribute:

```

Please input the file attribute (main/backup/none):main
The attribute of s3q05_01_00s56.app is changed from main to none!

done!

Note: s3q05_01_00s56.app was the old existing application file. The
application file that was just loaded will now be used when the switch is
rebooted.

```

In this example **main** is the file that the switch uses when it reboots. If you specify **backup**, this file is used only if the main file is unavailable. If you specify **None**, the file is just added to the file system. You can change the attributes again by following the procedure in the section entitled "Activating the New Application File Using the Boot Menu."

6. If needed, repeat steps 1 to 4 for each of the remaining files (you can download .app or .cfg files using this method). Do not use this method for updating the BootROM code. Use one of the BootROM procedures.

4.12. Upgrading the BootROM Using FTP from the Boot Menu

To upgrade the BootROM using FTP, perform the following steps:

1. From the Boot Menu, select option **6** (Enter BootROM upgrade menu) to display the following:

```
Enter your choice (0-9): 6

BootROM update menu:
1. Set TFTP protocol parameters
2. Set FTP protocol parameters
3. Set XMODEM protocol parameters
0. Return to boot menu
Enter your choice (0-3):
```

2. Select option **2** to display the following:

```
Load File name:
Switch IP address:
Server IP address:
FTP User Name:
FTP User Password:
```

3. Enter the file name (it has a .btm suffix, s3r01_20.btm), the Switch 4500G IP address, the FTP servers IP address, and the FTP user name and password. The switch and the FTP server must reside on the same IP subnet. The following prompt is displayed:

```
Are you sure you want to update your BootROM? Yes or No (Y/N)
```

4. Enter **y** to confirm the action. The following messages indicate that the file is downloading:

```
Loading.....done
.....done
Bootrom updating.....done!
```

4.12.1. Example of updating the boot ROM from the Boot Menu

```
BOOT MENU

1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot

Enter your choice(0-9): 6

Bootrom update menu:
1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter
0. Return to boot menu

Enter your choice(0-3): 2
Load File name           :s3q05_01_03s168.app  s3r01_20.btm
Switch IP address       :10.10.28.223  Note: The existing values were
fine, you may           need to enter the IP addresses.
Server IP address       :10.10.28.100
FTP User Name           :image  (Enter the FTP user id)
FTP User Password       :123  (Enter the FTP user id password)
Are you sure you want to update your bootrom? Yes or No(Y/N) y
Loading.....done
Bootrom updating.....done!

BOOT MENU is displayed.
```

4.13. Downloading the Application File Using XModem from the Boot Menu

This is the slowest method for updating the switch. It is limited to the transfer speed of the serial port. To perform this procedure, you must have a serial connection to the console port on the Switch 4500G console port. The default console port connection is 19200 Baud, 8 Data Bits, Parity none, 1 Stop bit, and None for flow control.

You also need to use an application that is capable of sending files using the XModem, such as Windows HyperTerminal or Tera Term. Windows HyperTerminal normally is located at **Start>All Programs>Accessories>Communications>HyperTerminal**.

On that same device, the files to be transferred to the switch need to be located on it. These would be the .app file: s3q05_01_03s56.app or s3q05_01_03s168.app, btm file (boot file) s3r01_20.btm, and if needed, the configuration file (.cfg). For this procedure the .app file: s3q05_01_03s56.app or s3q05_01_03s168.app is needed.

This example uses Tera Term as the transfer application. An example using Windows HyperTerminal is provided in the section entitled "Upgrading the BootROM Using XModem from the Boot Menu."

To upgrade the software on your Switch 4500G using XModem, perform the following steps:

1. From the Boot Menu, select option **1** (Download application file to flash) to display the following:

```
1. Set TFTP protocol parameter
2. Set FTP protocol parameter
3. Set XMODEM protocol parameter
0. Return to boot menu

Enter your choice(0-3): 3
```

2. Select option **3** to display the following:

```
Please select your download baudrate:
1. 9600
2.* 19200
3. 38400
4. 57600
5. 115200
0. Return

Enter your choice(0-5): 5

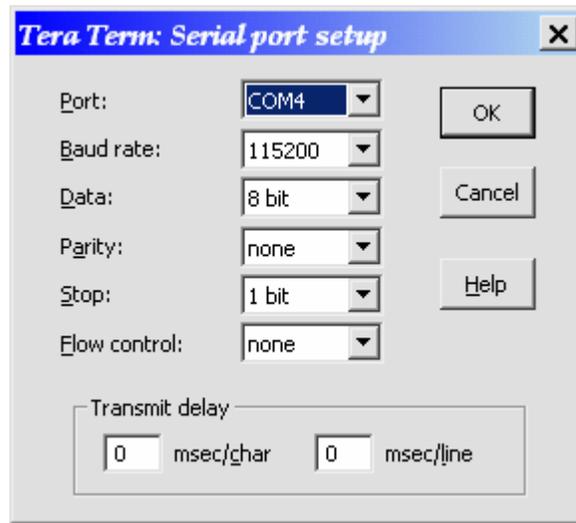
Download baudrate is 115200 bps

Please change the terminal's baudrate to 115200 bps and select XMODEM
protocol

Press enter key when ready
```

3. Select option **5** to set the baud rate to 115200 to increase the speed of the download.
You can select Option 2 and leave the baudrate at the default value but the download will take longer.
4. To change the baud rate on Tera Term or HyperTerminal to 115200 bps and select XModem protocol, from the Tera Term window, select **setup>serial port**. The Serial Port Setup window appears:

Figure 1 Tera Term Serial Port Setup window



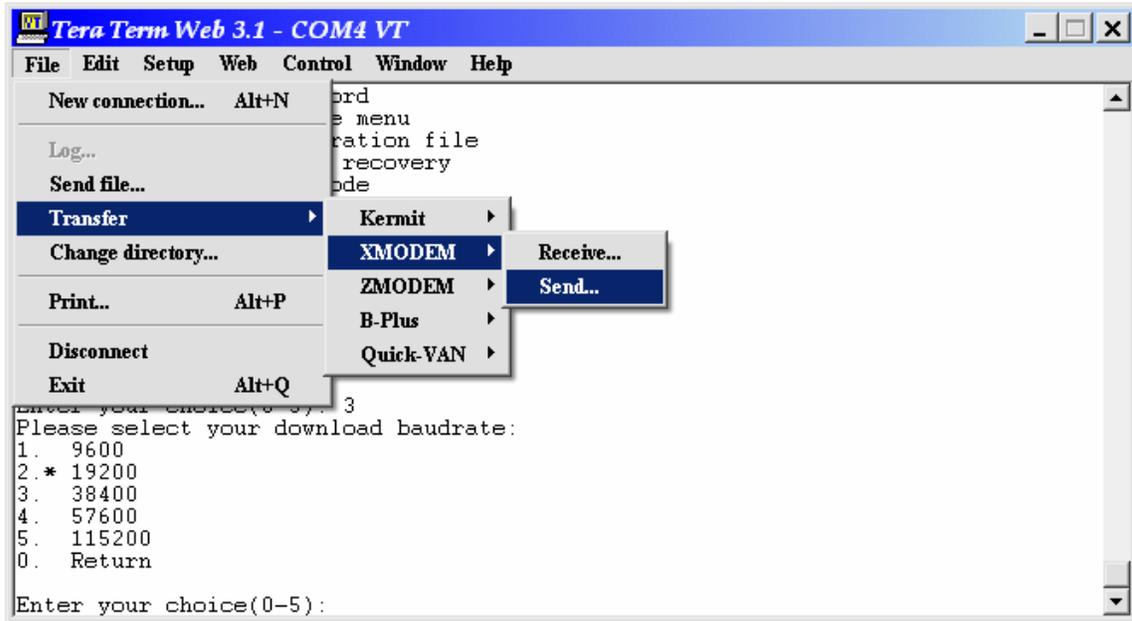
5. Click **OK**, then on the Tera Term window, on the switch, press Enter. The following message appears:

```

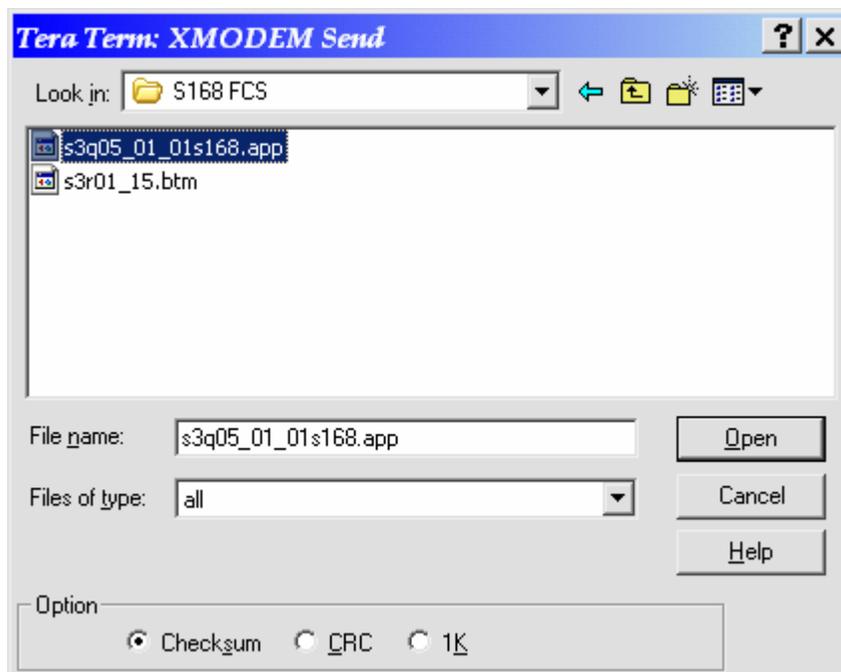
Now please start transfer file with XMODEM protocol
If you want to exit, Press <Ctrl+X>
Loading
...CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCC

```

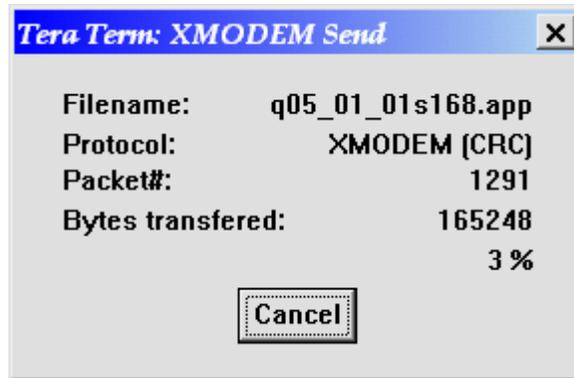
6. To start the transfer, select **File>Transfer>XMODEM>Send...**



7. Select the application file to be transferred to the switch, then click **Open**.



As the file is downloading, the following window provides an update status of the file transfer:



When the download is complete, then the message “done!” appears:

```
CCCCCCCCdone!
```

8. Enter a filename for the file just downloaded to the Switch 4500G:

```
Please input a new file name           :s3q05_01_03s168.app
Free flash Space: 8776704 bytes
Writing
flash.....
.....
.....
.....
.....done!
```

When the download is complete, the following prompt is displayed:

```
Please input the file attribute (main/backup/none):main
The attribute of s3q05_01_00s168.app is changed from main to none!

done!
```

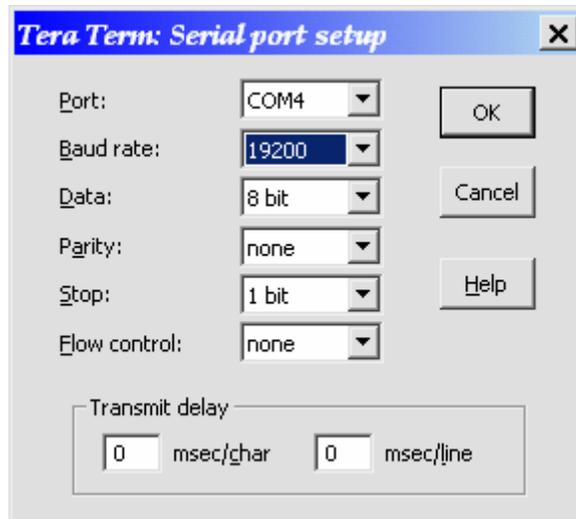
The file s3q05_01_00s168.app was the previous application file.

