

Packet Tracer Lab 9

VoIP Outage Investigation

Incident ID: INC-1009

Difficulty

Intermediate

Estimated Time

20–40 Minutes

Skills Covered

- Voice VLAN Troubleshooting
- Router-on-a-Stick Verification
- DHCP Validation
- Cisco IP Phone Registration
- Gateway Verification
- Structured Troubleshooting Methodology
- Operational Validation

Scenario

Following scheduled maintenance performed earlier in the day, users throughout the organization have reported that all Cisco IP phones are unavailable.

Employees are unable to place or receive internal phone calls. While voice communication has been disrupted, users report that computers continue functioning normally and business applications remain accessible.

BridgeOpsOne

You have been assigned to investigate the issue, restore phone service, and validate that the voice environment is fully operational.

Customer Report

Reported By: Operations Department

Users Affected: All Cisco IP Phone users

Business Impact: Internal voice communications are unavailable. Employees cannot place or receive phone calls.

Issue Started: Shortly after scheduled network maintenance.

Priority: High

Goal

- Identify the cause of the voice outage.
- Restore Cisco IP phone functionality.
- Validate successful phone registration.
- Verify users can place and receive calls.
- Document your findings.

Environment

The lab environment includes:

- Cisco 2811 Router (CME)
- Core Switch
- Three Access Switches
- HR Department
- Sales Department

BridgeOpsOne

- IT Department
- Cisco IP Phones
- Department Workstations
- Voice VLAN
- DHCP Services

Known Variables

- User workstations continue functioning normally.
- PCs should successfully obtain DHCP addresses.
- Users can still access internal network resources.
- The issue affects voice services only.
- Cisco IP phones remain powered on.
- User workstations can successfully communicate with their default gateways.
- Follow a structured troubleshooting methodology before making configuration changes.

Troubleshooting Mindset

During troubleshooting, think through the following questions:

- Are all departments affected?
- Do phones have power?
- Are workstations functioning normally?
- Are phones receiving network connectivity?
- Is the Voice VLAN functioning correctly?
- Can phones communicate with the voice gateway?
- Has a recent infrastructure change impacted voice traffic?

BridgeOpsOne

Focus on identifying **where** communication stops instead of immediately assuming the root cause.

Expected Outcome

By the end of this lab, users should successfully restore phone registration and validate that voice communications have been fully restored.

Users should also be able to explain the troubleshooting process 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 a customer-safe update describing:

- Company-wide phone outage
 - Voice services unavailable
 - Investigation underway
-

2. Save Timeline Updates

Provide 2–3 operational updates describing:

- Investigation progress
- Validation performed
- Findings

Add updates to your Command Center timeline.

3. Create a Final Resolution Statement

BridgeOpsOne

Summarize:

- Root cause
- Corrective actions
- Current voice environment status
- Validation completed

Real-World Relevance

This issue simulates realistic troubleshooting commonly encountered in:

- Network Operations Centers (NOC)
- Voice Infrastructure Support
- Enterprise IT
- Unified Communications Support
- Network Engineering

The purpose of this lab is to develop:

- Voice troubleshooting skills
- Layer 2/Layer 3 troubleshooting
- Structured operational thinking
- Infrastructure validation
- Operational communication

Deliverables

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

- Explain the issue.
- Describe the troubleshooting methodology.
- Restore phone service.

BridgeOpsOne

- Validate successful phone registration.
- Demonstrate successful phone calls.
- Communicate findings clearly.

Hints

If you become stuck during troubleshooting, consider the following:

- Verify workstation connectivity before assuming a complete network outage.
- Determine whether the issue affects one department or the entire organization.
- Compare workstation functionality with Cisco IP phone functionality.
- Verify Voice VLAN connectivity.
- Confirm gateway availability.
- Validate router interface status.
- Follow a structured troubleshooting methodology instead of guessing.