

Packet Tracer - Investigate Disaster Recovery

Objectives

Part 1: Review a Switch Configuration

Part 2: Backup Files to a TFTP Server

Part 3: Replace a Failed Switch

Part 4: Restore Network Operations

Background / Scenario

In this Packet Tracer (PT) activity, you will back up switch configuration files, replace a failed switch with a new switch, and then restore network operations by applying the backed up configuration from the failed switch to the new switch. The backup configuration files are saved to a Trivial File Transfer Protocol (TFTP) server. You are required to restore the saved files from the TFTP server to get the replacement switch online with as little down time as possible.

Note: The activity opens in the **Wiring Closet** for **HQ**. Although you can navigate out of the **Wiring Closet**, all tasks in this activity will occur inside the **Wiring Closet**. Switching to **Logical** mode is disabled.

Instructions

Part 1: Review a Switch Configuration

In this part, you will review and document the current configuration of the MDF-1 switch in the HQ Wiring Closet. This information will be necessary for manually configuring a replacement switch and verifying the new switch is operating as expected.

Step 1: Observe the contents of NVRAM.

- Click **MDF-1 > CLI** tab, and then press **Enter**.
- Enter the **enable** command, and then enter the **dir nvram** command to observe the contents of NVRAM.

What is the size of the startup-config file?

Directory of nvram:/

```
238 -rw-      2838      <no date> startup-config
```

2838 bytes total (237588 bytes free)

The startup-config file is 2838 bytes in size.

Step 2: Document the VLANs and other important configuration information.

- Enter the **show vlan** command.

What VLANs have been configured on MDF-1?

VLAN Name	Status	Ports
-----------	--------	-------

1	default	active
10	Accounting	active

20 Sales	active
50 Common	active
75 Servers	active Fa0/1, Fa0/2
99 Admin	active Fa0/3, Fa0/15
999 Unused	active Fa0/4, Fa0/5, Fa0/6, Fa0/7 Fa0/8, Fa0/9, Fa0/10, Fa0/11 Fa0/12, Fa0/13, Fa0/14, Fa0/16 Fa0/17, Fa0/18, Fa0/23, Fa0/24 Gig0/2
1002 fddi-default	active
1003 token-ring-default	active
1004 fddinet-default	active
1005 trnet-default	active

VLANs, 10, 20, 50, 75, 99, and 999

- Enter the **show run** command. Review the output to document the following information, which you will need to manually configure on a switch after a disaster.

Record the following settings in the following table:

MDF-1 Settings	Command Output
VLAN 99 IP Address	192.168.99.150 255.255.255.0
Default Gateway IP Address	192.168.99.1
VLAN Assignment of Interface F0/1	VLAN 75
Native LAN and Trunk Status of G0/1	Native VLAN 99 and trunk mode on

MDF-1 Settings	Command Output
VLAN 99 IP Address	192.168.99.150/24
Default Gateway IP Address	192.168.99.1
VLAN Assignment of Interface F0/1	VLAN 75
Native LAN and Trunk Status of G0/1	Native VLAN 99 and trunk mode on

Part 2: Backup Files to a TFTP Server

In this part, you will copy the configuration files for the MDF-1 switch to the TFTP server. You will then verify that the files are listed on the TFTP server.

Step 1: Enable the TFTP service on the FTP server.

- In the **Wiring Closet**, on the right rack, click the **FTP** server > **Desktop** tab > **Command Prompt**.
- Enter the **ipconfig** command.

What is the IP address for the FTP server?

IPv4 Address.....: 192.168.75.2

192.168.75.2

- c. Click the **Services** tab, and then under **SERVICES**, click **TFTP**.
- d. Enable the TFTP service.

Step 2: Upload the vlan.dat and the startup-config files to the TFTP server.

- a. Click **MDF-1**, and then **CLI** tab, if necessary. If you were logged out, enter the **enable** command again.
- b. Enter **copy flash tftp** command and specify **vlan.dat** as the source filename. You documented the IP address in the previous step. Enter **MDF-1_vlan.dat** for the destination filename.

Record the command below:

MDF-1#copy flash tftp

Source filename []? vlan.dat

Address or name of remote host []? 192.168.75.2

Destination filename [vlan.dat]? MDF-1_vlan.dat

Writing vlan.dat.....!!