The file attribute **main** is specified, this will be the file the switch uses when it reboots. If **backup** is specified, this file is used only if the main file is unavailable. If **None** is specified, the file is just added to the file system. You can change the attributes can again following the procedure in the section entitled Select Application to Boot from the Boot Menu.

9. Change the baud rate back to 19200. On the Switch 4500G the following is displayed:

```
Your baudrate should be set to 19200 bps again!
Press enter key when ready
```

10. In the Tera Term window, select **Setup>Serial Port** to change the baud rate back to 19200 and click **OK**:



11. Press **enter** and the Boot Menu appears:

```
BOOT MENU

1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
0. Reboot

Enter your choice(0-9):
```

12. You can change the file attributes again following the procedure in section entitled "Activating the New Application File Using the Boot Menu". or continue on to the next procedure to update the BootROM code.

4.14. Upgrading the BootROM Using XModem from the Boot Menu

This is the slowest method to transfer files to the switch. It is limited to the transfer speed of the serial port. To perform this procedure, you must have a serial connection to the console port on the Switch 4500G console port. The default console port connection is 19200 Baud, 8 Data Bits, Parity none, 1 Stop bit, and None for flow control.

You also need to use an application that is capable of sending files using XModem, such as Windows HyperTerminal or Tera Term. Windows HyperTerminal normally is located at **Start>All Programs>Accessories>Communications>HyperTerminal**.

On that same device, the files to be transferred to the switch need to be located on it. These are the .app file: s3q05_01_03s56.app or s3q05_01_03s168.app, btm file (boot file) s3r01_20.btm and your configuration file(s) (.cfg). For this procedure, the btm file (boot file) s3r01_20.btm will be needed.

This example uses Windows HyperTerminal as the transfer application. An example using Tera Term is provided in the section entitled "Downloading the Application File Using XModem from the Boot Menu."

To upgrade the BootROM using XModem, perform the following steps:

1. From the Boot Menu, select option **6** (Enter BootROM upgrade menu) to display the following:

```
Enter your choice (0-9): 6

BootROM update menu:
1. Set TFTP protocol parameters
2. Set FTP protocol parameters
3. Set XMODEM protocol parameters
0. Return to boot menu
Enter your choice (0-3):
```

2. Select option **3** to display the following:

```
Enter your choice (0-3): 3
Please select your download baud rate:
1. 9600
2.* 19200
3. 38400
4. 57600
5. 115200
0. Return
```

3. Select option **2** to set the baud rate to 19200.

You can select Option **5** to increase the download speed. You also need to change the Tera Term or HyperTerminal (or the application you choose) baud rate to 115200 bps and select the XModem protocol.

4. Press **Enter** to start the download. The following information is displayed:

```
Now please start transfer file with XMODEM protocol
If you want to exit, Press <Ctrl+X>
Loading...CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
```

5. As the file s3r01_20.btm is downloading, start the XModem send file process of your terminal emulation software, such as Microsoft HyperTerminal or Tera Term.

6. After the file is transfer is completed, **done!** appears and the BootROM is updated automatically. The following messages appear on the switch's console port after about a minute:

```
done!  
Bootrom updating.....done!
```

The Boot Menu will appear. If the application is updated and the file attributes are changed, you can reboot the Switch 4500G using option **0**. If the file attributes need to be changed, follow the procedure in section entitled "Activating the New Application File Using the Boot Menu" and then reboot the switch.

4.14.1. Example of Updating the BootROM using XModem

In this example, the transfer speed is changed from 19200 to 115200 baud rate and HyperTerminal is used to transfer the file using XModem.

1. From the Boot Menu, select option **6** (Enter BootROM upgrade menu) to display the following:

```
BOOT MENU  
  
1. Download application file to flash  
2. Select application file to boot  
3. Display all files in flash  
4. Delete file from flash  
5. Modify bootrom password  
6. Enter bootrom upgrade menu  
7. Skip current configuration file  
8. Set bootrom password recovery  
9. Set switch startup mode  
0. Reboot  
  
Enter your choice(0-9): 6  
  
Bootrom update menu:  
1. Set TFTP protocol parameter  
2. Set FTP protocol parameter  
3. Set XMODEM protocol parameter  
0. Return to boot menu  
  
Enter your choice(0-3): 3
```

2. Select option **3** to display the following:

```
Please select your download baudrate:
```

- 1. 9600
- 2.* 19200
- 3. 38400
- 4. 57600
- 5. 115200
- 0. Return

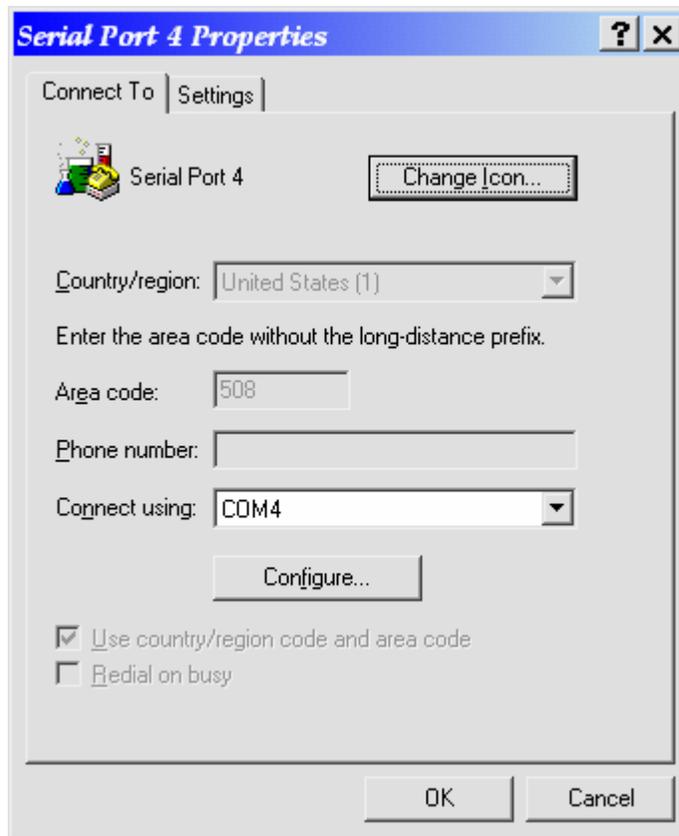
```
Enter your choice(0-5): 5
```

```
Download baudrate is 115200 bps
```

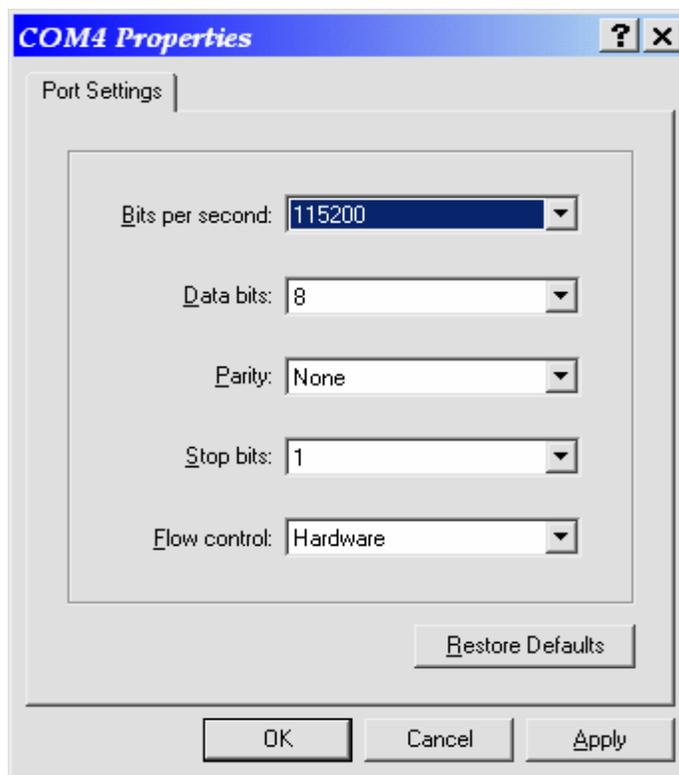
```
Please change the terminal's baudrate to 115200 bps and select XMODEM  
protocol
```

```
Press enter key when ready
```

3. Select option **5** to change the transfer from 19200 to 115200.
4. In the HyperTerminal window, disconnect by selecting **Call>Disconnect** or the click on the off hook phone icon.
5. Choose **File>Properties** or the Properties icon to display the Serial Port Properties window:



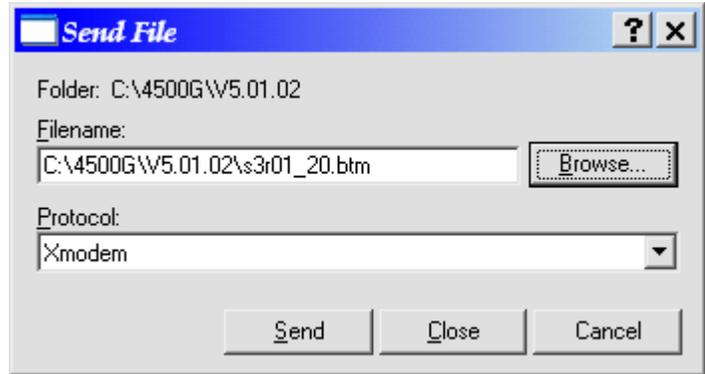
6. Click the **Configure..** button:



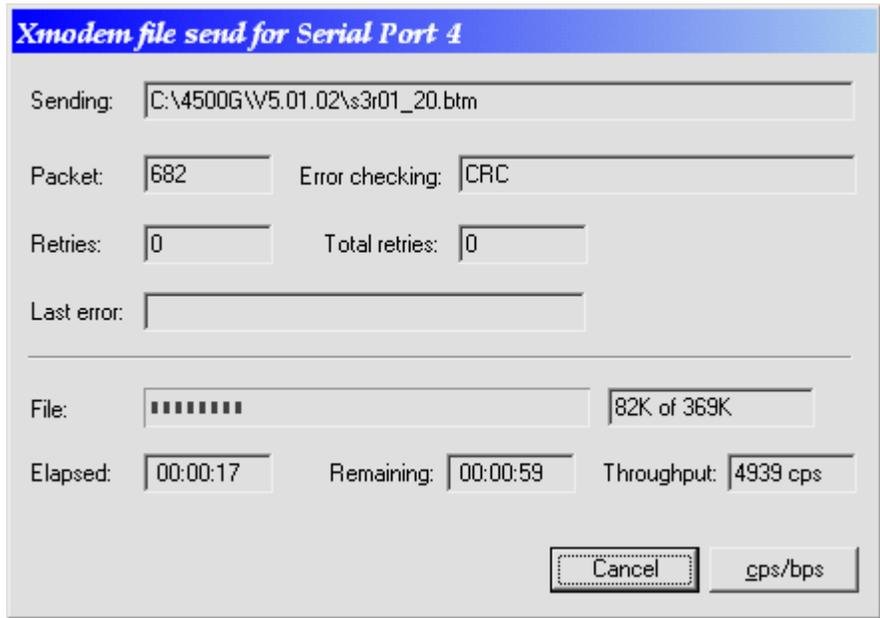
7. Click on the **Bits per second** drop down menu and select **115200**. Click **OK** twice..
8. Start the file transfer by pressing **enter** at the switch console.

```
Now please start transfer file with XMODEM protocol
If you want to exit, Press <Ctrl+X>
Loading ...CCCC
```

