

Configuring Broadband Access on a Layer 3 Switch



Overview

This video was associated with the source search result. Verify technical details against current product documentation and project requirements.

Key Takeaways

To enable broadband access on a Layer 3 switch, you must enable IP routing, configure VLAN interfaces with IP addresses, set up DHCP if needed, and define a default route pointing to the upstream router or gateway. Step 1: Enable Layer 3 Routing

Before the switch can route traffic between VLANs or to the Internet, you must enable Layer 3 functionality. On Cisco devices, this is done with the command:

```
ip routing
```

This allows the switch to perform routing functions in addition to standard Layer 2 switching .

Step 2: Configure VLAN Interfaces

Each VLAN that requires Internet access should have a corresponding Layer 3 interface (VLAN interface) with an IP address. For example:

```
interface Vlan2 ip address 192.168.2.1 255.255.255.0 no shutdown
```

This interface acts as the default gateway for devices in VLAN 2 . Repeat for other VLANs as needed.

Step 3: Assign Switch Ports to VLANs

Configure the access ports connected to end devices to belong to the appropriate VLAN:

```
interface GigabitEthernet1/0/2 switchport mode access switchport access vlan 2
```

For uplink ports connecting to other switches or routers, configure them as trunk ports to carry multiple VLANs:

```
interface GigabitEthernet1/0/1 switchport mode trunk switchport trunk allowed vlan 2,3
```

This ensures VLAN traffic can traverse the network .

Step 4: Configure DHCP (Optional)

If the switch will assign IP addresses to clients, enable DHCP on the VLAN interface:

```
interface Vlan2 dhcp select interface dhcp server dns-list 8.8.8.8 8.8.4.4
```

This allows devices to automatically receive IP addresses and DNS settings .

Step 5: Set the Default Route

To provide Internet access, configure a default route pointing to the upstream router or gateway:

```
ip route 0.0.0.0 0.0.0.0 192.168.100.1
```

Here, 192.168.100.1 is the IP address of the router interface connected to the switch. This ensures all traffic destined for external networks is forwarded correctly .

Step 6: Verify Connectivity

Check routing and interface status:

```
show ip routeshow ip interface briefping 8.8.8.8
```

Ensure the VLAN interfaces are up, the default route is present, and clients can reach external networks.

Additional Considerations

- NAT: Layer 3 switches typically do not perform NAT. If using private IP addresses internally, NAT must be configured on the upstream router to access the Internet .
- Security: Apply ACLs or firewall rules on VLAN interfaces if needed to control traffic.

- Subinterfaces: For ISPs requiring multiple public IPs or VLAN tagging, create subinterfaces on a routed port with unique IPs and 802.1Q encapsulation . By following these steps, a Layer 3 switch can act as the gateway for internal users, route traffic between VLANs, and provide broadband or Internet access through an upstream router.

Article Content

Configuring Layer 3 Interfaces

All Ethernet ports are Layer 2 (switchports) by default. You can change this default behavior using the no switchport command from

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