[OK - 916 bytes]

916 bytes copied in 7.006 secs (130 bytes/sec)

```
MDF-1# copy flash tftp
Source filename []? vlan.dat
Address or name of remote host []? 192.168.75.2
Destination filename [vlan.dat]? MDF-1_vlan.dat

Writing vlan.dat.....!!
[OK - 916 bytes]

916 bytes copied in 7.004 secs (130 bytes/sec)
```

- c. Enter the **copy startup-config tftp** command to copy the configuration to the TFTP server. You documented the IP address in the previous step. Enter **MDF-1_startup-config** as the destination filename.

Record the command below:

MDF-1#copy startup-config tftp

Address or name of remote host []? 192.168.75.2

Destination filename [MDF-1-config]? MDF-1_startup-config

Writing startup-config...!!

[OK - 3012 bytes]

3012 bytes copied in 0 secs

```
MDF-1# copy startup-config tftp
Address or name of remote host []? 192.168.75.2
Destination filename [MDF-1-config]? MDF-1_startup-config

Writing startup-config....!!
[OK - 3012 bytes]

3012 bytes copied in 6.028 secs (499 bytes/sec)
```

Step 3: Verify that the files are on the TFTP server.

Click **FTP** server. Under **TFTP** in **SERVICES**, verify the two files are listed in the **File** section. If necessary, refresh the File list by clicking another service and then clicking the TFTP service again.

Part 3: Replace a Failed Switch

Assume that the **MDF-1** switch has failed. This could be from a power surge, a corrupted chip, or some other environmental hazard or hardware failure. In this Part, you will install a replacement switch and move the cable connections from the failed switch to the new switch.

Step 1: Add a new switch to the network.

- On the **Table** in the **Wiring Closet**, locate **spare-switch_01**.
- Click and drag it to the rack below **HQ-WLC-1**.
- Click **spare-switch_01** > **CLI** tab, and then press **Enter**.
- Enter the following commands to deactivate all the interfaces.

```
enable
configure terminal
interface range f0/1 - 23, g0/1 - 2
shutdown
exit
```

Step 2: Move the cable connections from the MDF-1 switch to new switch.

- On the top toolbar, click **Zoom In** several times until you can easily see the cable connections for both **MDF-1** and **spare-switch_01**.
Alternatively, you can right click each switch and choose **Inspect Front**. But you will need to do this each time you move a connection from **MDF-1** to **spare-switch_01**.
- Click and drag a cable connection from **MDF-1** to the same port number on **spare-switch_01**. Repeat until all cables are moved from **MDF-1** to **spare-switch_01**.
- To verify cables are in the correct ports, right click **spare-switch_01** and choose **Inspect Front**. Zoom in and then float your mouse of each cable, wait for the information popup, and then make sure the cable connections map to this table.

MDF-1 Interface Port	Connected Device
F0/1	FTP Server
F0/2	MAIL Server
F0/3	AAA-RADIUS Server
F0/15	Net-Admin PC

MDF-1 Interface Port	Connected Device
F0/19	FL-1 F0/19
F0/20	FL-1 F0/20
F0/21	FL-2 F0/21
F0/22	FL-2 F0/22
G0/1	HQ Edge Router

- d. Right click the **Rack** and choose **Manage All Cables on Rack**.
- e. Uninstall **MDF-1** from the **Rack**. Click and drag it to the **Table**.
- f. On the top toolbar, click **Zoom Reset**.

Part 4: Restore Network Operations

In this Part, you will manually configure the new switch so that it can access the TFTP server. You will then copy the configuration files from the TFTP server to the new switch and verify the switch is operating as expected.

Step 1: Configure spare-switch_01 to access the network.

To access the TFTP server over the network, the spare switch will need network information configured manually. Enter the following configuration into **spare-switch_01** to connect it to the network and prepare it for TFTP server access.

```

vlan 99
name Admin
exit
interface vlan 99
ip address 192.168.99.150 255.255.255.0
exit
ip default-gateway 192.168.99.1
interface fa0/1
switchport mode access
switchport access vlan 75
no shutdown
interface g0/1
switchport mode trunk
switchport trunk native vlan 99
no shutdown
end

```

Step 2: Test connectivity to the TFTP server.

Enter **ping 192.168.75.2** to verify **spare-switch_01** can access the TFTP server.

Step 3: Download the vlan.dat and startup-config files from the TFTP server.

- a. Enter the **copy tftp flash** command. Specify the IP address of the TFTP server. The source filename is **MDF-1_vlan.dat**. The destination filename MUST be **vlan.dat**. Confirm you want to overwrite the current vlan.dat file.