9. The **C** continues to print until you start the transfer. To start the transfer select **Transfer>Send File**.



10. **Browse** to locate and select the bootROM (.btm) file. Check that the **Protocol** is **Xmodem** and click **Send**. A window with the status of the transfer appears. The **Packet** and **File** increment as the file is transferred:

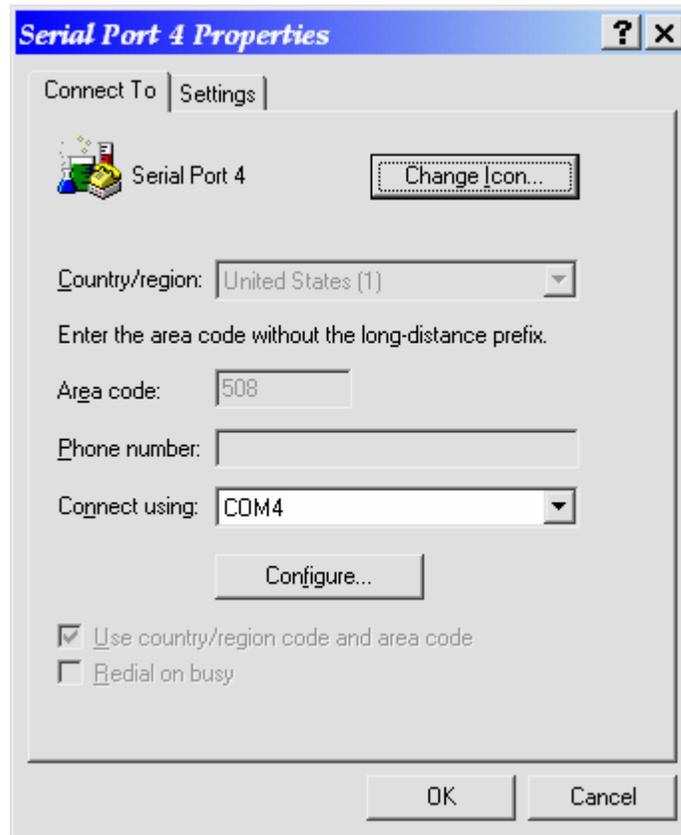


After the file transfer is completed, **done!** appears and the BootROM is updated automatically. The following appears on the switch console port:

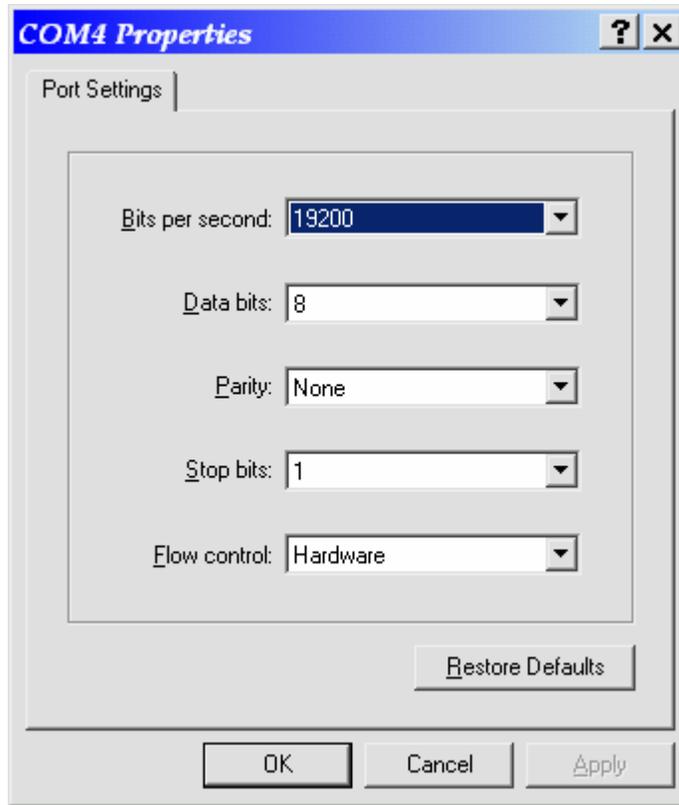
```
done!
Bootrom updating.....done!
```

Your baudrate should be set to 19200 bps again!
Press enter key when ready

11. Set the baud rate back to 19200 by selecting **Call>disconnect**, then click **File>Properties**.



12. Click Configure...



13. Change the baud rate back to 19200 and click **OK**. Click **OK** again.

14. Press **Enter** at the switch console and the Boot Menu appears.

4.15. Activating the New Application File Using the Boot Menu

To activate the newly loaded .app application file on your Switch 4500G, perform the following steps:

1. From the Boot Menu, select option **2** (Select application file to boot)

```
BOOT MENU

1. Download application file to flash
2. Select application file to boot
3. Display all files in flash
4. Delete file from flash
5. Modify bootrom password
6. Enter bootrom upgrade menu
7. Skip current configuration file
8. Set bootrom password recovery
9. Set switch startup mode
```

```
0. Reboot

Enter your choice(0-9): 2
```

2. Select option 1 (Set application file):

```
Select application file to boot
1. Set application files
2. Set configuration files
0. Return
Enter your choice(0-2): 1
```

3. Select the application file to be booted from by choosing its file number.

```
File Number      File Size(bytes)      File Name
=====
1(*)              5345335                s3q05_01_03s168.app
2                 5344601                s3q05_01_01c01s168.app
Free Space: 3430400 bytes
(*)-with main attribute
(b)-with backup attribute
(*b)-with both main and backup attribute
Please input the file number to change: 1
Please input the file attribute (main/backup):main
Do you want to run s3q05_01_03s168.app now? Yes or No(Y/N) n
```

Your filename is most likely either s3q05_01_03s168.app or s3q05_01_03s56.app .Set the file attribute to **main**. Repeat steps 2 and 3 again to configure a **backup** .app file. It will be used only if the **main** .app can not be loaded. You can use the previous main .app (most likely s3q05_01_00s56.app or s3q05_01_00s168.app) if you wish.

4. If needed, configure the configuration file to be loaded during the boot process. Repeat step 2, with option 2 (Set the configuration files), to select the configuration file.
5. Reboot the switch by selecting option 0 from the Boot Menu,

Chapter 5 Configuring SSH 2.0 with a PuTTY Client

5.1. Overview

On the SSH client (this example uses Windows XP), you need to install two applications as well as the PuTTY SSH program, PuTTY and PuTTYgen. To obtain these programs, use the <http://www.putty.nl/download.html> link.

You use can Puttygen to create public and private keys. Save the keys to the local users' hard drive. If you are using SFTP (Secure FTP) on the 4500G, you can obtain PSFTP from the same web site.

There are two ways to import the client public key on the Switch 4500G; by either using FTP or Sshconvert. Use only one of these methods to import the key, not both. Both methods require an external application to generate the public key. The following examples use Puttygen.

To transfer the public key to the Switch 4500G flash:/ file system using FTP, import the key using the command **rsa peer-public-key (name of key to be stored on the switch) import sshkey (the client's public key)**.

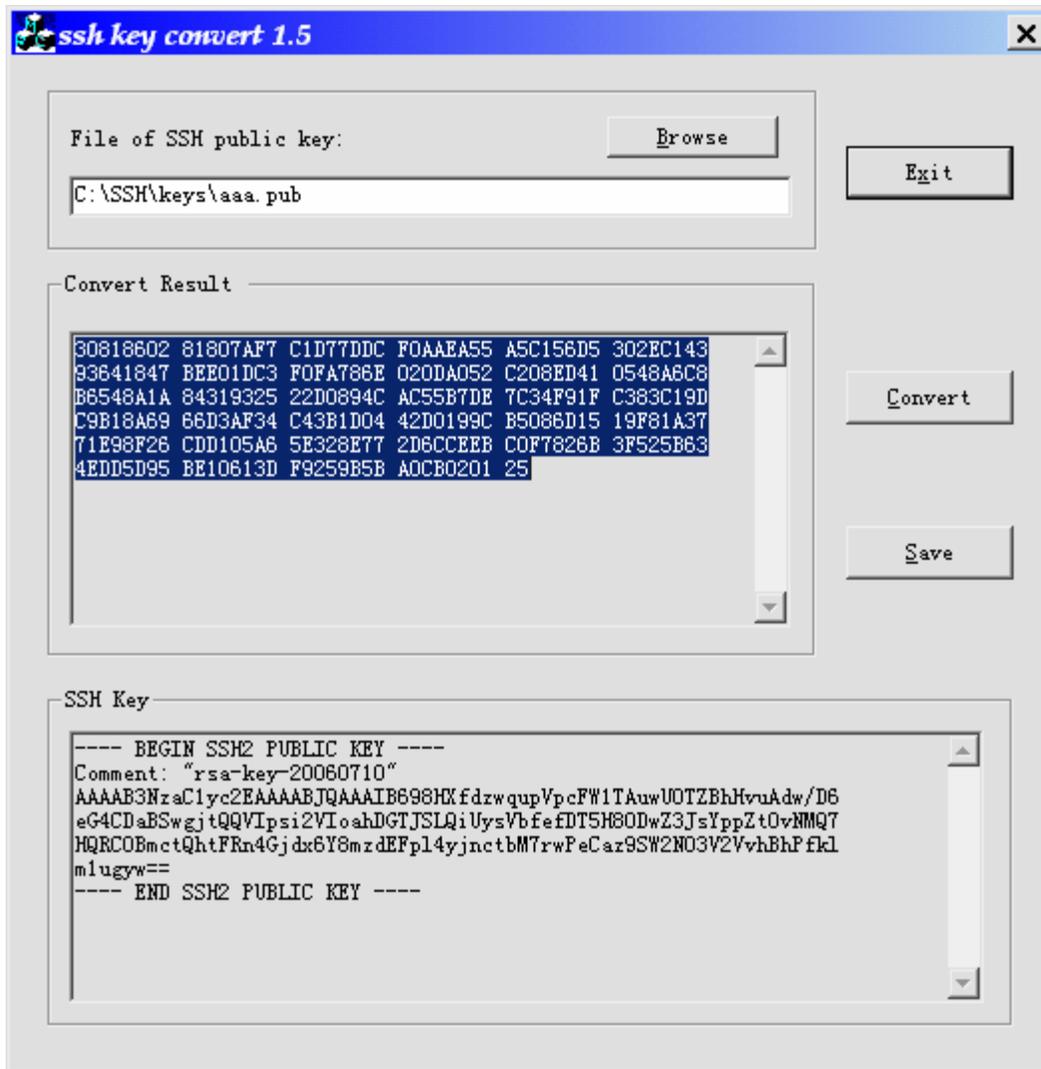
To use Sshconvert to convert the public key to the RSA key code (sshkey.exe application) enter the following commands:

```
rsa peer-public-key (string chosen as the public key)
public-key-code begin
```

When prompted for "rsa-key-code", enter the large hex string highlighted in the diagram below by copying and pasting the string into the switch's command line interface.

```
public-key-code end
peer-public-key end
```

Both methods are described in more detail below.



