A close-up of a computer switch

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3/8/2025

I recently worked through a lab exercise focused on verifying Spanning Tree port states on Cisco Catalyst switches—a key skill for any network professional. The goal? To dive into the various port states (Blocking, Listening, Learning, Forwarding) and master the IOS commands that reveal a port’s status at any moment.

Understanding how ports transition—from Blocking to Listening, Learning, and finally Forwarding—is foundational to grasping Spanning Tree Protocol (STP). A network is fully converged when all ports settle into either Forwarding or Blocking states, ensuring a loop-free topology.

I started my work by laying the groundwork for VLAN configuration, focusing first on setting up hostnames for Switch 1 (Sw1) and Router 1 (R1). Following the topology provided, I assigned the hostname to Sw1 and R1, ensuring both devices were clearly identified. It was a simple but essential step that paved the way for the more intricate configurations ahead.

Next, I turned my attention to configuring Sw1 as a VTP server. I set it up within the VTP domain named "CISCO" and secured it with the password "CISCO." After applying the configuration, I took a moment to verify that Sw1 was operating correctly as the VTP server, ready to manage VLAN information across the network. Getting this piece in place felt like a solid milestone, knowing it would keep the VLAN setup consistent.

With the VTP server established, I moved on to configuring VLAN10 on Sw1, sticking closely to the topology’s instructions. I designated FastEthernet0/1 (Fa0/1) on Sw1 as an access port for VLAN10, then shifted to Router R1. On R1, I activated the GigabitEthernet0/0/0 (G0/0/0) interface and configured its IP address as specified. Back on Sw1, I assigned an IP address to VLAN10 to complete the Layer 3 setup. To make sure everything was functioning, I ran ping tests to confirm IP connectivity between the devices. Seeing those successful pings was a reassuring sign that the configuration was working as intended.

Lastly, I explored Spanning Tree Protocol (STP) behavior on Sw1 by focusing on Fa0/1. I executed a "shutdown" command followed by a "no shutdown" command on the interface, intentionally prompting an STP state transition. I kept a close eye on the process, tracking the port’s journey toward the Forwarding state. My aim was to observe at least three distinct STP states—likely Blocking, Listening, and Learning—before it settled into Forwarding. Confirming this transition not only validated the configuration but also gave me a deeper, hands-on appreciation for how STP ensures network stability.

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