

PIX/ASA: Backup and Restore the Security Appliance Configuration Files Using TFTP Server

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Introduction

This document describes how to backup and restore the configuration and image files of Security Appliance versions 6.x and 7.x. This document provides the basic steps you use in order to copy these files between a TFTP server and a PIX/ASA.

Note: Refer to TFTP Server Selection and Use in order to select the TFTP server.

Prerequisites

Requirements

Before you use the information in this document, make sure that you have a TFTP server on the network to which you have IP connectivity. Use the `ping` command to verify connectivity.

Components Used

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

Related Products

The Cisco PIX 500 Series Security Appliance Software version 7.x configuration can also be used with Cisco ASA Series Security Appliance Software version 7.x.

Conventions

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

Backup and Restore the Configuration

This section provides information about these procedures used for the backup and restoration of PIX 6.x and 7.x configurations:

- Use the **tftp-server**, **config net**, and **write net** Commands to Backup and Restore a Configuration in PIX 6.x or 7.x
- Use the **copy** Command to Backup and Restore a PIX 6.x Image
- Use the **copy** Command to Backup and Restore a Configuration on PIX/ASA 7.x
- Use a Terminal Emulation Program to Backup and Restore a Configuration

Use the **tftp-server**, **config net**, and **write net** Commands to Backup and Restore a Configuration in PIX 6.x or 7.x

The **write net**, **config net**, and **tftp-server** commands enable you to backup and restore the PIX configuration for versions 6.x and 7.x.

Note: These commands and this procedure are supported in both PIX 6.x and 7.x versions. In both cases, the commands must be issued in global configuration mode.

1. Issue the **tftp-server** command in order to simplify entering the **configure net** and **write net** commands.

When you issue these commands, you can either inherit the TFTP server specified by the **tftp-server** command, or provide your own value. You can also inherit the path in the **tftp-server** command as is, add a path and filename to the end of the **tftp-server** command value, or override the **tftp-server** command value. The PIX Security Appliance supports only one **tftp-server** command.

```
tftp-server [if_name] {ip_address/hostname} path
```

2. Specify the default TFTP server, path and filename to use with the **configure net** or **write net** commands.

These commands are used in global configuration mode. Issue the **no** form of these commands in order to remove the server configuration. This command supports IPv4 and IPv6 addresses.

Note: The command syntax slightly varies for PIX 6.x and 7.x. In PIX 6.x, **[if_name]** is an optional parameter that represents the interface name on which the TFTP server resides. If not specified, an internal interface is assumed. If you specify the outside interface, a warning message informs you that the outside interface is not secure. However, in PIX 7.x, **[if_name]** is a mandatory parameter which specifies the gateway interface name. If you specify an interface other than the highest security interface, a warning message informs you that the interface is not secure.

The path name you specify in the **tftp-server** command is added to the end of the IP address you specify in the **configure net** and **write net** commands. The more you specify of a file and path name with the **tftp-server** command, the less you need to specify with the **configure net** and **write net** commands. If you specify the full path and filename in the **tftp-server** command, the IP address in the **configure net** and **write net** commands can be represented with a colon.

This example specifies a TFTP server, then reads the configuration from /pixfirewall/config/test_config:

```
tftp-server inside 10.1.1.42 /pixfirewall/config/test_config
configure net :
```

3. Issue the **configure net** command in order to merge the current running configuration with a TFTP configuration stored at the IP address you specify, and from the file you name.

If you specify both the IP address and path name in the **tftp-server** command, you can specify `server_ip :filename` with a colon.

```
configure net :
```

This example sets the server and filename in the **tftp-server** command, and then overrides the server with the **configure net** command. The same filename is used.

```
hostname(config)#tftp-server inside 10.1.1.1 configs/config1
hostname(config)#configure net 10.2.2.2:
```

This example sets the server only in the **tftp-server** command. The **configure net** command specifies only the filename.

```
hostname(config)#tftp-server inside 10.1.1.1
hostname(config)#configure net :configs/config1
```

A merge adds all commands from the new configuration to the running configuration, and overwrites any commands that conflict with the new versions. For example, if a command allows multiple instances, the new commands are added to the commands that exist in the running configuration. If a command allows only one instance, the new command overwrites the command in the running configuration. A merge never removes commands that exist in the running configuration, but are not set in the new configuration.