Issue the **rsa local-key-pair create** command only once on the switch. Enter system view:

```
[4500G] rsa local-key-pair create

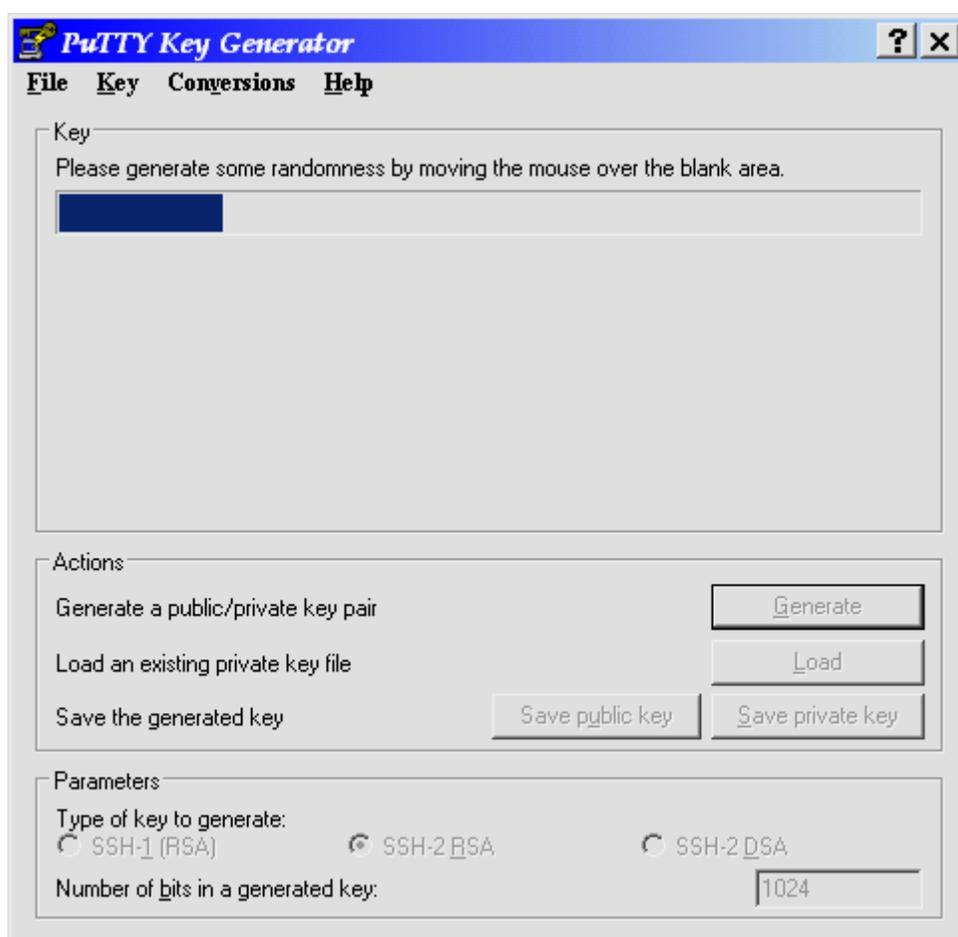
The range of public key size is (512 ~ 2048).
NOTES: If the key modulus is greater than 512,
       It will take a few minutes.
Input the bits in the modulus[default = 1024]:1024
Generating keys...
.....++++++
.....++++++
.....++++++
.....++++++
.....Done!
[4500G]
```

```
[4500G]user-interface vty 0 4
[4500G-ui-vty0-4]authen scheme
  Notice: Exec(Telnet) user must be added , otherwise operator can't
  login!

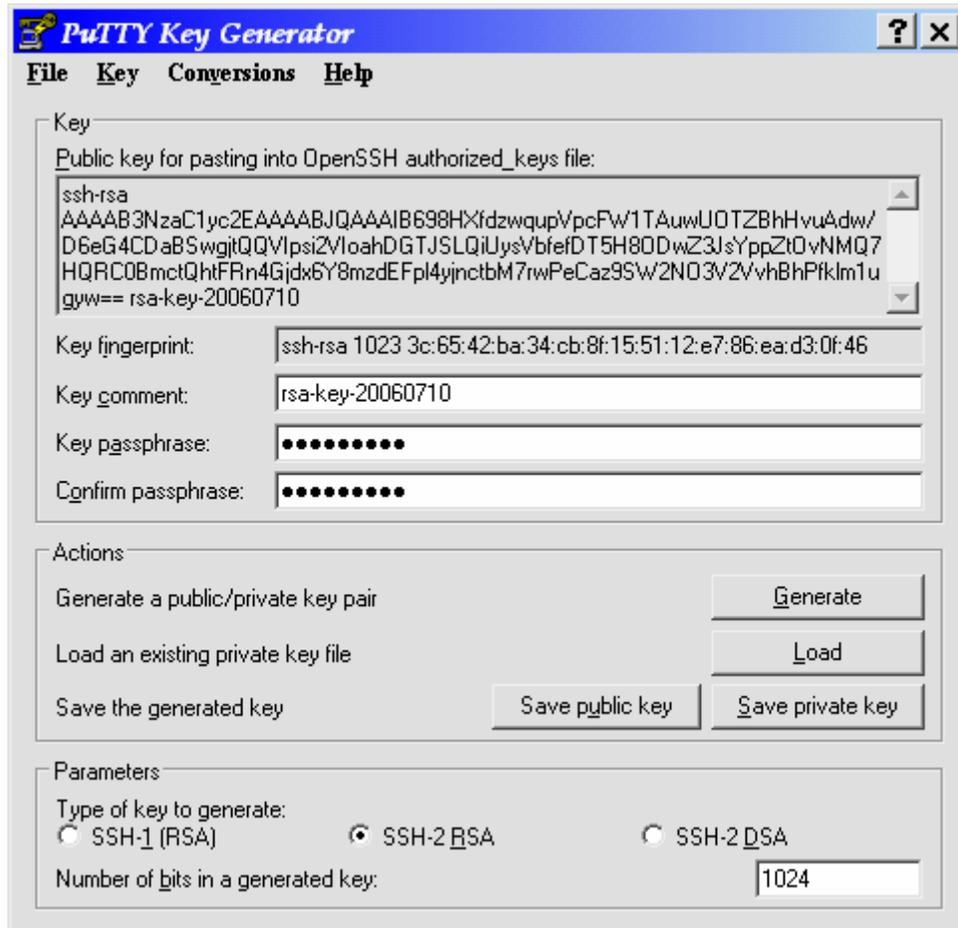
(Telnet users are already configured on this switch)

[4500G-ui-vty0-4]proto inbound all
[4500G-ui-vty0-4]q
```

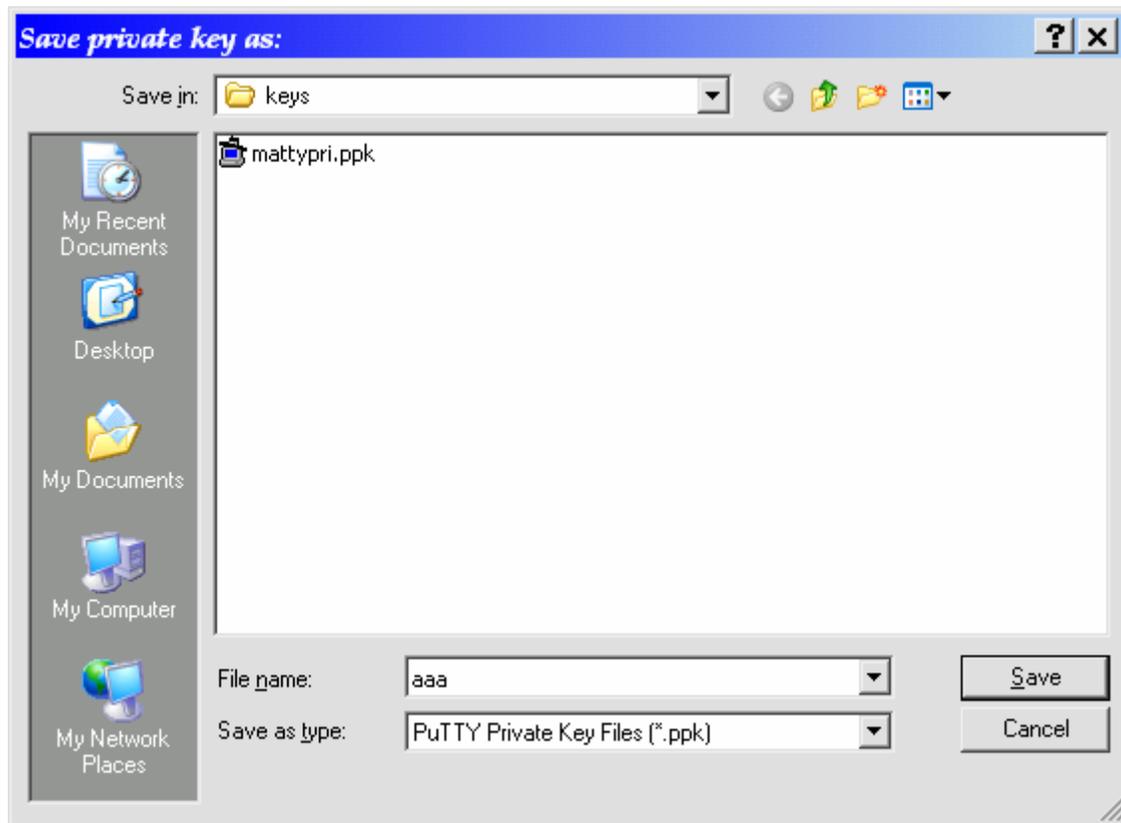
On the SSH client, generate the public and private keys using the Puttygen application. Click **Generate**. Move the mouse over the blank area as instructed.



Enter a pass phrase. Remember this pass phrase because you will need it when opening the SSH session later in this procedure.



Save the public and private keys. The private key has a .ppk extension. The public key is **aaa.pub**, in this example.



5.2. Importing a Client Public Key using FTP

Perform the following steps to import a public key using FTP.