Record the command below:

spare-switch_01#copy tftp flash:

Address or name of remote host []? 192.168.75.2

Source filename []? MDF-1_vlan.dat

Destination filename [MDF-1_vlan.dat]? vlan.dat

%Warning:There is a file already existing with this name

Do you want to over write? [confirm]

Accessing tftp://192.168.75.2/MDF-1_vlan.dat...

Loading MDF-1_vlan.dat from 192.168.75.2: !

[OK - 916 bytes]

916 bytes copied in 0 secs

```
spare-switch_01# copy tftp flash:
Address or name of remote host []? 192.168.75.2
Source filename []? MDF-1_vlan.dat
Destination filename [MDF-1_vlan.dat]? vlan.dat
%Warning:There is a file already existing with this name
Do you want to overwrite? [confirm]

Accessing tftp://192.168.75.2/MDF-1_vlan.dat...
Loading MDF-1_vlan.dat from 192.168.75.2: !
[OK - 916 bytes]

916 bytes copied in 0.013 secs (70461 bytes/sec)
spare-switch_01#
```

- b. Enter the **dir flash** command to verify the **vlan.dat** file is in the directory.

Record the command below:

Directory of flash:/

```
 1 -rw- 4670455      <no date> 2960-lanbasek9-mz.150-2.SE4.bin
 4 -rw-  1089      <no date> config.text
 5 -rw-   916      <no date> vlan.dat
```

64016384 bytes total (59343924 bytes free)

```
spare-switch_01# dir flash:
Directory of flash:/

 1 -rw- 4670455 <no date> 2960-lanbasek9-mz.150-2.SE4.bin
```

```
2 -rw- 916 <no date> vlan.dat
spare-switch_01#
```

- c. Enter the **copy tftp startup-config** command. Specify the IP address of the TFTP server. The source filename is **MDF-1_startup-config**. The destination filename MUST be **startup-config**.

Record the command below:

```
spare-switch_01#copy tftp: startup-config
Address or name of remote host []? 192.168.75.2
Source filename []? MDF-1_startup-config
Destination filename [startup-config]? startup-config
```

Accessing tftp://192.168.75.2/MDF-1_startup-config...

Loading MDF-1_startup-config from 192.168.75.2: !

[OK - 3012 bytes]

3012 bytes copied in 0 secs

```
spare-switch_01# copy tftp: startup-config
Address or name of remote host []? 192.168.75.2
Source filename []? MDF-1_startup-config
Destination filename [startup-config]? startup-config

Accessing tftp://192.168.75.2/MDF-1_startup-config...
Loading MDF-1_startup-config from 192.168.75.2: !
[OK - 3012 bytes]

3012 bytes copied in 0.004 secs (753000 bytes/sec)
spare-switch_01#
```

- d. Enter the **dir nvram** command to verify the startup-config file is now in NVRAM.

Record the command below:

Directory of nvram:/

```
238 -rw-      2838      <no date> startup-config
```

2838 bytes total (237588 bytes free)

```
spare-switch_01# dir nvram
Directory of nvram:/

238 -rw- 2838 <no date> startup-config
2838 bytes total (237588 bytes free)
spare-switch_01#
```

What is the size of the startup-config file?

Directory of nvram:/

```
238 -rw-      2838      <no date> startup-config
```

2838 bytes total (237588 bytes free)

The startup-config file is 2838 bytes in size.

Is this the same size as the startup-config recorded in Part 1, Step 1?

Yes

Yes

Step 4: Reload and verify the new switch now has the correct configuration.

- a. Enter the **reload** command. The startup-config file will be copied into RAM and become the running configuration.

Important: Answer **no** to the prompt, **System configuration has been modified. Save?**, and then press **Enter** to confirm reload.

Record the command below:

```
spare-switch_01#reload
```

System configuration has been modified. Save? [yes/no]:no

Proceed with reload? [confirm]

C2960 Boot Loader (C2960-HBOOT-M) Version 12.2(25r)FX, RELEASE SOFTWARE (fc4)

Cisco WS-C2960-24TT (RC32300) processor (revision C0) with 21039K bytes of memory.

2960-24TT starting...

Base ethernet MAC Address: 0030.A327.7520

Xmodem file system is available.

Initializing Flash...

flashfs[0]: 3 files, 0 directories

flashfs[0]: 0 orphaned files, 0 orphaned directories

flashfs[0]: Total bytes: 64016384

flashfs[0]: Bytes used: 4674383

flashfs[0]: Bytes available: 59342001

flashfs[0]: flashfs fsck took 1 seconds.