This command is the same as the **copy tftp running-config** command. For multiple context mode in PIX 7.x, this command is only available in the system execution space. Therefore, the **configure net** command is an alternative to use within a context.

4. Issue the **write net** command in order to store the running configuration in the TFTP server.

The **write net** command is equivalent to the **copy running-config tftp** command.

```
write net :
```

The running configuration is the configuration that currently runs in memory. This includes any changes you made at the command line. In multiple context mode, this command saves only the current configuration. You cannot save all contexts with a single command. This command must be entered separately for the system and for each context.

The **write net** command uses the context interfaces to write a configuration to a TFTP server. However, the **write memory** command uses the admin context interfaces in order to save to the startup configuration because the system uses the admin context interfaces to access context startup configurations.

This example sets the TFTP server and filename in the **tftp-server** command.

```
hostname#tftp-server inside 10.1.1.1 /configs/contextbackup.cfg
hostname#write net
```

This example sets the server and filename in the **write net** command. The **tftp-server** command is not populated.

```
hostname#write net 10.1.1.1:/configs/contextbackup.cfg
```

Note: If you have a PIX Firewall configuration that exists on a TFTP server and store a shorter version of that configuration with the same filename on the TFTP server, you might notice extra text after the first `:end` mark.. Some TFTP servers begin to write at the start of the file and thus leave some of the original configuration after the first `:end` mark. This does not affect the PIX Firewall. However, because the **configure net** command stops reading when it reaches the first `:end` mark, such a situation might cause confusion if you view the configuration and see extra text at the end.

Use the copy Command to Backup and Restore a PIX 6.x Image

The **copy tftp flash** command enables you to download a software image into the Flash memory of the firewall via TFTP. You can use the **copy tftp flash** command with any PIX Firewall model that runs version 5.1 or later. The image you download is made available to the PIX Firewall on the next reload (reboot).

This is the output from the **copy tftp flash** command:

```
copy tftp[:[//location] [/tftp_pathname]] flash[:[image | pdm]]
```

If the command is used without the location or pathname optional parameters, then the location and filename are obtained from the user interactively via a series of questions similar to those presented by Cisco IOS® software. If you only enter a colon, parameters are taken from the **tftp-server** command settings. If other optional parameters are supplied, then these values are used in place of the corresponding **tftp-server** command setting. If any of the optional parameters, such as a colon and anything after it are supplied, the command runs without a prompt for user input.

The location is either an IP address or a name that resolves to an IP address via the PIX Firewall naming resolution mechanism, which is currently static mappings via the **name** and **names** commands. The PIX Firewall must know how to reach this location via its routing table information. This information is determined by the **ip address**, the **route**, or the **RIP** commands. This depends on your configuration.

The pathname can include any directory names besides the actual last component of the path to the file on the server. The pathname cannot contain spaces. If a directory name has spaces set to the directory in the TFTP server instead of in the **copy tftp flash** command, and if your TFTP server is configured to point to a directory on the system from which you download the image, you only need to use the IP address of the system and the image filename. The TFTP server receives the command and determines the actual file location from its root directory information. The server then downloads the TFTP image to the PIX Firewall.

This is the procedure to copy an image file from a TFTP server to a PIX, and back to a TFTP server.

1. Issue the **copy tftp flash** command in order to copy the PIX image from the TFTP server to PIX Flash.

This example causes the PIX Firewall to prompt you for the filename and location before you start the TFTP download.

```
pix#copy tftp flash
Address or name of remote host [127.0.0.1]? 10.1.1.5
Source file name [cdisk]? pix512.bin
copying tftp://10.1.1.5/pix512.bin to flash
```

```
!!
1030 bytes copied in 2.489 secs (395 bytes/sec)
pix#
```

2. Issue the **copy flash tftp** command in order to copy the PIX image from Flash to the TFTP server:

```

pix#copy flash tftp
Address or name of remote host []? 10.0.0.1
Source filename []? pix512.bin
Destination filename [pix512.bin]?
Accessing tftp://10.66.64.10/backup_cfg_for_pix...
!!!!

1030 bytes copied in 9.612 secs (107 bytes/sec)
pix#

```

3. Issue the **tftp-server** command in order to set the filename and location.

This saves memory, and then downloads the image to Flash memory.

