Backup and password recovery

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Book(s)

Text Book(s)

Glen E. Clarke, Richard Dea

CCT/CCNA Routing and Switching

Complete Study Guide: Exam 100-490
Exam 200-301

McGraw-Hill Education

Todd Lammle

CCNA Routing and Switching

Complete Study Guide: Exam 100-105
Exam 200-105
Exam 200-125

SYBEX Publication

Introduction

- A *Trivial File Transfer Protocol (TFTP)* is an application layer protocol which is used to transfer files from a source to a destination node.
- It utilizes the services of UDP port 69 and does not require authentication.
- A *TFTP* server can be used to backup the configuration files and IOS images from a networking device.
- As a backup-files storage server, it can also be used to restore the configuration files and IOS images back to the networking devices.

Backing Up and Restoring the Cisco Configuration

- To copy the running configuration from an IOS device to a server using TFTP (Trivial File Transfer Protocol), use:

  `copy running-config tftp`.

- To copy startup configuration from an IOS device to a server using TFTP, use `copy startup-config tftp` command.

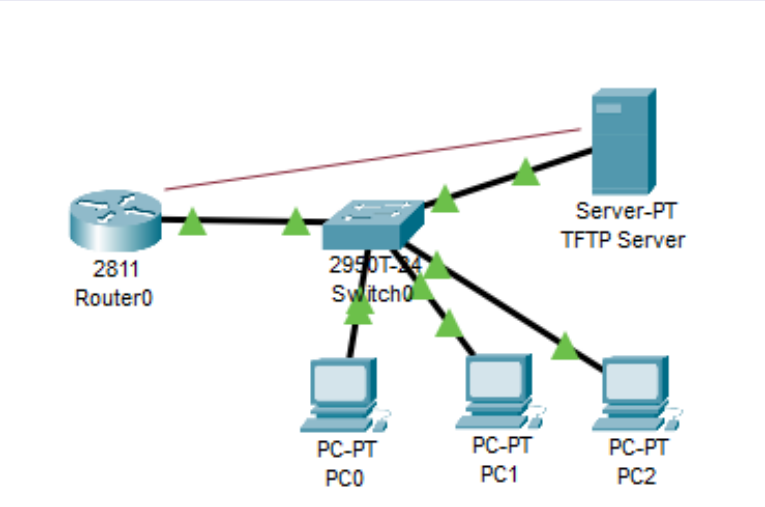

Figure 1: Backing up configuration from device to TFTP server

Verify the Cisco Configuration

- To verify the configuration in DRAM (dynamic Ram, erased on powering off the device), use the `show running-config` command (`sh run` for short) like this:

```
Router#show running-config
Building configuration...
Current configuration :  855 bytes
!
version 15.0
```

- To verify the startup configuration, use the `show startup-config` command (`sh start` for short) like this:

```
Router#sh start
Using 855 out of 524288 bytes
!
!  Last configuration change at 04:49:14 UTC Fri Mar 5 1993
!

version 15.0
```

Copy current configuration to NVRAM

- It ensures that the running-config will always be reloaded if the router gets rebooted.

```
Router#copy running-config startup-config
Destination filename [startup-config]?[enter]

Building configuration...
```

Multiple options in `copy` command

- There are many options you can use when prompted for filename when using the copy command:

```
Router#copy running-config ?
flash:  Copy to flash:  file system
ftp:  Copy to ftp:  file system
http:  Copy to http:  file system
https:  Copy to https:  file system
null:  Copy to null:  file system
nvram:  Copy to nvram:  file system
rcp:  Copy to rcp:  file system
running-config Update (merge with) current system configuration
scp:  Copy to scp:  file system
startup-config Copy to startup configuration
syslog:  Copy to syslog:  file system
system:  Copy to system:  file system
tftp:  Copy to tftp:  file system
tmpsys:  Copy to tmpsys:  file system
```

Copying the Configuration to the server

- To make a backup to a TFTP server, use `copy running-config tftp` command:

```
Router#copy running-config tftp
Address or name of remote host []?  10.10.10.254
Destination filename [router-confg]?
!!

776 bytes copied in 0.800 secs (970 bytes/sec)
```

