

Configuration of a Typical Layer 3 Core Switch



Overview

In this post, we'll explore how to configure a Layer 3 switch to handle Inter-VLAN routing, turning your flat network into a high-performance routed architecture.

Key Takeaways

A typical Layer 3 core switch is configured with routed interfaces, VLANs, SVIs, inter-VLAN routing, and uplinks to routers or firewalls to enable full Layer 3 connectivity. Core Configuration Steps

1. Enable Layer 3 Routing

Ensure the switch is operating in Layer 3 mode.

On Cisco devices, this may involve enabling the ip routing command to allow routing between VLANs and routed ports.

2. Configure VLANs

Define VLANs for each network segment or department.

For example, VLAN 10 for Sales, VLAN 20 for HR, VLAN 30 for IT.

Assign VLA

N names and verify with show vlan to ensure they exist in the VLAN database.

3. Configure Switched Virtual Interfaces (SVIs)

Create an SVI for each VLAN to act as the default gateway for hosts in that VLAN:

```
CodeCopyinterface Vlan10 ip address 192.
```

```
168. 10. 1 255.
```

```
255. 255. 0 no shutdowninterface Vlan20 ip address 192.
```

```
168. 20. 1 255.
```

255. 255. 0 no shutdown SVIs allow the Layer 3 switch to route traffic between VLANs.

4.

Configure Routed Ports

Convert physical ports to Layer 3 interfaces for uplinks or point-to-point connections: CodeCopyinterface GigabitEthernet1/0/1 no switchport ip address 172. 16. 10.

2 255. 255. 255.

0 no shutdown Routed ports do not participate in Layer 2 protocols like STP. 5.

Configure Trunk and Access Ports

Trunk ports carry multiple VLANs between switches: CodeCopyinterface GigabitEthernet1/0/2 switchport mode trunk switchport trunk allowed vlan 10,20,30

Access ports connect end hosts to a single VLAN: CodeCopyinterface GigabitEthernet1/0/3 switchport mode access switchport access vlan 10 6.

Configure DHC

P (Optional)The Layer 3 switch can act as a DHCP server for VLANs: CodeCopyip dhcp pool VLAN10 network 192. 168. 10.

0 255. 255. 255.

0 default-router 192. 168. 10.

1 dns-server 8. 8. 8.

8 This allows automatic IP assignment to hosts in each VLAN. 7.

Configure Default Routes

Set a default route pointing to the upstream router or firewall for Internet access: CodeCopyip route 0. 0. 0.

0 0. 0. 0.

0 192. 168. 100.

1 This ensures traffic destined for external networks is forwarded correctly. 8.

Optional: Dynamic Routing ProtocolsFor larger networks, enable OSPF, EIGRP, or BGP to exchange routes with other Layer 3 devices: CodeCopyrouter ospf 1 network 192.

168. 0. 0 0.

0. 255. 255 area 0 9.

Verification Use commands like show ip route, ping, and traceroute to verify inter-VLAN connectivity and routing functionality. Confirm trunk and access port configurations with show interfaces trunk and show vlan brief. Summary A typical Layer 3 core switch configuration involves enabling routing, creating VLANs, configuring SVIs and routed ports, setting up trunk/access ports, optionally enabling DHCP, and defining default or dynamic routes. This setup allows the switch to act as a central routing point, providing inter-VLAN communication, uplink connectivity, and integration with routers or firewalls for Internet access.

Article Content

Mastering the Core: A Practical Guide to Layer 3 Switch Configuration

In this post, we'll explore how to configure a Layer 3 switch to handle Inter-VLAN routing, turning your flat network into a high-performance routed architecture.

Configuring Layer 3 Interfaces

All Ethernet ports are switched interfaces by default. You can change this default behavior with the CLI setup script or through the system default switchport command. You can assign an IP address to the

Example for Configuring a Layer 3 Switch to Work with a Router for ...

Switch configurations used in this example apply to all versions of S12700 and S12700E switches. This example uses router configurations of AR3600 V200R007C00SPCc00. For other

Layer 3 Switch Example

This article outlines a basic example of how layer 3 routing functionality on MS series switches could be implemented. Before proceeding, please refer to the Layer 3 Switch Overview for general information

Layer 3 Switches Explained: Architecture, Routing Logic, Use Cases,

A typical enterprise design uses a three-layer model: core layer, aggregation layer, and access layer. In this model, the core layer usually relies on Layer 3 switches for high-speed data

Chapter: Configuring Layer 3 Interfaces

Layer 3, the network layer, is primarily responsible for the routing of data in packets across logical internetwork paths. Layer 2, the data link layer, contains the protocols that control the

Layer 3 Switches in Cisco

A layer 3 Switch is a special type of networking device which is able to perform/execute functions of 2 layers of the OSI Model i.e., the Data Link Layer (Layer 2) and the Network Layer

Cisco Layer 3 Switch InterVLAN Routing Configuration

Below is a diagram that we can use as a reference in understanding how to configure Inter-VLAN routing and test inter-switch connectivity across the network before configuring its routing capability.

Example for Configuring a Layer 3 Switch to Work with a Router for ...

Layer 3 switches can work at Layer 2 and Layer 3 and be deployed at the access layer or aggregation layer as user gateways. This example uses router configurations of AR3600 V200R007C00SPCc00.

Adding a Core Switch with Layer 3

Yes, a layer 3 switch is much better at routing vlan traffic vs a firewall. Yes, you'll need to add routes to your local subnets on the firewall. On the core switch you can use a single static route

Cisco Catalyst 3750 Series Switches Data Sheet

For mid-sized organizations and enterprise branch offices, the Cisco Catalyst 3750 Series Switches ease deployment of converged applications and

Layer 3 Switch Example

Configuring the Switch Ports Additional Considerations Switch Management IP and Layer 3 Interfaces (SVIs) Related KBs This article outlines a basic example of how layer 3 routing functionality on MS

How To Use A Layer 3 Switch In A Small Network

This is where a Layer 3 switch comes in handy. A Layer 3 switch can perform IP routing tasks as well as Layer 2 tasks such as VLANs. Moreover, a Layer 3 switch can typically route faster than a router,

How to configure Layer 3 Switch using Vlan's

How to configure Layer 3 Switch using Vlan's In this lab i divide the switches like the Core switch, Distribution layer switch & Access layer switches. The purpose for this is to basically reduce ...

Example for Configuring a Layer 3 Switch to Work with a Router for ...

Layer 3 Switch Layer 3 switches provide the routing function, which indicates a network-layer function in the OSI model. Layer 3 switches can work at Layer 2 and Layer 3 and be deployed

Fundamentals of Operations on a Layer 3 Switch

Now, all the standard configurations, of normal interface on routers, are applicable to these non-switching interfaces. The first configuration is usually IP address related.
SW-1 (config-if)#ip address

How to Choose Layer-3 /Core Switches for Enterprise Networks

However, they are also more expensive than fixed switches. In order to guarantee the availability of the network, it is common to choose medium/large scale chassis-based switches for

Understanding the Core Switch: Key Differences and Uses

Explore the core switch's role as the backbone of your network. Discover key differences, uses, and insights into layer 3 core switch technology.

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