

# Using TFTP on a PC to Download WAN Switch Software and Firmware

Document ID: 10757

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## Introduction

This document describes how to use Trivial File Transfer Protocol (TFTP) on a PC to install Cisco StrataCom software and firmware.

## Prerequisites

### Requirements

Cisco recommends that you have knowledge of these topics:

- **TFTP Client Software**

You can use TFTP to transfer software image files from a PC to your device. This document was written using output from the Cisco TFTP Server application. Cisco has discontinued this application and no longer supports it. If you do not have a TFTP server, obtain any third-party TFTP server application from another source.

**Note:** There have been problems reported using the Weird Solutions client to TFTP MGX AXIS Shelf Controller (ASC) bootcode.

- **dnld.fw and dnld.sw Template Files**

The steps in the Preliminary Setup section of this document explain how to create these files. The native format of the templates is UNIX, but you can use NotePad or WordPad. Download the shareware editor DwEdit to easily convert to and from DOS and UNIX text formats.

- **Switch software 8.4 or later that supports TFTP**

### Components Used

This document is not restricted to specific software and hardware versions.

## Conventions

Refer to Cisco Technical Tips Conventions for more information on document conventions.

## Preliminary Setup

This section provides sample directory layouts and program settings. It also includes tips on path name settings in the dnld files. These examples reference the Cisco TFTP server and the Weird Solutions TFTP client, but the same principles can be used with other vendor software. It is assumed that the TFTP client and server are already installed.

1. Create one or more directories from which the firmware and software images will be loaded. This example uses the **c:\images\ipxbpx** and **c:\images\mgx** directories. These directories somewhat mirror the svplus images directories, but this is not required.
2. Run the Cisco TFTP server. Select **Options > Server Root Directory** and browse to the **c:\images** directory. This is the directory from which the path name in the dnld files is referenced.

You can also use **c:\images\ipxbpx**. In which case the PathName in the dnld files is a slash (/) or a period (.).

**Note:** Most users prefer to set the Server Root to the directory where the firmware and software is contained and use a slash (/) or a period (.) as the PathName. For this example and to illustrate how the PathName is relative to the Server Root, the Server Root is set to the **c:\images** directory and the firmware and software is in the **c:\images\ipxbpx** directory.

3. Format the dnld files. You can use either UNIX or DOS/Windows:

### a. Create the dnld files in UNIX:

Create the dnld.fw and/or dnld.sw files on a UNIX machine using vi/textedit/dtpad (or create them with a UNIX-capable editor such as DwEdit). The file format is illustrated in this table. These files are in UNIX text format which means the line terminator is a new-line/line-feed (0A) character. DOS and Windows text files use carriage-return, linefeed pair (0D0A). Currently, WAN switches do not accept dnld files with DOS or Windows line terminators. FTP the files from a UNIX machine to a PC. Ensure the transfer is in **binary** mode. If DwEdit was used, select **Edit > Conversions > Windows > UNIX** (each line appears on one line with black blocks between them). If these files are edited on a PC, they **must** be edited with WordPad. WordPad retains the original line terminators that were loaded when the file was read. However, there does not seem to be a way to make it read a DOS-style file and write a UNIX-style file. Notepad always writes in DOS/Windows style.

An easy way to determine the style of the file is to load the file in Notepad (the original Windows version, not Notepad+). If the fields appear normal, the file is in DOS/Windows style. If the fields are all on one line with blocks between them, the file is in UNIX style. Exit Notepad without saving. If the file is translated to DOS/Windows style, FTP it again and edit it, or convert it with a utility like DwEdit.

### Examples of dnld Files in UNIX Format

dnld.fw	dnld.sw
◇ Tftp_Request	◇ Tftp_Request
◇ IP: 161.44.116.53	◇ IP:
◇ PathName: /ipxbpx	161.44.116.53

◇ CardName: ASI-155	◇ PathName: /ipxbpx
◇ RevNum: WDK	◇ RevNum: 9102
◇ FileName: wdk	◇ Filename: 9102B

**b. Create the dnld files in DOS/Windows:**

If templates of the UNIX dnld files or a UNIX-style editor are not available, you can create and edit the dnld files with a regular Windows editor such as Notepad. In this case, to avoid the new-line/linefeed problem, all the fields must be on a single line separated by spaces.

**Examples of dnld Files in DOS/Windows Format**

<b>dnld.fw</b>
Tftp_Request IP: 171.68.44.9 PathName: . CardName: ASI-155 RevNum: WDK Filename: wdk
<b>dnld.sw</b>
Tftp_Request IP: 171.68.44.9 PathName: . RevNum: 9108 Filename: 9108B

**Note:**

- ◇ Do not enter any spaces after the Filename entry. This prevents the files from downloading.
- ◇ Insert a space at the end of the single line of text. This allows the device to recognize the end of line.
- ◇ Create shortcuts to the various editors in the \Windows\SendTo directory to easily choose Windows editors. Right-click the file name, select **Send To**, and select the editor. Or, press the Shift key while you right-click the file name and select **Open With**.