1. To import the key into the Switch 4500G file system using FTP, enable the FTP server on the Switch 4500G in system view using the following commands (in bold text).

```
<4500G>sys
System View: return to User View with Ctrl+Z.
[4500G]ftp server enable
% FTP server has been started

[4500G]
```

2. Create an FTP user on the 4500G so the client can FTP to the Switch 4500G and transfer the public key. The following commands create user **ftp**.

```
[4500G]local-user ftp
New local user added.
[4500G-luser-ftp]password ?
```

```
cipher  Display password with cipher text
simple  Display password with plain text
```

```
[4500G-luser-ftp]password simple ftp
[4500G-luser-ftp]level 3
[4500G-luser-ftp]service-type ftp
[4500G-luser-ftp]q
[4500G]
```

3. From the client PC where the key is stored, FTP to the Switch 4500G. In this example, **ftp** is used. From a command (or MS-DOS) window, change to the directory where the key resides:

```
C:\SSH\keys>
C:\SSH\keys>ftp 158.101.28.222
Connected to 158.101.28.222.
220 FTP service ready.
User (158.101.28.222:(none)): ftp
331 Password required for ftp.
Password: (password for ftp user, will not be echo'ed)
230 User logged in.
ftp> bin
200 Type set to I.
ftp> put aaa.pub
200 Port command okay.
150 Opening BINARY mode data connection for aaa.pub.
226 Transfer complete.
ftp: 294 bytes sent in 0.00Seconds 294000.00Kbytes/sec.
ftp> bye
221 Server closing.

C:\SSH\keys>
```

4. Return to the Switch 4500G.

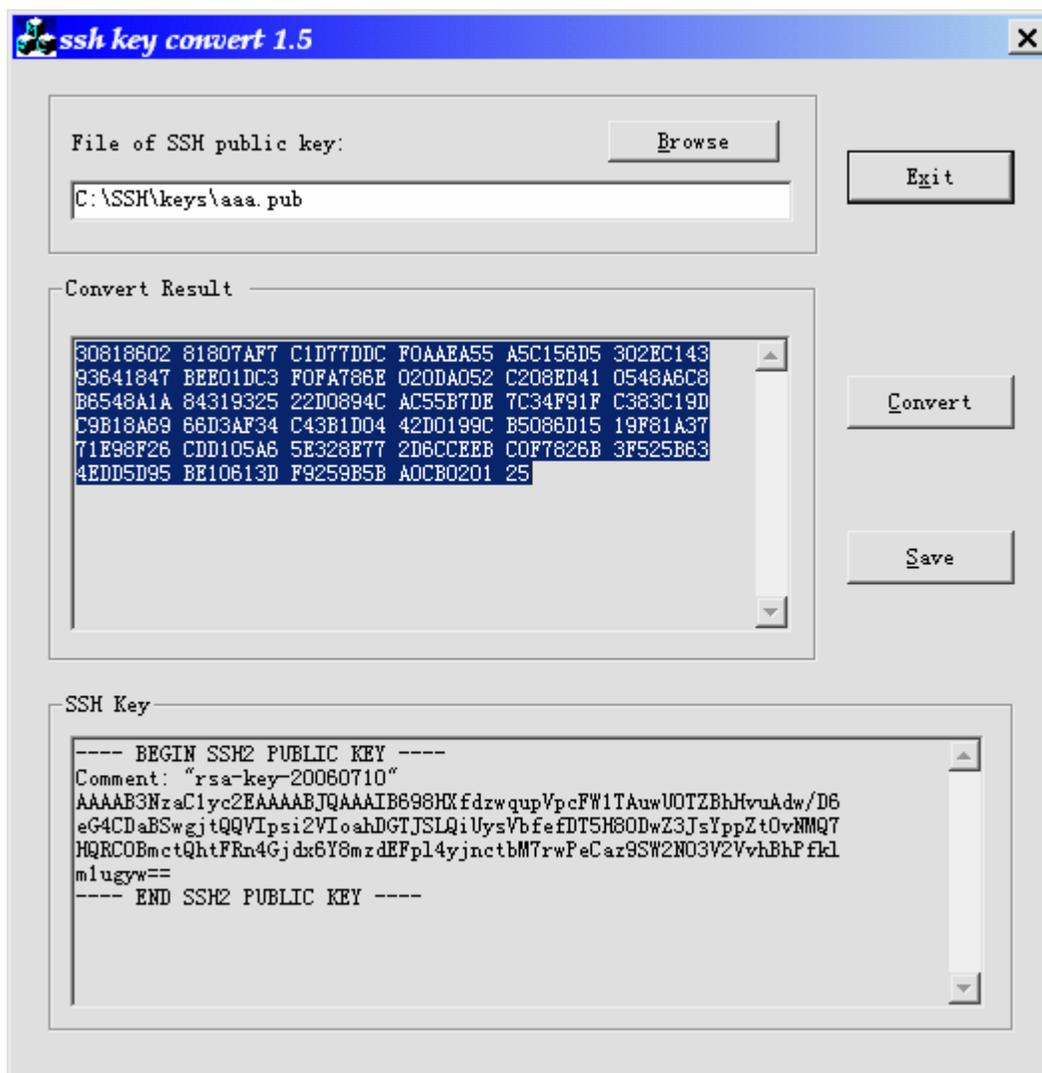
```
[4500G]rsa peer-public-key SW4500G002 import sshkey aaa.pub
The public key is successfully imported from the file.
```

Note: If you issue the **dir** command on the file system the **aaa.pub** file is displayed.

5.3. Importing the Client Public Key using sshkey.exe

This section describes how to use the **sshkey.exe** application to convert the public key to a large hex string that you will enter onto the switch.

1. Browse to where you stored the public key on the client PC.
2. **Convert** the key.



3. Return to the switch's CLI. Copy the hex string from "ssh key convert" and paste it into the switch when prompted for the "rsa-key-code".

The name of the key is SW4500G002 in this example.

```
[4500G] rsa peer-public-key SW4500G002

[4500G-rsa-public-key]public-key-code begin
RSA key code view: return to last view with "public-key-code end".
```

```
[4500G-rsa-key-code]30818602 81807AF7 C1D77DDC F0AAEA55 A5C156D5 30
2EC143
[4500G-rsa-key-code]93641847 BEE01DC3 F0FA786E 020DA052 C208ED41 05
48A6C8
[4500G-rsa-key-code]B6548A1A 84319325 22D0894C AC55B7DE 7C34F91F C3
83C19D
[4500G-rsa-key-code]C9B18A69 66D3AF34 C43B1D04 42D0199C B5086D15 19
F81A37
[4500G-rsa-key-code]71E98F26 CDD105A6 5E328E77 2D6CCEEB C0F7826B 3F
525B63
[4500G-rsa-key-code]4EDD5D95 BE10613D F9259B5B A0CB0201 25
```

Note: You may have to press **Enter** if the key code does not end at the end of the line.

```
[4500G-rsa-key-code]public-key-code end
[4500G-rsa-public-key]peer-public-key end
```

4. To display the key that was just created, enter:

```
[4500G]display rsa peer-public-key
=====
Key name: SW4500G002
Key address:
=====
Key Code:
308186
028180
7AF7C1D7 7DDCF0AA EA55A5C1 56D5302E C1439364 1847BEE0 1DC3F0FA
786E020D
A052C208 ED410548 A6C8B654 8A1A8431 932522D0 894CAC55 B7DE7C34
F91FC383
C19DC9B1 8A6966D3 AF34C43B 1D0442D0 199CB508 6D1519F8 1A3771E9
8F26CDD1
05A65E32 8E772D6C CEEBC0F7 826B3F52 5B634EDD 5D95BE10 613DF925
9B5BA0CB
0201
25
[4500G]
```

5.4. Creating a SSH User ID and Assigning the RSA Key

The SSH user id created in this example is **client002** and its associated public key is **SW4500G002**.

```
[4500G]ssh user client002 assign rsa-key SW4500G002
%Successful to create SSH user!
[4500G]ssh user client002 authentication-type RSA
[4500G]ssh user client002 service-type ?
    all      Specify service name
    sftp     Specify service name
    stelnet  Specify service name

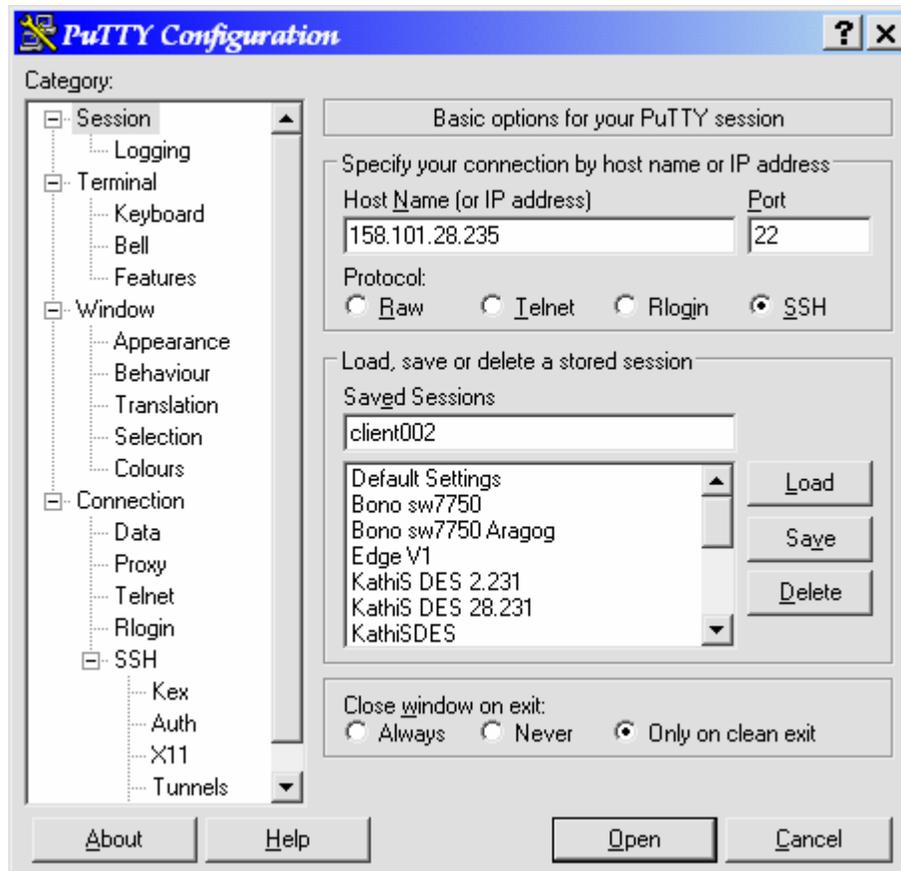
[4500G]ssh user client002 service-type all
[4500G]dis ssh user client002
```

Username	Authentication-type	User-public-key-name	Service-type
client002	rsa	SW4500G002	stelnet sftp

