

Packet Tracer Lab 6 Solution Guide

Multiple Departments Offline

Incident ID: INC-1006

Objective

This lab focuses on identifying and resolving a network connectivity issue affecting multiple departments within the organization.

Several users have reported being unable to access internal applications and shared network resources. While some departments are experiencing connectivity problems, others remain operational.

The objective is to use a structured troubleshooting methodology to identify the root cause, restore connectivity, and validate normal network operations.

Root Cause

A switch uplink between the Core Switch and Distribution Switch SW-D1 was incorrectly configured.

The interface connecting SW-Core to SW-D1 was operating as an access port instead of a trunk port.

As a result, VLAN traffic for departments connected through SW-D1 was unable to traverse the network correctly.

Affected departments:

- HR
- Finance

Unaffected departments:

- IT
- Operations

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This caused multiple departments to lose access to internal resources and application services while other departments continued operating normally.

Symptoms Observed

- HR users unable to access internal applications
- Finance users unable to access internal applications
- Internal server unreachable from affected departments
- Default gateway unreachable from affected departments
- IT department functioning normally
- Operations department functioning normally
- Application server remains online and reachable from unaffected departments

Troubleshooting Process

1. Identify which departments are affected by testing connectivity from HR, Finance, IT, and Operations workstations.

2. Run ipconfig on HR-PC1 and FIN-PC1 to verify:

- Valid IP Address
- Valid Subnet Mask
- Valid Default Gateway

3. Ping the default gateway from HR-PC1 and FIN-PC1.

- Both pings should fail.

4. Compare results with IT-PC1 and OPS-PC1.

- IT and Operations successfully reach the application server.
- This confirms the issue is isolated to HR and Finance.

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5. Review the network topology.

- Notice HR and Finance both connect through SW-D1.

6. On SW-Core run:

show interfaces trunk

Compare the trunk output with the network topology.

Notice that GigabitEthernet0/2 (the uplink to SW-D1) is missing from the list of active trunk ports.

7. Verify the interface configuration:

show interface gigabitEthernet0/2 switchport

**Notice that the interface is operating in static access mode rather than trunk mode. This confirms the uplink is unable to carry traffic for multiple VLANs and explains why only the departments connected through SW-D1 are affected.*

Observe:

Administrative Mode: static access

Operational Mode: static access

The uplink is configured as an access port instead of a trunk.

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Commands Used

```
ipconfig  
ping  
show interfaces trunk  
show interface gigabitEthernet0/2 switchport
```

Resolution

Access SW-Core and correct the uplink configuration.

Example:

```
enable  
  
configure terminal  
  
interface gigabitEthernet0/2  
  
switchport mode trunk  
  
switchport trunk allowed vlan 10,20,30,40,50  
  
end  
  
write
```

Once the interface is restored as a trunk, VLAN traffic can traverse the uplink normally.

Validation

1. show interfaces trunk
 - Confirm **Gig0/2** now appears in the trunk list.
2. From **HR-PC1**:
 - ping 192.168.10.1

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- ping 192.168.50.10

3. From **FIN-PC1**:

- ping 192.168.20.1
- ping 192.168.50.10

If all four pings succeed, then we've successfully restored connectivity.

Key Takeaways

- Not all outages impact the entire network
- Comparing affected and unaffected users can significantly reduce troubleshooting time
- Shared infrastructure often reveals the true point of failure
- Trunk ports are critical for transporting VLAN traffic between switches
- Layer 2 issues can appear similar to routing or server problems
- Structured troubleshooting helps isolate issues quickly