



Lab 7.2.1 Troubleshooting Problems at All Logical Layers

Objective

Complete the lab exercise by defining, isolating, and correcting the problems outlined in the scenario to restore the network to baseline specifications.

In this exercise, each workgroup will use a troubleshooting methodology and Cisco commands to define, isolate, and correct issues. The student should complete the following steps:

- Define the problem by questioning users and using end-system tools.
- Isolate the problem by analyzing documented symptoms and using Cisco tools.
- Consider options for solving the problem.
- Develop a troubleshooting implementation plan for correcting the problems the student identified.
- Execute a troubleshooting implementation plan.
- Verify the network is restored to baseline specifications and that new problems have not been introduced into the network.

Scenario

It is Friday morning. You went to the dentist at 8:00 AM, and arrived to work a bit late. Karl is standing outside your office.

"You know how HR promised to inform us about employee terminations for personnel with network access before they occur?" he asks.

You are getting a bad feeling.

"Yes, why," you ask.

"Well, last night they escorted Mike from MIS out of the building. They didn't get word to us until well after everyone up here had gone home," he says.

"So no one was here to turn off his access to the devices?" you ask.

"Unfortunately, no. It appears that he's been in the network making some changes but we're not sure exactly where. We've shut down his access. However, the network is messed up. MIS first reported that the users could not get to any host on the Internet. Now they are reporting that the end users appear to be getting network errors connecting to anything. Network operations is reporting issues logging into the access and distribution routers, and problems reaching the Internet. To make matters worse, we cannot connect between the divisions."

Required Resources

These are the resources and equipment required to complete this exercise:

- A network baseline documenting the laboratory installation
- A troubleshooting log listing isolated physical or data link problems

Command List

As you work through the case study, you may find the following list of commands helpful. The list includes router, switch, and PC commands. The commands used in this exercise should be familiar to you from previous experience or from the Cisco BSCI, BCMSN, and BCRAN courses.

Table 8: Helpful Commands

Command	Description
arp -a	Displays ARP information
debug ip dhcp server	Displays DHCP Server debugging
debug ip eigrp	Enables debugging of EIGRP events
debug ip ospf adj	Enables debugging of OSPF adjacencies
debug ip policy	Enables debugging of the IP policy
debug ip routing	Enables debugging of IP routing events
ipconfig /all	Display IP information for the PC
ping {host address}	Pings an IP address
route print	Display active routes for the PC
show access-lists	Displays access list information
show ip bgp	Displays entries in the BGP routing table
show ip bgp summary	Shows summary BGP status
show ip dhcp binding	Displays address bindings on the DHCP server
show ip dhcp server statistics	Displays DHCP server statistics
show ip interface brief	Display brief form of interface information
show ip policy	Displays which route map is associated with which interface
show ip protocol interface	Displays interface information for a protocol.
show ip protocol neighbor	Displays information about neighbors for a specific routing protocol.
show ip protocols	Displays routing protocol status
show ip route	Displays IP routing table information
show route-map	Displays route map information
show spanning-tree vlan vlan-id	Displays Spanning Tree Protocol information including port status for a specific VLAN
show vlan vlan-id	Displays default and defined VLAN information
telnet {host ip-address}	Connects to an IP address via the Telnet application
tracert {host ip-address}	Runs trace to an IP address
tracert {ip-address}	Runs trace from a PC to an IP address

Troubleshooting Log: Troubleshooting Problems at All Logical Layers

Problem	Solution
Core Router/Switch	
Distribution Router/Switch	
Access Router	
Access Switch	

Step 1

What questions should you ask the users?

What commands should they try from their PC's?

Step 2

Document the symptoms of the problem on the Troubleshooting Log. The Troubleshooting Log is divided into four possible areas of concern: core routing and switching, distribution routing and switching, access routing, and access switching.

Step 3

Where should you look first in the network to isolate the problems?

What commands might you use to look for issues?

Step 4

Where should you look next to isolate the problems?

What commands might you use to look for issues?

Step 5

Coordinate with your workgroup to isolate the problems.

Step 6

Repeat Steps 1–5 as needed to isolate all the problems.

Step 7

Develop a plan to correct the identified problems and document the plan in the space provided below.

Step 8

Execute the plan you developed to correct the identified network problems.

Step 9

Verify the network data flows match the network baseline and that you have not introduced any new problems into the network.

Step 10

Does your network data flow match the network baseline? _____

Can you ping the host named Cisco (simulated on ISP)? _____

Can you use Telnet to connect to the host named Cisco? _____

Can you browse the Web files on CCNP4_Server? _____

Can you use Telnet to connect to CCNP4_Server from your PC? _____

Can you FTP a file from CCNP4_Server to your PC? _____