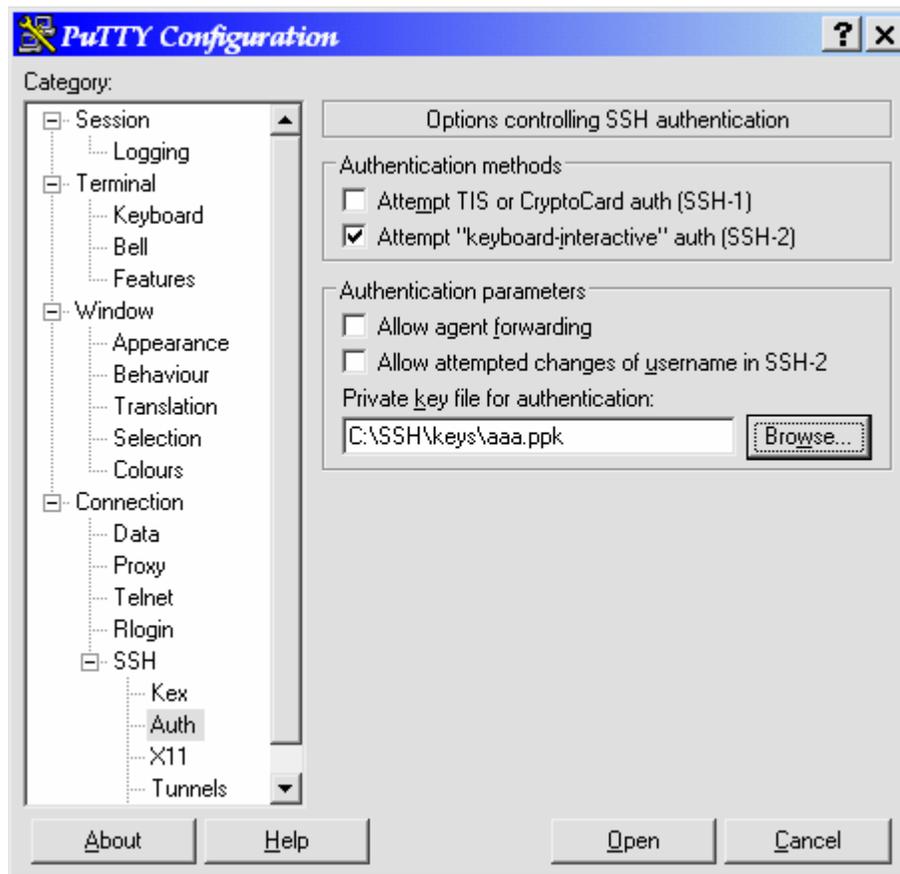
5.5. Configuring PuTTY

To configure PuTTY, perform the following steps:

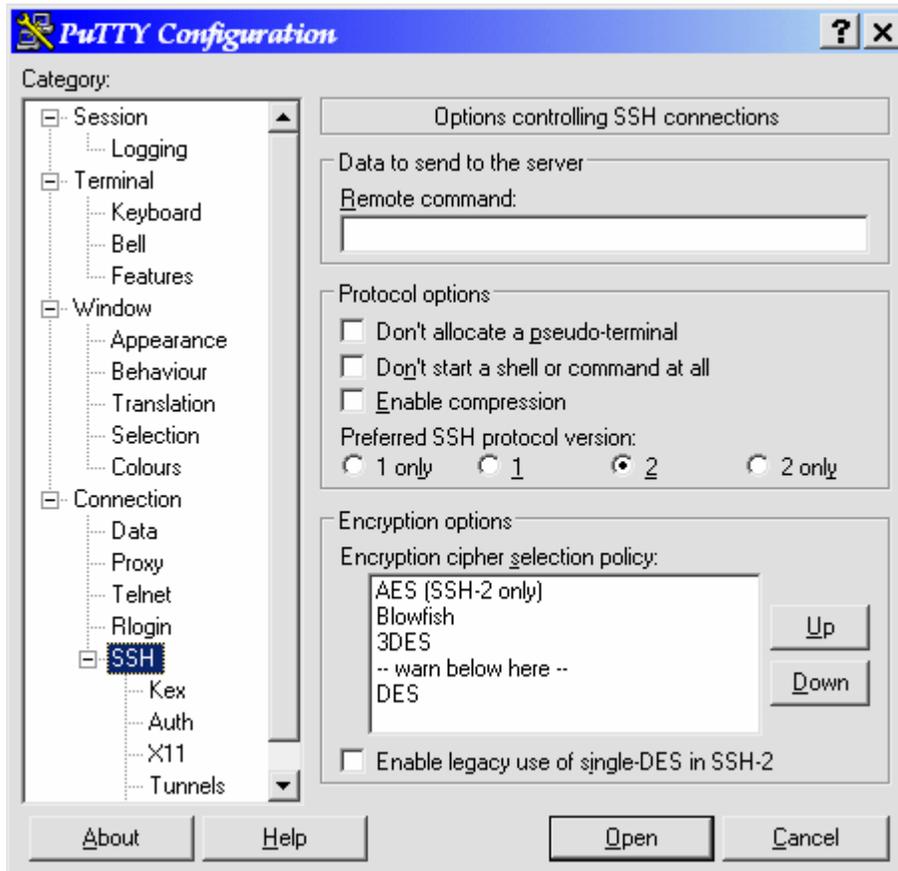
1. Start the PuTTY SSH application on the SSH client.
2. Configure the switch's IP address.
3. Check the protocol for SSH.
4. Give the session a name so you can save session information.



5. To associated the user id with the private key, click **SSH/Auth** and then click **Browse** to locate the saved the private key on the hard drive.



- To check the SSH version, click on **SSH**. In this example the version is 2.

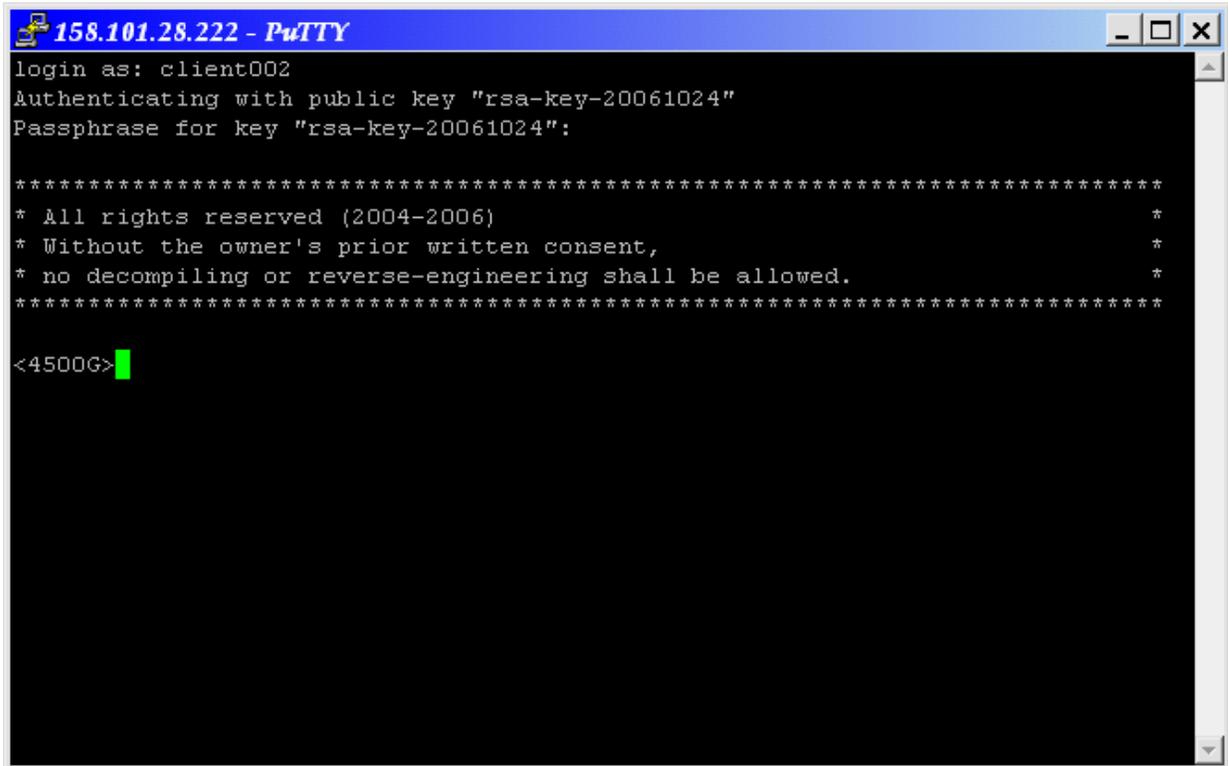


- To save the profile, click on **Session** and then **Save**.
- To communicate with the switch, click **Open**. A window with the switch's IP address in the title bar is displayed. Also a PuTTY Security Alert is displayed after starting PuTTY if you are using RSA for the first time. After the first time, this message is not displayed unless you generate new keys with new pass phrases. If you are using SSH with a client using only a password, this is not displayed.



9. Click **yes**. You are prompted for a login id, which is **client002** in this example. Enter the pass phrase that you specified when you generated the key earlier in this document.

You are now connected and logged into the switch.



```
158.101.28.222 - PuTTY
login as: client002
Authenticating with public key "rsa-key-20061024"
Passphrase for key "rsa-key-20061024":

*****
* All rights reserved (2004-2006) *
* Without the owner's prior written consent, *
* no decompiling or reverse-engineering shall be allowed. *
*****

<4500G>
```

Chapter 6 Converting dynamic aggregated links to static aggregated links.

6.1. Determining if Dynamic LACP Link Aggregations Used

To determine if dynamic LACP link aggregations are being used, issue the **display link-aggregation verbose** command. The Switch 4500G sysnam is 4500G_221 in the example below.

```
[4500G_221]dis link-aggregation verbose
Loadsharing Type: Shar -- Loadsharing, NonS -- Non-Loadsharing
Flags: A -- LACP_Activity, B -- LACP_timeout, C -- Aggregation,
      D -- Synchronization, E -- Collecting, F -- Distributing,
      G -- Defaulted, H -- Expired
Aggregation ID: 1, AggregationType: Dynamic, Loadsharing Type: Shar
Aggregation Description:
System ID: 0x8000, 0016-e0d6-7c00
Port Status: S -- Selected, U -- Unselected
Local:
  Port                Status  Priority  Oper-Key  Flag
-----
  GE1/0/8              S       32768    2         {ACDEF}
  GE1/0/9              S       32768    2         {ACDEF}
  GE1/0/10             S       32768    2         {ACDEF}
  GE1/0/11             S       32768    2         {ACDEF}
  GE1/0/12             S       32768    2         {ACDEF}
  GE1/0/13             S       32768    2         {ACDEF}
  GE1/0/14             S       32768    2         {ACDEF}
  GE1/0/15             S       32768    2         {ACDEF}
Remote:
  Actor                Partner Priority  Oper-Key  SystemID          Flag
-----
  GE1/0/8              8       32768    1         0x8000,0016-e0e8-3d80 {ACDEF}
  GE1/0/9              9       32768    1         0x8000,0016-e0e8-3d80 {ACDEF}
  GE1/0/10             11      32768    1         0x8000,0016-e0e8-3d80 {ACDEF}
  GE1/0/11             10      32768    1         0x8000,0016-e0e8-3d80 {ACDEF}
  GE1/0/12             12      32768    1         0x8000,0016-e0e8-3d80 {ACDEF}
```

GE1/0/13	13	32768	1	0x8000,0016-e0e8-3d80	{ACDEF}
GE1/0/14	14	32768	1	0x8000,0016-e0e8-3d80	{ACDEF}
GE1/0/15	15	32768	1	0x8000,0016-e0e8-3d80	{ACDEF}

[4500G_221]

The Aggregation Type is **Dynamic** (in *italic bold* text). The group aggregation ID is 1. You can also see in the above output that all eight ports are connected to the same remote switch because the remote actor system ID is the same on all ports. The maximum number of Gigabit Ethernet active ports is eight (or two Ten Gigabit Ethernet ports) in one link aggregation group.

In this example a Gigabit Ethernet interface is configured for dynamic LACP. The only command to enable dynamic LACP is **LACP enable** while the Switch 4500G is running V5.01.00.

```
[4500G_221]interface GigabitEthernet 1/0/8
[4500G_221-GigabitEthernet1/0/8]dis this
#
interface GigabitEthernet1/0/8
  broadcast-suppression pps 3000
  undo jumboframe enable
  lacp enable
#
```

6.2. Converting Dynamic Aggregated Links to Static Aggregated Links

Complete the steps in this section **before updating** the Switch 4500G to rev 5.01.03.