...done Initializing Flash.

Boot Sector Filesystem (bs:) installed, fsid: 3

Parameter Block Filesystem (pb:) installed, fsid: 4

Loading "flash:/2960-lanbasek9-mz.150-2.SE4.bin"...

[OK]

Smart Init is enabled

smart init is sizing iomem

TYPE MEMORY_REQ
TOTAL: 0x00000000

Rounded IOMEM up to: 0Mb.

Using 6 percent iomem. [0Mb/512Mb]

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cisco Systems, Inc.

170 West Tasman Drive

San Jose, California 95134-1706

Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE SOFTWARE (fc1)

Technical Support: <http://www.cisco.com/techsupport>

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Initializing flashfs...

fsck: Disable shadow buffering due to heap fragmentation.

flashfs[2]: 2 files, 1 directories

flashfs[2]: 0 orphaned files, 0 orphaned directories

flashfs[2]: Total bytes: 32514048

flashfs[2]: Bytes used: 11952128

flashfs[2]: Bytes available: 20561920

flashfs[2]: flashfs fsck took 2 seconds.

flashfs[2]: Initialization complete....done Initializing flashfs.

Checking for Bootloader upgrade..

Boot Loader upgrade not required (Stage 2)

POST: CPU MIC register Tests : Begin

POST: CPU MIC register Tests : End, Status Passed

POST: PortASIC Memory Tests : Begin

POST: PortASIC Memory Tests : End, Status Passed

POST: CPU MIC interface Loopback Tests : Begin

POST: CPU MIC interface Loopback Tests : End, Status Passed

POST: PortASIC RingLoopback Tests : Begin
POST: PortASIC RingLoopback Tests : End, Status Passed
POST: PortASIC CAM Subsystem Tests : Begin
POST: PortASIC CAM Subsystem Tests : End, Status Passed
POST: PortASIC Port Loopback Tests : Begin
POST: PortASIC Port Loopback Tests : End, Status Passed
Waiting for Port download...Complete

This product contains cryptographic features and is subject to United States and local country laws governing import, export, transfer and use. Delivery of Cisco cryptographic products does not imply third-party authority to import, export, distribute or use encryption. Importers, exporters, distributors and users are responsible for compliance with U.S. and local country laws. By using this product you agree to comply with applicable laws and regulations. If you are unable to comply with U.S. and local laws, return this product immediately.

A summary of U.S. laws governing Cisco cryptographic products may be found at:

<http://www.cisco.com/wwl/export/crypto/tool/stqrg.html>

If you require further assistance please contact us by sending email to export@cisco.com.

cisco WS-C2960-24TT-L (PowerPC405) processor (revision B0) with 65536K bytes of memory.

Processor board ID FOC1010X104

Last reset from power-on

1 Virtual Ethernet interface

24 FastEthernet interfaces

2 Gigabit Ethernet interfaces

The password-recovery mechanism is enabled.

64K bytes of flash-simulated non-volatile configuration memory.

Base ethernet MAC Address : 00:30:A3:27:75:20

Motherboard assembly number : 73-10390-03

Power supply part number : 341-0097-02

Motherboard serial number : FOC10093R12

Power supply serial number : AZS1007032H

Model revision number : B0

Motherboard revision number : B0

Model number : WS-C2960-24TT-L

System serial number : FOC1010X104

Top Assembly Part Number : 800-27221-02

Top Assembly Revision Number : A0

Version ID : V02

CLEI Code Number : COM3L00BRA

Hardware Board Revision Number : 0x01

Switch Ports Model	SW Version	SW Image
-----	-----	-----
* 1 26 WS-C2960-24TT-L	15.0(2)SE4	C2960-LANBASEK9-M

Cisco IOS Software, C2960 Software (C2960-LANBASEK9-M), Version 15.0(2)SE4, RELEASE SOFTWARE (fc1)

Technical Support: <http://www.cisco.com/techsupport>

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```
spare-switch_01# reload
System configuration has been modified. Save? [yes/no]:no
Proceed with reload? [confirm]
```

- b. After the switch reloads, review the configuration.
 - o The hostname is now be **MDF-1**.
 - o Enter the **show vlan** command and verify VLANs you documented in Part 1, Step 2 are listed.
 - o Enter the **show ip interface brief** command. Verify that your connected physical ports are now all up.