

VLAN Trunk Failure: Use a Working VLAN as a Control

Recommended time: 50-70 minutes | Focus: Trunks, allowed VLANs, controls, fault isolation

Learning Objectives

1. Use a healthy VLAN as a troubleshooting control.
2. Distinguish VLAN-specific failure from a total physical-uplink failure.
3. Interpret allowed-VLAN or tagging evidence.
4. Verify a correction without breaking an already working VLAN.

Teacher design rule: Require a prediction before configuration and an explanation after verification. A working fix without supported reasoning is still useful formative-assessment evidence.

Scenario

Switch A and Switch B share an uplink. VLAN 10 works across it. VLAN 20 fails across it. Local VLAN 20 devices on the same switch can communicate.

Evidence Artifact

Allowed VLANs on trunk: 10. Expected: 10,20.

Student Reasoning

The uplink is not completely down because VLAN 10 crosses it. Local VLAN 20 switching works. The failure is specific to VLAN 20 carriage across the shared uplink.

Best Next Artifact

Inspect trunk state, allowed VLAN list, VLAN existence, and tagging/native configuration before replacing the cable or rebuilding endpoint addressing.

Correction

Add VLAN 20 to the intended permitted set while preserving VLAN 10.

Verification

VLAN 20 must work across the trunk; VLAN 10 must still work; any intentionally prohibited VLAN should remain blocked.

Misconception to Expose

Incorrect: "The trunk cable is bad."

Why weak: a complete physical failure is difficult to reconcile with VLAN 10 successfully using the same uplink.

Extension

Change the artifact so VLAN 20 is allowed but one side uses the wrong VLAN ID. Ask students how the hypothesis changes.

Quick Assessment Rubric

Criterion	Strong Evidence
Prediction	States the expected network behavior or artifact before the change.
Interpretation	Explains what the evidence proves and what remains unresolved.
Decision	Changes only what the evidence supports.
Verification	Repeats the original test and includes a control or negative test when appropriate.

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