

Using TFTP to Download Firmware to an IPX, IGX, or BPX

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Introduction

Firmware may be downloaded to an IPX, IGX, or BPX using TFTP on a Sun (UNIX) workstation or the Hewlett-Packard OpenView (HP OV) StrataCom Utilities.

Prerequisites

Conventions

For more information on document conventions, refer to the Cisco Technical Tips Conventions.

Requirements

There are no specific requirements for this document.

Components Used

UNIX workstation, IGX or BPX

If you want to TFTP firmware to a BPX or IGX from a PC, refer to Using TFTP on a PC to Download WAN Switch Software and Firmware

Download the Firmware

This section describes how to prepare and download firmware to an IPX, IGX, or BPX.

Prepare for the Download

Perform these steps to prepare for the firmware download:

1. On the UNIX workstation, verify the firmware is uncompressed, and note the directory where the firmware is located.

```
unix-server% ls <-----use the "ls" command to verify the files are there
```

```
ABU.000 ABU.001 ABU.002 ABU.003 ABU.004 ABU.004 ABU.006 ABU.007
ABU.008 ABU.009 ABU.010 ABU.011 ABU.012 ABU.013 ABU.014 ABU.015
ABU.016 ABU.017 ABU.018 ABU.img ABUread.me ab09.000 ab09.img
ab09read.me
```

```
unix-server% pwd <-----Use the "pwd" command to get the directory path
```

```
/usr/users/svplus/images/ipxbpx
```

2. On the IPX, IGX, or BPX, use the **cnffwswinit** command to configure the IP address of the UNIX workstation that you are using to download firmware to the switch.

cnffwswinit							
igxl	TN	Cisco	IGX 8410	9.3.42	May	27 2004	10:52 GMT
Last Command: cnffwswinit 10.10.10.10							

Verify that both Ping and Telnet connectivity exists between the TFTP server and the switch.

Note: Enabling the **cnfdlparm 8** and **cnffunc 6** commands is not a requirement when using the TFTP method.

Download the Firmware using TFTP Enabled Unix Workstation

Complete these steps to download the firmware using a TFTP-enabled UNIX workstation:

1. Create a firmware request file named **dnld.fw**, which specifies these parameters on the UNIX workstation:

- ◆ **Tftp_Request** used by the IGX or BPX to create the tftp request back to the workstation
- ◆ **IP** The IP address of the UNIX workstation
- ◆ **PathName** The path that contains the images
- ◆ **CardName** The card type to be upgraded
- ◆ **RevNum** The revision of the firmware being loaded
- ◆ **FileName** Optional; use this field if you want to specify the exact file.

Note: This is sometimes needed when the filename has a mixture of upper and lowercase characters, or is oddly named. The switch first looks for a file with the same name as the "RevNum.img" in all lowercase, then it tries all uppercase on its own, but it never tries anything else. If you see that your ".img" file is named something other than the RevNum, then you need to use this field.

Note: You must not enter the ".img". The switch does that on its own.
Below is an example **dnld.fw** file. This example uses these parameters:

- ◆ IP address of UNIX workstation = 10.10.10.10
- ◆ IP address of IGX = 10.10.10.20
- ◆ Directory path where code is located on UNIX workstation = /usr/users/svplus/images/ipxbpx
- ◆ Name of card to be upgraded = UXM
- ◆ Revision of firmware being upgraded to = ABU Must be uppercase
- ◆ The firmware file name = ABU —Because my ".img" file is named ABU.img. In this case, I did not need to add this optional field. It is only added here for completeness.

The **bold** type must be written exactly as it appears here. The rest is dependent on your specific setup, and most likely is different than what is displayed here.

```
unix-server% more dnld.fw

! --- The more command displays the file contents.

Tftp_Request
IP:10.10.10.10
PathName:/usr/users/svplus/images/ipxbpx
CardName:UXM
RevNum:abu
FileName:ABU
```

Note: If you create this file on a PC using Microsoft Word, or something similar, it imbeds odd characters that cause the TFTP to fail. If possible, create it on the UNIX workstation.

2. Transfer the dnld.fw file to the target switch (using TFTP). In the example below, you first start the TFTP session to the IP address of your IGX or BPX with the **tftp ip-address** command. Second, you put the TFTP session into binary mode (using the **bin** command), and finally, you transfer the dnld.fw file to the switch by using the **put dnld.fw** command. This is an example:

```
unix-server% tftp 10.10.10.20
tftp> bin
tftp> put dnld.fw
tftp> quit
```

Use the **dsplog** command to verify the firmware was found on the UNIX server, and that it was downloaded.