This example takes the information from the **tftp-server** command. In this case, the TFTP server is in an intranet and resides on the outside interface.

```

pixfirewall(config)#tftp-server outside 10.1.1.5 pix512.bin

Warning: 'outside' interface has a low security level (0).

```

This example shows the usage of **tftp:** in the **copy** command. The PIX directly copies the image from TFTP to Flash without intervention.

```

pixfirewall(config)#copy tftp: flash

copying tftp://10.1.1.5/pix512.bin to flash

!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!...

```

4. Issue the **tftp-host** command name in the **copy** commands.

This example maps an IP address to the TFTP host name with the name command.

```

name 10.1.1.6 tftp-host

copy tftp://tftp-host/pix512.bin flash

copy tftp://tftp-host/tftpboot/pix512.bin flash

```

Use the copy Command to Backup and Restore a Configuration on PIX/ASA 7.x

Use one of these methods in order to backup and restore your configuration on a PIX/ASA 7.x:

- Use the copy Command to Backup and Restore the PIX Configuration and Image
- Backup and Restore the Single Mode Configuration or Multiple Mode System Configuration
- Backup and Restore a Context Configuration in Flash Memory
- Backup and Restore a Context Configuration within a Context

Use the copy Command to Backup and Restore the PIX Configuration and Image

The **copy** command enables you to copy a file from one location to another.

```

copy [/noconfirm | /pcap] {url | running-config | startup-config}
{running-config | startup-config | url}

```

Note: Use the **copy** command procedure mentioned in steps 1 and 2 of the Use the copy Command to Backup and Restore a PIX 6.x Image section in order to take the backup and restore the PIX image to the TFTP server. The use of the **copy** command is slightly different with versions 6.x and 7.x. In version 6.x, if you

issue **tftp:** with the **copy** command, such as **copy tftp: flash**, the PIX uses the stored TFTP server information, such as the path and filename. However, in version 7.x, the PIX interacts the user with a set of questions, even if you specify the **tftp:** with the **copy** command and the TFTP server information. .

This is the procedure to copy a configuration from a PIX to a TFTP server, and back to PIX.

1. Select and copy the PIX running configuration file to the TFTP server:

```
pix#copy running-config tftp
Address or name of remote host []? 10.0.0.1
Destination filename [pix-config]? backup_cfg_for_pix
!!
1030 bytes copied in 2.489 secs (395 bytes/sec)
pix#
```

2. Select and copy the configuration file from the TFTP server to a same PIX in privileged (enable) mode, which has a basic configuration.

```
pix#copy tftp running-config
Address or name of remote host []? 10.0.0.1
Source filename []? backup_cfg_for_pix
Destination filename [running-config]?
Accessing tftp://10.66.64.10/backup_cfg_for_pix...
Loading backup_cfg_for_pix from 10.0.0.1 (via Ethernet0): !
[OK - 1030 bytes]

1030 bytes copied in 9.612 secs (107 bytes/sec)
pix#
```

Backup and Restore the Single Mode Configuration or Multiple Mode System Configuration

In single context mode, or from the system configuration in multiple mode, you can copy the startup configuration or running configuration to an external server or to the local Flash memory:

Note: When you copy a configuration to the running configuration, you merge the two configurations. A merge adds any new commands from the new configuration to the running configuration. If the configurations are the same, no changes occur. If commands conflict or if commands affect the running of the context, then the effect of the merge depends on the command. You might get errors, or you might have unexpected results.

1. Select and copy the startup configuration or running configuration to an external server or to the local Flash memory:

```
hostname#copy {startup-config | running-config}
tftp://server[/path]/filename
```

2. Issue this **copy tftp** command in order to restore the file back to PIX:

```
hostname#copy tftp://server[/path]/filename {startup-config | running-config}
```

3. Issue this **copy** command in order to copy to a FTP server:

```
hostname#copy {startup-config | running-config}
ftp://[user[:password]@]server[/path]/filename
```

4. Issue this **copy** command in order to restore the file back to PIX:

```
hostname#copy ftp://[user[:password]@]server[/path]/filename {startup-config | running-config}
```

5. Issue this **copy** command in order to copy to local Flash memory:

```
hostname#copy {startup-config | running-config} {flash:/ | disk0:/ |
disk1:/}[path/]filename
```

6. Issue this **copy** command in order to restore the backup file:

```
hostname#copy {flash:/ | disk0:/ |
disk1:/}[path/]filename {startup-config | running-config}
```

Make sure the destination directory exists. If it does not exist, issue the **mkdir** command in order to create the directory.

