

Packet Tracer Lab 12

Wireless Authentication Failure Investigation

Incident ID: INC-1012

Difficulty

Intermediate

Estimated Time

20–40 Minutes

Skills Covered

- Wireless LAN (WLAN) Troubleshooting
- WPA2-PSK Authentication
- Wireless Controller (WLC) Verification
- Access Point (AP) Validation
- DHCP Validation
- Client Connectivity Testing
- Structured Troubleshooting Methodology
- Operational Validation

Scenario

Following scheduled wireless infrastructure maintenance performed earlier in the day, multiple employees have reported they are unable to connect to the corporate wireless network.

Although the wireless network is visible to users, connection attempts consistently fail and wireless devices are unable to obtain network connectivity.

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The wired network continues to function normally, and no outages have been reported for internal servers or network infrastructure.

You have been assigned to investigate the issue, restore wireless connectivity, and validate that users can successfully join the corporate wireless network.

Customer Report

Reported By: Corporate IT Help Desk

Users Affected: Wireless users throughout the organization

Business Impact: Employees are unable to connect to the corporate Wi-Fi, preventing wireless access to internal applications, file shares, and internet resources. Wired users continue operating normally.

Issue Started: Shortly after scheduled wireless maintenance.

Priority: High

Known Variables

- The corporate SSID is **BridgeOps-Corp**.
- The corporate wireless password is **BridgeOps2026!**
- Wired network connectivity is functioning normally.
- Access Points remain online and associated with the Wireless LAN Controller.
- Wireless clients should automatically obtain IP addresses using DHCP.
- Follow a structured troubleshooting methodology before making configuration changes.
- The wireless network (SSID) is visible to client devices.

Goal

- Identify the cause of the wireless authentication failure.
- Restore wireless client connectivity.

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- Verify clients successfully obtain DHCP addresses.
- Validate communication with internal network resources.
- Document your findings.

Environment

The lab environment includes:

- Cisco Wireless LAN Controller (WLC)
- Two Lightweight Access Points (AP1 and AP2)
- Wireless Laptop
- Wireless Tablet
- Wireless Smartphone
- DHCP Server
- DNS Server
- AAA Server
- Edge Router
- Core Switch

Troubleshooting Mindset

During troubleshooting, think through the following questions:

- Can the client detect the wireless network?
- Are the Access Points online?
- Is the Wireless LAN enabled?
- Is the client successfully authenticating?
- Can the client successfully obtain an IP address after authentication?
- Is the client receiving a DHCP address?

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- Does the issue affect wireless clients only?
- Has a recent wireless configuration change impacted authentication?

Focus on identifying where the wireless connection process fails instead of immediately assuming the issue is related to DHCP or network connectivity.

Expected Outcome

By the end of this lab, users should successfully reconnect to the corporate wireless network, receive valid IP addressing information, and verify communication with internal resources.

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

Optional BridgeOpsOne Workflow

1. Create an Initial Update

Create a customer-safe update describing:

- Users unable to connect to corporate Wi-Fi
- Wireless authentication failures reported
- Investigation underway

2. Save Timeline Updates

Provide 2–3 operational updates describing:

- Investigation progress
- Infrastructure validation
- Findings

Add updates to your Command Center timeline.

3. Create a Final Resolution Statement

Summarize:

- Root cause

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- Corrective actions
- Current wireless environment status
- Validation completed

Real-World Relevance

This issue simulates realistic troubleshooting commonly encountered in:

- Help Desk
- Network Operations Center (NOC)
- Enterprise IT
- Wireless Infrastructure Support
- Junior Network Engineer Roles

The purpose of this lab is to develop:

- Wireless troubleshooting skills
- Authentication troubleshooting
- Infrastructure validation
- Structured operational thinking
- Operational communication

Deliverables

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

- Explain the issue.
- Describe the troubleshooting methodology.
- Restore wireless authentication.
- Validate successful wireless connectivity.
- Demonstrate successful communication with internal resources.

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- Communicate findings clearly.

Hints

If you become stuck during troubleshooting, consider the following:

- Verify the wireless network is visible before assuming the APs are offline.
- Confirm the Access Points are associated with the Wireless LAN Controller.
- Use **ipconfig** to determine whether the client received a valid DHCP address or an APIPA (169.254.x.x) address.
- Use **ping** to validate connectivity after authentication succeeds.
- Compare expected wireless configuration values with the current WLAN configuration.
- Follow a structured troubleshooting methodology instead of guessing.