Note: In the example below, ABU was **found**.

dsplog							
igx1	TN	Cisco	IGX 8410	9.3.42	May	28 2004	16:50 GMT
Most recent log entries (most recent at top)				(events 3-1 of 3)			
Class	Description				Date	Time	
Info	TFTP Client 0: IP 10.10.10.10	ABU found			05/28/04	16:46:53	
Info	getfwrev UXM ABU	initiated from 10.10.10.10			05/28/04	16:46:37	
Info	Log Cleared				05/28/04	16:44:13	
Last Command: dsplog							

You can use the **dspfwrev** and **dspdnd** commands to monitor the download after it has been **found**. Notice the **Status**.

```

dspfwrev
igx1      TN      Cisco      IGX 8410  9.3.42   May 28 2004 16:48 GMT

Firmware      Size      Status
UXM-A.B.U     1211 K   Getting from igx1-05a SV 10.10.10.10

File          Address   Length   CRC           Burn Address
0             BFC10000 10000   B1E0D546
1             BFC20000 10000   8A6C6711
2             BFC30000 10000   388F246F
3             BFC40000 10000   E60443FB
4             BFC50000 10000   4FC19030
5             BFC60000 10000   BE3BEE06
6             BFC70000 10000   860ADAC7
7             BFC80000 10000   073758AB
8             BFC90000 10000   221C8E81
9             BFCA0000 10000   41BB69AF

This Command: dspfwrev

```

Each set of numbers represent one of the firmware files that are being downloaded to the switch. If you watch the output of this screen, you see each set of number increment until the file is transferred. When each individual file transfer is complete, the numbers appear in "reverse video".

```

dspdnl
igx1      TN      Cisco      IGX 8410  9.3.42   May 28 2004 16:48 GMT

dl_dest:  Active CC           dl_source: SV SV 10.10.10.10
dl_type:  Firmware          dl_image:  Firmware
pathname: /usr/users/svplus/images/ipxbpx
filename: ABU

BFC20000 BFC30000 BFC40000 BFC50000 BFC60000 BFC70000 BFC80000 BFC83E00
BFC90000 BFCA0000 BFCB0000 BFCC0000 BFCD0000 BFCE0000 BFCF0000 BFD00000
BFD10000 BFD20000 BFD30000

Last Command: dspdnl

```

You can also use the **snoop host tftp_host_name port 69** command to monitor the download at the UNIX workstation. However, usually you need root access to the workstation.

- When the status displayed by using the **dspfwrev** command shows complete, the switch is ready to burn the firmware onto the card.

```

dspfwrev
igx1      TN      Cisco      IGX 8410  9.3.42   May 28 2004 17:02 GMT

Firmware      Size      Status
UXM-A.B.U     1211 K   Complete

File          Address   Length   CRC           Burn Address
0             BFC10000 10000   B1E0D546
1             BFC20000 10000   8A6C6711

```

2	BFC30000	10000	388F246F
3	BFC40000	10000	E60443FB
4	BFC50000	10000	4FC19030
5	BFC60000	10000	BE3BEE06
6	BFC70000	10000	860ADAC7
7	BFC80000	10000	073758AB
8	BFC90000	10000	221C8E81
9	BFCA0000	10000	41BB69AF

Last Command: `dspfwrev`

Use the `burnfwrev rev-number slot-number` command to burn the firmware onto the card. For details, refer to the document *Upgrading Firmware for Non-Control Cards*.

Download Firmware Using HP OpenView StrataCom Utilities

Complete these steps, from the main HP OV window, to download the firmware using HP OV StrataCom Utilities:

1. Select the **OV StrataCom topology** submap.
2. Select the node from the submap.
3. Select the **StrataCom/Image Download** from the drop down list box.
4. Select the image to download in the pop-up window.
5. Click **Download**.

HP OV now creates a TFTP request file and transfers it to the node. The node requests the image from the location specified in the request file. The advantage of using this method is that the pop-up window referred to in Step 4 above shows only images valid for the type of switch you are using. The disadvantage is that a large number of downloads require multiple iterations because there is no way to select multiple switches for one download. If downloads for this type of card are not supported, the pop-up window download never shows the status as complete.

TFTP Error Codes

You may encounter these errors during the TFTP download process:

- Error code 4: Illegal TFTP operation mode

A field error (typo) is in the TFTP request file, or the transfer mode is set to ASCII. Change transfer mode to BIN.

- Error code 72: SW revision change going on

A switch software download is in progress. You have to wait until the software download has completed.

- Error code 75: Invalid Revision number Rev does not match card type

The card specified in the CardName field in the dnld.fw file is not valid. This field is case sensitive, and it must be uppercase. Any lowercase letters give this error code as well.

- Error code 78: Card does not support FW Download
- Error code 79: Download Space Not FREE

A configuration image is present in the switch's RAM. Use the `savecnf clear` command to clear the configuration image.

- Error code 80: SV+ not authorized to initiate FW/SW dnld

The IP address entered with the **cnffwswinit** command does not match the IP address of the UNIX workstation you are using. Verify the IP address you entered in the **cnffwswinit** command.

- Transfer timed out

The specified IP address is not reachable, or another firmware download is in progress.

- Invalid String

The dnld.fw file is in DOS or Windows format on separate lines, or there are field names that are not typed correctly.

- File too large

The dnld.fw file is probably corrupted, or in Microsoft Word or Rich Text Format (RTF).

- File not found

Check the server root and PathName configuration. The image file (.img) must have a lowercase extension.

Related Information

- [Cisco WAN Switching Solutions – Cisco Documentation](#)
- [Guide to New Names and Colors for WAN Switching Products](#)
- [Downloads – WAN Switching Software](#)
- [Technical Support – Cisco Systems](#)

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