1. To convert this switch from using dynamic LACP link aggregation to static link aggregation, follow the steps below. In this example, Group Aggregation ID 1 is converted from a dynamic to a static AggregationType .

```
1. [4500G_221]link-aggregation group 1 mode static
This aggregation will be modified to static mode. Continue?[Y/N]:y
[4500G_221]
#Jul 25 17:40:26:732 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 1 becomes INACTIVE!
#Jul 25 17:40:26:930 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 1 becomes INACTIVE!
#Jul 25 17:40:27:130 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 1 becomes INACTIVE!
#Jul 25 17:40:27:330 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 1 becomes INACTIVE!
```

```

#Jul 25 17:40:27:530 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 1 becomes INACTIVE!
#Jul 25 17:40:27:731 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 1 becomes INACTIVE!
#Jul 25 17:40:27:930 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 1 becomes INACTIVE!
%Jul 25 17:40:28:131 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 1: port member GigabitEthernet1/0/9 is inactive!
%Jul 25 17:40:28:297 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 1: port member GigabitEthernet1/0/10 is inactive!
%Jul 25 17:40:28:460 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 1: port member GigabitEthernet1/0/11 is inactive!
%Jul 25 17:40:28:630 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 1: port member GigabitEthernet1/0/12 is inactive!
%Jul 25 17:40:28:816 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 1: port member GigabitEthernet1/0/13 is inactive!
%Jul 25 17:40:28:980 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 1: port member GigabitEthernet1/0/14 is inactive!
%Jul 25 17:40:29:150 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 1: port member GigabitEthernet1/0/15 is inactive!

```

Note: No traps are sent when the Link aggregation group becomes active.

```

[4500G_221]dis link-agg ver (abbreviated command for "display link-aggregation
verbose")
Loadsharing Type: Shar -- Loadsharing, NonS -- Non-Loadsharing
Flags:  A -- LACP_Activity, B -- LACP_timeout, C -- Aggregation,
        D -- Synchronization, E -- Collecting, F -- Distributing,
        G -- Defaulted, H -- Expired

Aggregation ID: 1,  AggregationType: Static,  Loadsharing Type: Shar
Aggregation Description:
System ID: 0x8000, 0016-e0d6-7c00
Port Status: S -- Selected, U -- Unselected
Local:

```

Port	Status	Priority	Oper-Key	Flag
GE1/0/8	S	32768	1	{ACDEF}
GE1/0/9	S	32768	1	{ACDEF}
GE1/0/10	S	32768	1	{ACDEF}

GE1/0/11	S	32768	1	{ACDEF}	
GE1/0/12	S	32768	1	{ACDEF}	
GE1/0/13	S	32768	1	{ACDEF}	
GE1/0/14	S	32768	1	{ACDEF}	
GE1/0/15	S	32768	1	{ACDEF}	
Remote:					
Actor	Partner	Priority	Oper-Key	SystemID	Flag

GE1/0/8	8	32768	1	0x8000,0016-e0e8-3d80	{ACDEF}
GE1/0/9	9	32768	1	0x8000,0016-e0e8-3d80	{ACDEF}
GE1/0/10	11	32768	1	0x8000,0016-e0e8-3d80	{ACDEF}
GE1/0/11	10	32768	1	0x8000,0016-e0e8-3d80	{ACDEF}
GE1/0/12	12	32768	1	0x8000,0016-e0e8-3d80	{ACDEF}
GE1/0/13	13	32768	1	0x8000,0016-e0e8-3d80	{ACDEF}
GE1/0/14	14	32768	1	0x8000,0016-e0e8-3d80	{ACDEF}
GE1/0/15	15	32768	1	0x8000,0016-e0e8-3d80	{ACDEF}

2. Check to make sure there is connectivity to the remote switch:

```
[4500G_221]ping 10.101.23.55
PING 10.101.23.55: 56 data bytes, press CTRL_C to break
  Reply from 10.101.23.55: bytes=56 Sequence=1 ttl=255 time=2 ms
  Reply from 10.101.23.55: bytes=56 Sequence=2 ttl=255 time=6 ms
  Reply from 10.101.23.55: bytes=56 Sequence=3 ttl=255 time=2 ms
  Reply from 10.101.23.55: bytes=56 Sequence=4 ttl=255 time=3 ms
  Reply from 10.101.23.55: bytes=56 Sequence=5 ttl=255 time=2 ms

--- 10.101.23.55 ping statistics ---
  5 packet(s) transmitted
  5 packet(s) received
  0.00% packet loss
  round-trip min/avg/max = 2/3/6 ms

[4500G_221]
```

The following example is a Gigabit Ethernet interface converted from dynamic LACP to a member of a static link aggregation group while the Switch 4500G is still running V5.01.00. The commands needed to configure a static link aggregation group are **lACP enable** and **port link-aggregation group (group id number)**.

```
[4500G_221]interface GigabitEthernet 1/0/8
[4500G_221-GigabitEthernet1/0/8]dis thi
```

```
#
interface GigabitEthernet1/0/8
 broadcast-suppression pps 3000
 undo jumboframe enable
 lacp enable
 port link-aggregation group 1
#
```

This following example is a Gigabit Ethernet interface converted from dynamic LACP to a member of a static link aggregation group while the Switch 4500G is running V5.01.03 and later. The command used to configure a static link aggregation group is **port link-aggregation group (group id number)**.

```
[4500G_221]interface GigabitEthernet 1/0/8
[4500G_221-GigabitEthernet1/0/8]dis thi
#
interface GigabitEthernet1/0/8
 broadcast-suppression pps 3000
 undo jumboframe enable
 port link-aggregation group 1
#
```

The following example is a switch that has two dynamic link aggregation groups.

```
[4500G_221]dis link-agg ver
Loadsharing Type: Shar -- Loadsharing, NonS -- Non-Loadsharing
Flags: A -- LACP_Activity, B -- LACP_timeout, C -- Aggregation,
      D -- Synchronization, E -- Collecting, F -- Distributing,
      G -- Defaulted, H -- Expired

Aggregation ID: 1, AggregationType: Dynamic, Loadsharing Type: Shar
Aggregation Description:
System ID: 0x8000, 0016-e0d6-7c00
Port Status: S -- Selected, U -- Unselected
Local:
  Port                Status  Priority  Oper-Key  Flag
-----
  GE1/0/4              S       32768    2         {ACDEF}
  GE1/0/5              S       32768    2         {ACDEF}
  GE1/0/6              S       32768    2         {ACDEF}
  GE1/0/7              S       32768    2         {ACDEF}
Remote:
```

```

Actor      Partner Priority Oper-Key SystemID
Flag
-----
GE1/0/4    12      32768   1      0x8000,0016-e0f7-d580 {ACDEF}
GE1/0/5    13      32768   1      0x8000,0016-e0f7-d580 {ACDEF}
GE1/0/6    14      32768   1      0x8000,0016-e0f7-d580 {ACDEF}
GE1/0/7    15      32768   1      0x8000,0016-e0f7-d580 {ACDEF}

Aggregation ID: 2, AggregationType: Dynamic, Loadsharing Type: Shar
Aggregation Description:
System ID: 0x8000, 0016-e0d6-7c00
Port Status: S -- Selected, U -- Unselected
Local:
  Port      Status Priority Oper-Key Flag
  -----
  GE1/0/8    S      32768   2      {ACDEF}
  GE1/0/9    S      32768   2      {ACDEF}
  GE1/0/10   S      32768   2      {ACDEF}
  GE1/0/11   S      32768   2      {ACDEF}
  GE1/0/12   S      32768   2      {ACDEF}
  GE1/0/13   S      32768   2      {ACDEF}
  GE1/0/14   S      32768   2      {ACDEF}
  GE1/0/15   S      32768   2      {ACDEF}

Remote:
  Actor      Partner Priority Oper-Key SystemID      Flag
  -----
  GE1/0/8    8      32768   1      0x8000,0016-e0e8-3d80 {ACDEF}
  GE1/0/9    9      32768   1      0x8000,0016-e0e8-3d80 {ACDEF}
  GE1/0/10   11     32768   1      0x8000,0016-e0e8-3d80 {ACDEF}
  GE1/0/11   10     32768   1      0x8000,0016-e0e8-3d80 {ACDEF}
  GE1/0/12   12     32768   1      0x8000,0016-e0e8-3d80 {ACDEF}
  GE1/0/13   13     32768   1      0x8000,0016-e0e8-3d80 {ACDEF}
  GE1/0/14   14     32768   1      0x8000,0016-e0e8-3d80 {ACDEF}
  GE1/0/15   15     32768   1      0x8000,0016-e0e8-3d80 {ACDEF}

[4500G_221]link-aggregation group 1 mode static
This aggregation will be modified to static mode. Continue?[Y/N]:y
[4500G_221]
#Jul 25 18:33:40:843 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 1 becomes INACTIVE!

```

```
#Jul 25 18:33:40:40 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 1 becomes INACTIVE!
#Jul 25 18:33:41:240 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 1 becomes INACTIVE!
%Jul 25 18:33:41:441 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 1: port member GigabitEthernet1/0/5 is inactive!
%Jul 25 18:33:41:600 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 1: port member GigabitEthernet1/0/6 is inactive!
%Jul 25 18:33:41:760 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 1: port member GigabitEthernet1/0/7 is inactive!
```

You can optionally add a description of the link:

```
[4500G_221]link-aggregation group 1 description "link to Account 4500G
224"
```

3. Convert the second dynamic group to a static aggregated group:

```
[4500G_221]link-aggregation group 2 mode static
This aggregation will be modified to static mode. Continue?[Y/N]:y
[4500G_221]
#Jul 25 18:36:02:131 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 2 becomes INACTIVE!
#Jul 25 18:36:03:330 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 2 becomes INACTIVE!
#Jul 25 18:36:03:530 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 2 becomes INACTIVE!
#Jul 25 18:36:03:741 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 2 becomes INACTIVE!
#Jul 25 18:36:03:941 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 2 becomes INACTIVE!
#Jul 25 18:36:03:140 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 2 becomes INACTIVE!
#Jul 25 18:36:04:340 2007 4500G_221 LAGG/1/AggPortInactive:
  Trap 1.3.6.1.4.1.43.45.1.5.25.25.2.2: Status of some port(s) in
aggregation group 2 becomes INACTIVE!
%Jul 25 18:36:04:541 2007 4500G_221 LAGG/2/AggPortInactive:
```

```

Link aggregation group 2: port member GigabitEthernet1/0/9 is inactive!
%Jul 25 18:36:04:700 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 2: port member GigabitEthernet1/0/10 is inactive!
%Jul 25 18:36:04:870 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 2: port member GigabitEthernet1/0/11 is inactive!
%Jul 25 18:36:04:42 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 2: port member GigabitEthernet1/0/12 is inactive!
%Jul 25 18:36:04:202 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 2: port member GigabitEthernet1/0/13 is inactive!
%Jul 25 18:36:05:370 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 2: port member GigabitEthernet1/0/14 is inactive!
%Jul 25 18:36:05:540 2007 4500G_221 LAGG/2/AggPortInactive:
  Link aggregation group 2: port member GigabitEthernet1/0/15 is inactive!
[4500G_221]link-aggregation group 2 description "link to Sales 4500G 55"
[4500G_221]dis link-agg ver
Loadsharing Type: Shar -- Loadsharing, NonS -- Non-Loadsharing
Flags:  A -- LACP_Activity, B -- LACP_timeout, C -- Aggregation,
        D -- Synchronization, E -- Collecting, F -- Distributing,
        G -- Defaulted, H -- Expired

Aggregation ID: 1, AggregationType: Static, Loadsharing Type: Shar
Aggregation Description: "link to Account 4500G 224"
System ID: 0x8000, 0016-e0d6-7c00
Port Status: S -- Selected, U -- Unselected
Local:
  Port                Status  Priority  Oper-Key  Flag
  -----
  GE1/0/4             S       32768    1         {ACDEF}
  GE1/0/5             S       32768    1         {ACDEF}
  GE1/0/6             S       32768    1         {ACDEF}
  GE1/0/7             S       32768    1         {ACDEF}

Remote:
  Actor                Partner Priority  Oper-Key  SystemID          Flag
  -----
  GE1/0/4             12      32768    1         0x8000,0016-e0f7-d580 {ACDEF}
  GE1/0/5             13      32768    1         0x8000,0016-e0f7-d580 {ACDEF}
  GE1/0/6             14      32768    1         0x8000,0016-e0f7-d580 {ACDEF}
  GE1/0/7             15      32768    1         0x8000,0016-e0f7-d580 {ACDEF}

