

Packet Tracer Lab 7

Intermittent Network Connectivity

Incident ID: INC-1007

Difficulty

Intermediate

Estimated Time

20–40 Minutes

Skills Covered

- Network Troubleshooting
- Connectivity Testing
- Traffic Flow Analysis
- Infrastructure Verification
- Structured Troubleshooting Methodology
- Cisco IOS Verification Commands
- Root Cause Identification

Scenario

Users across multiple departments have reported inconsistent network behavior throughout the day.

While most network resources remain accessible, users have experienced occasional application disconnects, delayed responses, and brief periods of degraded performance. Initial troubleshooting has confirmed that basic IP connectivity appears operational; however, the network may not be functioning as intended.

The issue does not appear to be isolated to a single department or workstation, making the root cause difficult to identify.

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A maintenance window was recently completed to support ongoing infrastructure improvements. Following the maintenance activities, reports of unstable network behavior began to increase.

You have been assigned as the technician responsible for investigating the issue, identifying the root cause, and restoring normal operations.

Customer Report

Reported By: Multiple Departments

Users Affected: HR, Finance, IT, and Operations

Business Impact: Users are reporting occasional application disconnects, delayed responses, and inconsistent network performance. While most resources remain accessible, the unstable behavior is impacting normal business operations.

Issue Started: Shortly after scheduled network maintenance.

Priority: Medium

Initial Observations:

- Multiple departments are reporting similar symptoms.
- No complete network outage has been reported.
- Users indicate connectivity usually recovers without intervention.
- Recent network maintenance may be related to the issue.
- Root cause is currently unknown and requires investigation.

Known Variables

The following information has already been confirmed by the Service Desk before escalation:

- Multiple departments are affected.
- Devices are receiving valid IP addresses.
- Users can generally access network resources, although performance may appear inconsistent.

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- The issue does not appear to be isolated to a single workstation.
- Recent switching infrastructure changes were completed before reports began.
- Further investigation is required to identify the underlying cause.

Goal

- Identify the root cause of the connectivity issue
- Determine which part of the network is contributing to the instability
- Restore normal network operation
- Validate successful connectivity
- Document findings and corrective actions

Environment

- Branch Router
- Core Network Infrastructure
- Multiple Access Layer Devices
- Multiple Department Workstations
- Internal Application Server
- Shared Network Resources

Troubleshooting Mindset

During troubleshooting, think through the following questions:

- Is the issue affecting one user, one department, or the entire environment?
- Is the problem constant or intermittent?
- Are devices receiving valid network configurations?
- Can devices communicate with local and remote resources?
- Are there any signs of instability within the network infrastructure?
- Have recent configuration changes introduced unintended behavior?
- Where does connectivity appear to become unreliable?

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- What evidence supports or disproves your current theory?

Focus on collecting evidence and validating assumptions before making configuration changes.

Expected Outcome

By the end of this lab, users should:

- Identify the source of the connectivity issue
- Implement the appropriate corrective action
- Restore stable network communication
- Validate successful operation of affected systems
- Explain the troubleshooting methodology used to resolve the incident

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:

- Reports of inconsistent network behavior
- Multiple users potentially affected
- Investigation underway

Example topics:

- Users reporting inconsistent application performance
- Network infrastructure under investigation
- Technical investigation in progress

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2. Save Timeline Updates

During troubleshooting, provide 2–3 operational updates describing:

- What has been tested
- What has been ruled out
- Current findings
- 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:

- Root cause identified
- Actions taken
- Validation performed
- Current environment status
- Monitoring and follow-up activities

Real-World Relevance

This issue simulates realistic troubleshooting commonly encountered in:

- NOC Environments
- Enterprise IT Operations
- Managed Service Providers (MSPs)

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- Campus Networks
- Network Operations Teams
- Junior Network Engineer Roles

Deliverables

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

- Explain the issue
- Describe the troubleshooting process
- Identify the root cause
- Demonstrate the fix
- Validate successful connectivity
- Communicate findings clearly

Hints

- Verify endpoint network configurations before investigating the network infrastructure.
- Confirm basic connectivity between devices in different departments.
- Rule out Layer 3 issues before investigating Layer 2.
- Compare the expected network design with the current switching topology.
- Review the switching infrastructure if routing appears healthy.
- Use evidence collected during testing to guide your next troubleshooting step.
- Recent infrastructure changes often provide valuable clues during an investigation.
- Avoid making configuration changes until the root cause has been identified.