

Packet Tracer Lab 21

Critical Link Down Investigation

Incident ID: INC-1021

Difficulty

Advanced

Estimated Time

20–40 Minutes

Skills Covered

- WAN Troubleshooting
- Serial Interface Verification
- OSPF Neighbor Validation
- Routing Table Analysis
- Interface Status Verification
- End-to-End Connectivity Testing
- Structured Troubleshooting Methodology
- Enterprise WAN Operations

Scenario

Following scheduled network maintenance performed earlier in the day, users at one regional office have reported a complete loss of connectivity to corporate resources.

Employees at the affected branch are unable to access headquarters services, centralized business applications, or communicate with users located at other branch offices.

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Local connectivity within the affected office remains operational.

You have been assigned to investigate the issue, restore WAN connectivity, and validate that enterprise communication has been fully restored.

Customer Report

Reported By: Branch B Operations

Users Affected: Branch B Office

Business Impact:

- Headquarters resources unavailable
- Corporate services inaccessible
- Communication with other branch offices unavailable

Issue Started:

Shortly after scheduled WAN maintenance.

Priority:

High

Goal

- Identify the cause of the WAN outage.
- Restore connectivity between Branch B and Headquarters.
- Validate communication with other branch offices.
- Verify access to centralized corporate services.
- Document your findings.

Environment

The lab environment includes:

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- Headquarters Core Infrastructure
- Three Regional Branch Offices
- Enterprise WAN
- OSPF Dynamic Routing
- Internal DNS Server
- Internal File Server
- Multiple Workstations
- Layer 3 Core Switch

Known Variables

- Branch B users can successfully communicate with their local default gateway (**192.168.60.1**).
- Local communication within Branch B remains operational.
- Headquarters users continue accessing local corporate resources without issue.
- Branch A and Branch C remain fully operational.
- Branch A (**192.168.50.0/24**) and Branch C (**192.168.70.0/24**) continue communicating successfully.
- The headquarters server network is **192.168.40.0/24**.
- DNS Server: **192.168.40.10**
- File Server: **192.168.40.20**
- Scheduled WAN maintenance was completed before the incident began.
- Follow a structured troubleshooting methodology before making configuration changes.

Troubleshooting Mindset

During troubleshooting, think through the following questions:

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- Is the issue isolated to one branch office?
- Is local connectivity functioning normally?
- Can the branch communicate with its default gateway?
- Are WAN interfaces operational?
- Is the OSPF neighbor relationship established?
- Where does communication stop?
- Has a recent infrastructure change affected WAN connectivity?

Focus on isolating the failure before making configuration changes.

Expected Outcome

By the end of this lab, Branch B should successfully regain communication with Headquarters, the remaining branch offices, and centralized corporate services.

Users should also be able to explain the troubleshooting methodology used to identify and resolve the issue.

Optional BridgeOpsOne Workflow

This section is optional but recommended for users who want a more realistic operations-center experience.

1. Create an Initial Update

Create an initial customer-safe incident update describing the issue.

Example topics:

- Multiple departments reporting connectivity issues
- Internal applications inaccessible
- Investigation in progress

Use the Generate feature if needed to clean and professionalize your update.

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2. Save Timeline Updates

During troubleshooting, provide 2–3 operational updates describing:

- What you are investigating
- What has been ruled out
- Progress toward resolution

Add these updates to your incident timeline within the Command Center.

Focus on keeping updates:

- Professional
- Concise
- Customer safe

3. Create a Final Resolution Statement

Once connectivity has been restored, create a final resolution update summarizing:

- What caused the issue
- Actions taken
- Current environment status
- Monitoring and validation steps

Real-World Relevance

This issue simulates realistic troubleshooting commonly encountered in:

- Network Operations Centers (NOC)
- Enterprise WAN Operations
- ISP Circuit Troubleshooting
- Enterprise IT
- Network Engineering

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The purpose of this lab is to develop:

- WAN troubleshooting skills
- Routing validation
- Operational thinking
- Infrastructure verification
- Enterprise communication skills

Deliverables

At the conclusion of this lab, users should be able to:

- Explain the issue.
- Describe the troubleshooting methodology.
- Restore WAN connectivity.
- Validate communication with Headquarters.
- Verify Branch B connectivity to other branch offices.
- Communicate findings clearly.

Hints

If you become stuck during troubleshooting, consider the following:

- Verify local connectivity before assuming a complete network outage.
- Determine whether the issue affects one office or the enterprise.
- Compare Branch B connectivity with Branch A and Branch C.
- Verify default gateway connectivity.
- Review interface status.
- Validate OSPF neighbor relationships.
- Follow a structured troubleshooting methodology instead of guessing.