```

```

Aggregation ID: 2, AggregationType: Static, Loadsharing Type: Shar
Aggregation Description: "link to Sales 4500G 55"
System ID: 0x8000, 0016-e0d6-7c00
Port Status: S -- Selected, U -- Unselected
Local:
  Port                Status Priority Oper-Key Flag
-----
GE1/0/8               S       32768   3     {ACDEF}
GE1/0/9               S       32768   3     {ACDEF}
GE1/0/10              S       32768   3     {ACDEF}
GE1/0/11              S       32768   3     {ACDEF}
GE1/0/12              S       32768   3     {ACDEF}
GE1/0/13              S       32768   3     {ACDEF}
GE1/0/14              S       32768   3     {ACDEF}
GE1/0/15              S       32768   3     {ACDEF}

Remote:
  Actor                Partner Priority Oper-Key SystemID      Flag
-----
GE1/0/8                8       32768   1     0x8000,0016-e0e8-3d80 {ACDEF}
GE1/0/9                9       32768   1     0x8000,0016-e0e8-3d80 {ACDEF}
GE1/0/10               11      32768   1     0x8000,0016-e0e8-3d80 {ACDEF}
GE1/0/11               10      32768   1     0x8000,0016-e0e8-3d80 {ACDEF}
GE1/0/12               12      32768   1     0x8000,0016-e0e8-3d80 {ACDEF}
GE1/0/13               13      32768   1     0x8000,0016-e0e8-3d80 {ACDEF}
GE1/0/14               14      32768   1     0x8000,0016-e0e8-3d80 {ACDEF}
GE1/0/15               15      32768   1     0x8000,0016-e0e8-3d80 {ACDEF}

```

4. Check the connectivity to the remote switch using ping:

```

[4500G_221]ping 10.101.23.55
PING 10.101.23.55: 56 data bytes, press CTRL_C to break
  Reply from 10.101.23.55: bytes=56 Sequence=1 ttl=255 time=2 ms
  Reply from 10.101.23.55: bytes=56 Sequence=2 ttl=255 time=2 ms
  Reply from 10.101.23.55: bytes=56 Sequence=3 ttl=255 time=3 ms
  Reply from 10.101.23.55: bytes=56 Sequence=4 ttl=255 time=2 ms
  Reply from 10.101.23.55: bytes=56 Sequence=5 ttl=255 time=3 ms

--- 10.101.23.55 ping statistics ---
  5 packet(s) transmitted
  5 packet(s) received
  0.00% packet loss

```

```
round-trip min/avg/max = 2/2/3 ms
```

```
[4500G_221]ping 10.101.23.224
```

```
PING 10.101.23.224: 56 data bytes, press CTRL_C to break
```

```
Reply from 10.101.23.224: bytes=56 Sequence=1 ttl=255 time=2 ms
```

```
Reply from 10.101.23.224: bytes=56 Sequence=2 ttl=255 time=3 ms
```

```
Reply from 10.101.23.224: bytes=56 Sequence=3 ttl=255 time=2 ms
```

```
Reply from 10.101.23.224: bytes=56 Sequence=4 ttl=255 time=12 ms
```

```
Reply from 10.101.23.224: bytes=56 Sequence=5 ttl=255 time=2 ms
```

```
--- 10.101.23.224 ping statistics ---
```

```
5 packet(s) transmitted
```

```
5 packet(s) received
```

```
0.00% packet loss
```

```
round-trip min/avg/max = 2/4/12 ms
```

```
[4500G_221]
```

Chapter 7 Configuring the SFP Dual Mode Transceivers

The 3CSFP9-81 100BASE-FX SFP Dual Mode Transceiver and the 3CSFP9-82 100BASE-LX10 SFP Dual Mode Transceiver require that the Gigabit Ethernet dual media port in which they are installed, be configured to support the speed **100** and **full** duplex mode.

7.1. Configuring a Dual Mode SFP Transceiver Example

In the example below, the 3CSFP9-81 100BASE-FX SFP Dual Mode Transceiver is installed in Gigabit Ethernet port 1/0/52 and is connected to another switch. Both switches have an IP address configured on the same IP network.

```
<4500G>sys
System View: return to User View with Ctrl+Z.
[4500G]interface GigabitEthernet 1/0/52
[4500G-GigabitEthernet1/0/52]dis this
#
interface GigabitEthernet1/0/52
 broadcast-suppression pps 3000
 undo jumboframe enable
 shutdown
 stp edged-port enable
#
return
```

The dual media ports share the same MAC address thus only the SFP port or the 10/100/1000BASE-T port can be active. When GigabitEthernet port 1/0/52 is configured to **undo shut**, the corresponding 10/100/1000BASE-T port 1/0/48 is shut down automatically and cannot forward data frames.

```
[4500G-GigabitEthernet1/0/52]undo shut
[4500G-GigabitEthernet1/0/52]speed 100
[4500G-GigabitEthernet1/0/52]duplex full
```

The following example connects the two switches. Do not use **stp edge port** when connecting one switch to another.

```
[4500G-GigabitEthernet1/0/52]undo stp edged-port
[4500G-GigabitEthernet1/0/52]dis this
#
interface GigabitEthernet1/0/52
 speed 100
```

```
duplex full
broadcast-suppression pps 3000
undo jumboframe enable
#
return
[4500G-GigabitEthernet1/0/52]
```

Insert the 100BASE-FX SFP Dual mode Transceiver into Gigabit Ethernet port 1/0/52. The following message is displayed:

```
%Sep 12 15:57:19:919 2007 4500G IFNET/4/PORT PHY TYPE CHANGE:
GigabitEthernet1/0/52: is SGMII_100_BASE_FX_SFP
```

For a 3CSFP9-82 100BASE-LX10 SFP Dual Mode Transceiver, the following trap is displayed:

```
%Sep 12 16:42:26:140 2007 4500G IFNET/4/PORT PHY TYPE CHANGE:
GigabitEthernet1/0/50: is SGMII_100_BASE_LX_SFP
```

If the following message is displayed, it means that the speed or duplex is not configured correctly or you did not issue the **undo shut** command on the Gigabit Ethernet port.

```
4500G IFNET/4/PORT PHY TYPE CHANGE: The SFP transceiver type and port
configuration does not match in port GigabitEthernet1/0/52
```

Connect the cable to both devices. The following messages are generated. STP is enabled on this Switch 4500G.

```
#Sep 12 16:46:19:411 2007 4500G IFNET/4/INTERFACE UPDOWN:
Trap 1.3.6.1.6.3.1.1.5.4: Interface 9437235 is Up, ifAdminStatus is 1,
ifOperStatus is 1
%Sep 12 16:46:19:610 2007 4500G IFNET/4/LINK UPDOWN:
GigabitEthernet1/0/52: link status is UP
#Sep 12 16:46:20:776 2007 4500G MSTP/1/PFWD:hwPortMstiStateForwarding:
Instance 0's Port 0.9437235 has been set to forwarding state!
%Sep 12 16:46:21:961 2007 4500G MSTP/2/PFWD:Instance 0's
GigabitEthernet1/0/52 has been set to forwarding state!
```

To make sure there is connectivity to the switch at the other end of the cable, ping the device:

```
[4500G-GigabitEthernet1/0/52]ping 10.10.1.55
PING 10.10.1.55: 56 data bytes, press CTRL_C to break
Reply from 10.10.1.55: bytes=56 Sequence=1 ttl=255 time=3 ms
Reply from 10.10.1.55: bytes=56 Sequence=2 ttl=255 time=6 ms
Reply from 10.10.1.55: bytes=56 Sequence=3 ttl=255 time=3 ms
Reply from 10.10.1.55: bytes=56 Sequence=4 ttl=255 time=2 ms
Reply from 10.10.1.55: bytes=56 Sequence=5 ttl=255 time=2 ms

--- 10.10.1.55 ping statistics ---
5 packet(s) transmitted
5 packet(s) received
```

```
0.00% packet loss
round-trip min/avg/max = 2/3/6 ms
```

The interface appears as follows when the SFP is installed. The link is connected and is forwarding traffic.

```
[4500G-GigabitEthernet1/0/52]dis int GigabitEthernet 1/0/52
GigabitEthernet1/0/52 current state: UP
IP Packet Frame Type: PKTFMT_ETHNT_2, Hardware Address: 0016-e0d6-7f74
Description: GigabitEthernet1/0/52 Interface
Loopback is not set
Media type is optical fiber
Port hardware type is SGMII_100_BASE_FX_SFP
The transceiver Detail Information :
  The transceiver type : SFP
  The standard compliance : SGMII_100BASE_FX
  Transfers distance(m) : 9um Fiber : 0
    50um Fiber : 2000
    62.5um Fiber : 2000
    copper line : 0
  Serial Num is 9WMV850000015
  Vendor Name is FIBERXON INC.
  3C Number is 3CSFP9-81
100Mbps-speed mode, full-duplex mode
Link speed type is force link, link duplex type is force link
Flow-control is not enabled
The Maximum Frame Length is 1522
Broadcast MAX-pps: 3000
Unicast MAX-ratio: 100%
Multicast MAX-ratio: 100%
Forbid jumbo frame to pass
PVID: 1
Port link-type: access
  Tagged VLAN ID : none
  Untagged VLAN ID : 1
Port priority: 0
Last 300 seconds input:  0 packets/sec 55 bytes/sec
Last 300 seconds output: 0 packets/sec 38 bytes/sec
Input (total):  261 packets, 32083 bytes
    18 broadcasts, 233 multicasts
Input (normal):  - packets, - bytes
    - broadcasts, - multicasts
```

```
Input:  0 input errors, 0 runts, 0 giants, - throttles
        0 CRC, - frame, - overruns, 0 aborts
        - ignored, - parity errors
Output (total): 116 packets, 12746 bytes
            11 broadcasts, 92 multicasts, 0 pauses
Output (normal): - packets, - bytes
                - broadcasts, - multicasts, - pauses
Output: 0 output errors, - underruns, - buffer failures
        0 aborts, 0 deferred, 0 collisions, 0 late collisions
        0 lost carrier, - no carrier
```

```
[4500G-GigabitEthernet1/0/52]
```