Restoring the configuration from the server

- To restore the configuration from TFTP server, use: the `copy tftp running-config`, or the `copy tftp startup-config` command, as shown:

```
Router#copy tftp running-config
Address or name of remote host []?10.10.10.254
Source filename []?router-confg
Destination filename[running-config]?[enter]
Accessing tftp://10.10.10.254/todd-confg...
Loading router-confg from 10.10.10.254 (via FastEthernet0/0):
!!
[OK - 776 bytes]
776 bytes copied in 9.212 secs (84 bytes/sec)
Router#
*Mar 7 17:53:34.071:  %SYS-5-CONFIG_I: Configured from
tftp://10.10.10.254/router-confg by console
```

Deleting the Cisco Configuration

- To delete the startup-config file on a Cisco router or switch, use the command `erase startup-config`, like this:

```
Router#erase startup-config
Erasing the nvram filesystem will remove all configuration files!
Continue?  [confirm][enter]
[OK]
Erase of nvram:  complete
*Mar 7 17:56:20.407:  %SYS-7-NV_BLOCK_INIT: Initialized the geometry of nvram
Router#reload
System configuration has been modified.  Save?  [yes/no]:n
Proceed with reload?  [confirm][enter]
*Mar 7 17:56:31.059:  %SYS-5-RELOAD: Reload requested by console.
```

Configuration Registers

- The configuration register is a 16-bit field that is stored in NVRAM and can be modified to control how your device boots.
- The 16 bits are divided into four, 4-bit blocks, with each 4-bit chunk known as a nibble.
- Turning on one of the bits in the configuration registers is a method to enable a feature during bootup.

Bit number	Explanation
0-3	Boot fields
6	Ignore the contents of NVRAM
7	Disable the display of boot messages
8	Break is disabled
10	IP broadcast with all zeros
13	Loads the default ROM software if network boot fails

Table 1: Configuration register fields

Boot Fields

- The first 4-bit nibble on the right side is known as the boot field, which controls how the Cisco device boots up.
  - **0:** Boot to ROMMON mode. Troubleshooting startup issues or needing to download or install a new IOS image file. When booted to ROMMON mode, the **rommon>** prompt is displayed.
  - **1:** Boots to a Mini IOS that is located on ROM (RXBOOT). When a device is booted into RXBOOT, the prompt is **router (boot)>**.
  - **2 to F:** Having the boot field set to a value from 2 to F indicates the IOS image that should be loaded from flash memory

Important configuration register commands

- Once the router is booted up, you can view the current configuration register value with the `show version` command.
- For changing the configuration register from configuration mode, use `Router (config)# config-register <0xhexadecimal_value>`
- For changing the configuration register from ROM monitor, use `rommon> confreg <0xhexadecimal_value>`

Password Recovery

- The passwords are stored in the startup configuration, which is stored in NVRAM.
- To bypass the password, modify the configuration registers so that the device boots without loading the startup configuration (ignore NVRAM).
- To configure your Cisco device to ignore NVRAM, enable bit 6, resulting in the configuration register value of 0x2142 instead of the default 0x2102.

Password Recovery Steps

- Use the `show version` command to view the current configuration register value. It is most likely 0x2102.
- Power on the Cisco router, press **ctrl-break** to disrupt the boot process and go into **ROMMON** mode (`rommon>` prompt).
- `rommon> confreg 0x2142`
- `rommon> reset`
- Router reboots (`Router>` prompt). Type **no** and press **Enter** in the System Configuration dialogue query.
- `Router> enable`
- `Router# copy startup-config running-config`
- Use `enable password <newpass>` or `enable secret <newsecret>` to set new password in global configuration mode.
- To remove passwords altogather, use `no enable password` or `no enable secret`

Password Recovery Steps-2

- `Router# copy running-config startup-config`
- `Router (config)# config-register 0x2102` sets the configuration register to default value in NVRAM.
- Reboot the router with the `reload` command.