

Packet Tracer Lab 7 Solution Guide

Intermittent Network Connectivity

Incident ID: INC-1007

Objective

This lab focuses on identifying and resolving a network stability issue affecting multiple departments.

Users report inconsistent application performance and occasional connectivity interruptions following recent network maintenance.

The objective is to troubleshoot the issue using a structured methodology, identify the root cause, restore the intended spanning-tree topology, and validate normal network operation.

Root Cause

Access Switch **SW-A2** was incorrectly configured with an STP priority of **0**, causing it to become the Root Bridge for VLAN 1 instead of the Core Switch.

Symptoms Observed

- Multiple departments reported inconsistent network behavior.
- Devices successfully received IP addresses.
- Inter-VLAN communication remained functional.
- Router interfaces were operational.
- Switch interfaces appeared healthy.
- Core Switch was not acting as the Root Bridge.
- SW-A2 had unexpectedly become the Root Bridge.

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Troubleshooting Process

1. **Verify endpoint IP configuration using:**

Ipconfig

2. **Verify connectivity between departments using:**

Ping

3. **Verify router interfaces.**

show ip interface brief

4. **Verify switch interfaces.**

show interfaces status

5. **Review the STP topology on the Core Switch.**

show spanning-tree vlan 1

Notice the Core Switch does not display: This bridge is the root

6. **Review STP information on downstream switches.**

show spanning-tree vlan 1

SW-A2 should display: This bridge is the root

confirming it has become the Root Bridge.

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Commands Used

ipconfig

ping

show ip interface brief

show interfaces status

show spanning-tree vlan 1

show running-config

Resolution

Step 1 — Remove the incorrect STP priority from SW-A2

enable

configure terminal

no spanning-tree vlan 1 priority 0

end

write memory

Step 2 — Configure the Core Switch as the preferred Root Bridge

enable

configure terminal

spanning-tree vlan 1 priority 4096

end

write memory

Validation

Verify the Core Switch: show spanning-tree vlan 1

The Core Switch should display: This bridge is the root

Verify SW-A2: show spanning-tree vlan 1

SW-A2 should no longer display: This bridge is the root

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Finally verify:

- Successful communication between departments.
- Core Switch operating as the Root Bridge.
- Stable spanning-tree topology established.
- Network operating normally.
- SW-A2 is no longer acting as the Root Bridge.

Key Takeaways

- Follow a structured troubleshooting methodology.
- Eliminate Layer 3 issues before investigating Layer 2.
- Successful connectivity tests do not always indicate a healthy network.
- STP Root Bridge placement directly affects Layer 2 traffic flow.
- Core switches should be intentionally configured as the preferred Root Bridge.
- Always validate the network topology after infrastructure changes.