Backup and Restore a Context Configuration in Flash Memory

In multiple context mode, issue one of these commands in the system execution space in order to copy context configurations that are on the local Flash memory.

1. Issue this **copy** command in order to copy to a TFTP server:

```
hostname#copy disk:[path/]filename tftp://server[/path/]filename
```

2. Issue this **copy** command in order to restore the file back to PIX:

```
hostname#copy tftp://server[/path/]filename disk:[path/]filename
```

3. Issue this **copy** command in order to copy to an FTP server:

```
hostname#copy disk:[path/]filename ftp://[user[:password@]server
[/path/]filename
```

4. Issue this **copy** command in order to restore the file back to PIX:

```
hostname#copy ftp://[user[:password@]server
[/path/]filename disk:[path/]filename
```

5. Issue this **copy** command in order to copy to local Flash memory:

```
hostname#copy {flash:/ | disk0:/ | disk1:/}[path/]filename {flash:/ | disk0:/ |
disk1:/}[path/]newfilename
```

6. Issue this **copy** command in order to restore the file back to PIX:

```
hostname#copy {flash:/ | disk0:/ |
disk1:/}[path/]newfilename {flash:/ | disk0:/ | disk1:/}[path/]filename
```

Backup a Context Configuration within a Context

In multiple context mode, from within a context, you can perform these backups:

1. Issue this **copy** command in order to copy the running configuration to the startup configuration server (connected to the admin context):

```
hostname/contexta#copy running-config startup-config
```

2. Issue this **copy** command in order to copy the running configuration to a TFTP server connected to the context network:

```
hostname/contexta#copy running-config tftp://server[/path/]filename
```

Use a Terminal Emulation Program to Backup and Restore a Configuration

A terminal emulation program can be used in order to backup and restore a configuration. This is a description of the procedure that uses Microsoft HyperTerminal Terminal Emulation software and either PIX 6.x or 7.x

1. At the `pix>` prompt, issue the **enable** command and enter the required password when prompted.

The prompt changes to `pix#`. This indicates that the PIX is in privileged mode.

2. Issue the **terminal pager 0** command in order to force the PIX to return the entire response at once, rather than one screen at a time.

This allows you to capture the configuration without extraneous `--more--` prompts generated when the PIX responds one window at a time.

3. On the HyperTerminal menu, choose **Transfer > Capture Text**.

The Capture Text window appears.

4. Name this file **config.txt**.
5. Click **Start** in order to dismiss the Capture Text window and begin the capture.
6. Issue the **show running-config** command, and allow time for the router to complete its response.

You see this:

```
Building configuration...
```

The configuration comes after `Building configuration`.

7. On the HyperTerminal menu, choose **Transfer > Capture Text > Stop** in order to end the screen capture.
8. Open the **config.txt** file you created in any text editor, such as Notepad or Wordpad, and save the file.
9. Connect to the PIX that needs the configuration to restore.
10. Open the **config.txt** file.
11. Highlight the entire contents of the config.txt file.

Drag the cursor from before the first character to after the last character in the file while you hold down the left mouse button in order to highlight. Alternatively, if you use Notepad, choose **Edit > Select All** from the menu.

12. Choose **Edit > Copy** from the text editor menu, or hold down the **CTRL** key and simultaneously press the **C** key in order to copy the selected text from the Windows clipboard.
13. Switch to the HyperTerminal window, and issue the **configure terminal** command at the `pix#` prompt.
14. Press **Enter**.
15. Choose **Edit > Paste to Host** on the HyperTerminal menu in order to paste the configuration file into the PIX.
16. After the configuration is pasted and the PIX brings you back to the configuration prompt, issue the **copy running-config startup-config** command in order to write the configuration into memory.
17. Issue the **exit** command in order to return to the `pix#` prompt.

Verify

Issue the **show running-config** command in order to confirm that the configuration file has been copied to the destination PIX.

Related Information

- [Cisco PIX 500 Series Security Appliances](#)
 - [Cisco ASA 5500 Series Adaptive Security Appliances](#)
 - [Documentation for Cisco PIX Security Appliance OS Software](#)
 - [Cisco Secure PIX Firewall Command References](#)
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