4. Save the dnld files that you created/FTPed in the **c:\images** directory. When you save the file in WordPad, be sure to select **Text Document** as the file type. To prevent the editor (any Windows editor) from appending .txt to the file name, surround the file name with quote marks ("). For example, in the file name field of the Save As dialog box, enter "**dnld.sw**" when you save. These files will be the "master" template files (this is recommended because if you are working with UNIX format files and accidentally save them as DOS, Word, or RTF format, you will still have good master copies). Make a copy of the template files from the **c:\images** directory into the **c:\images\ipxbpx** directory. These files will be the "working" files.
5. Edit the "working" dnld.fw and/or dnld.sw file(s) in the **c:\images\ipxbpx** directory. If the UNIX template files are used as detailed earlier, you **must** use WordPad. Enter this information in the appropriate fields:

<b>Field</b>	<b>Comments</b>
<b>IP</b>	Enter the <i>IP address</i> of the PC. If you use Dynamic Host Configuration Protocol (DHCP), run the Windows 95 <b>winipcfg</b> utility 95 or the Windows NT <b>ipconfig</b> utility to find the IP address.
<b>PathName</b>	Enter <b>/ipxbpx</b> if the server root is set for <b>c:\images</b> . If the server root is

	c:\images\ipxbpx, enter a slash (/) or a period (.). Use forward slashes (/) in path names (the back slash (\) is not supported in all SWSW revisions).
<b>CardName</b>	For the dnld.fw file, enter the <i>card name</i> that you want to use in the <b>getfwrev</b> command (from dspcds).
<b>RevNum</b>	Enter the <i>revision</i> (for example, <b>WDK</b> for firmware and <b>9108</b> for software).
<b>Filename</b>	Enter the <i>identifier portion</i> of the files (for example, <b>wdk</b> for firmware and <b>9108B</b> for BPX software).

6. Save the file(s). When you save the file in WordPad, be sure to select **Text Document** as the file type. To prevent the editor (any Windows editor) from appending .txt to the file name, surround the file name with quote marks ("). For example, in the file name field of the Save As dialog box, enter "**dnld.sw**" when you save.
7. Log in to the desired destination node and enter the **cnffwswinit** command followed by the IP address of the PC (if using DHCP, run the **winipcfg** utility to find the IP address).

**Note:** If the network uses WAN Manager/SV+, be sure to set the IP address back to the WAN Manager/SV+ workstation IP address when you are finished. Otherwise, the workstation is not able to TFTP firmware or software.

## Initiate the TFTP

This section describes how to initiate the transfer after you complete all of the preliminary setup steps.

1. Run the Weird Solutions TFTP client.
2. Set the option buttons to **Put** and **Binary** (ASCII does not work).
3. In the **Source file** field, enter **c:\images\ipxbpx\dnld.fw** or **c:\images\ipxbpx\dnld.sw** (assuming you use the directory structure this example uses).
4. In the **Destination file** field, enter **dnld.fw** or **dnld.sw**.
5. In the **Remote host** field, enter the *Name* or *IP address* of the switch. If you use the *Name*, it must be resolvable by DNS, or the appropriate Name-to-IP address mapping must be in the \Windows\hosts file. The \Windows\hosts file may or may not exist on the PC. Create it if necessary (do not use the lmhosts or hosts.sam (sample) files). On Windows NT, the hosts file is located in the \Winnt\system32\drivers\etc directory.
6. No entries are necessary in the **Blocksize** and **Timeout** fields. They default to **512** and **3**, respectively.
7. Run the Cisco TFTP server if does not already run. Select **Options**, then **Server Root Directory**, and browse to the **c:\images** directory.
8. Click the **Put** button. The transfer should complete with no errors. If you receive a timeout, check that the node is reachable by pinging the *Name* or *IP address* entered in the Remote Host field. If errors are received, see the list of common errors.
9. View the TFTP server status window or the node **dspdnd** and **dspfwrev** screens, or both. After a short delay, the files should begin to transfer. If not, verify that the IP address of the PC is in the dnld file that was transferred to the node.

## Common Errors

This section describes some common errors which can be seen when you use the TFTP client.

Error	Explanation
Invalid String	The dnld file is in DOS/Windows format or the field names have been typed incorrectly. See step 3 in the Preliminary Setup section.
File too large	The dnld file is probably in Word, RTF format, or corrupt. See step 3 in the Preliminary Setup section.
Error on server: Illegal TFTP operation	TFTP <b>Put</b> is in ASCII mode. Switch to <b>Binary</b> mode.
Error on server: SV+ not authorized to initiate FW/SW dnld	<b>Cnffwswinit</b> IP address is not set to the PC's IP address on the node.
Download Space Not FREE	Configuration image (from savecnf) present
File not found	(use the <b>savecnf clear</b> command to clear). Check the <b>Server Root</b> and <b>PathName</b> configuration. Also make sure the image file has a lowercase extension (.img instead of .IMG). The node looks for upper and lowercase file names, but the extension must be in lowercase letters. Also, check for extra spaces after the file name. Recheck the PC's IP address entered in the dnld file.
SW revision change going on	SWSW download in progress.
Invalid Revision number	Revision does not match card type.
Invalid Card Type	Card specified in the <b>CardName</b> field in dnld.fw is not valid.
Card does not support FW download	In earlier releases of SWSW, some cards (ASI, BNI, HDM, LDM) are not supported, and the error code 78 will appear. Refer to Cisco bug ID CSCdj35089 (registered customers only) .

## Notes on Other TFTP Programs

This section describes some additional caveats when you use other versions of TFTP client/server software.

### Network TeleSystems TFTP Server

- File name mapping must be set to **Default** (not Cisco).
- Use a period (.) instead of a slash (/) to specify the server root.
- Be sure to set **No restriction** or **Allow Read** on the server root directory.

## Related Information

- [Saving and Restoring Configurations on IPX, IGX, and BPX Nodes](#)
  - [Using the savecnf and loadcnf Commands in StrataView Plus](#)
  - [Downloading Software and Firmware for 9.2 Networks](#)
  - [Saving and Restoring Node Configurations for 9.2 Networks](#)
  - [Save and Restore Configuration Commands for 9.2 Networks](#)
  - [Cisco WAN Switching Solutions – Cisco Documentation](#)
  - [Guide to New Names and Colors for WAN Switching Products](#)
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Updated: Apr 17, 2009

Document ID: 10757

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