

Access switch has two network segments

Article Overview

A standard Layer 2 access switch cannot directly interconnect two different network segments; communication between segments requires a Layer 3 device or a Layer 3 switch with routing capabilities.

Layer 2 vs Layer 3 Switches

Layer 2 switches operate at the data link layer and forward traffic based on MAC addresses. They can only facilitate communication within the same subnet or VLAN. Devices on different IP subnets connected to a Layer 2 switch cannot communicate directly without a router or Layer 3 switch to route traffic between the segments. Layer 3 switches combine switching and routing capabilities. They can route traffic between VLANs or subnets internally, allowing devices on different network segments to communicate without needing an external router.

Enabling Communication Between Segments

To allow two network segments to communicate through a switch:

- o VLAN Segmentation: Assign each network segment to a separate VLAN (e.g., VLAN10 for 192.168.1.0/24 and VLAN20 for 192.168.2.0/24) on the switch.
- o IP Configuration: Configure an IP address for each VLAN interface on the Layer 3 switch. These IPs act as gateways for devices in each segment.
- o Routing: Enable inter-VLAN routing on the Layer 3 switch so that packets can be forwarded between VLANs. Static routes or dynamic routing protocols can also be used if multiple switches or routers are involved.
- o Access Control: Optionally, implement ACLs or firewall rules to control which devices or services can communicate between segments, maintaining security and compliance.

Practical Considerations

- o If using a Layer 2 switch only, you must connect the segments to a router or Layer 3 switch to enable inter-subnet communication.
- o For small office networks, a single Layer 3 switch can handle multiple VLANs and routing internally, simplifying management and improving performance.
- o Ensure that DHCP servers or IP address assignments do not conflict across segments, especially if devices rely on automatic IP allocation. By following these steps, an access switch can support multiple network segments while enabling controlled communication between them, improving network efficiency and security.



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Switches in this layer are called access switches. End devices connect to the LAN through the access switches. In

Network segmentation with switches involves dividing a network into smaller, isolated segments to enhance security,

The main goal of this cheat sheet is to show the basics of network segmentation to effectively counter attacks by building a secure

Network segmentation divides a computer network into smaller, isolated segments to control and restrict

In network communication, the interconnection between different network segments is crucial. As one of the core

We have a existing network setup where we have two D-Link switches,connected to each other. IPs are manually assigned in the

Macro-segmentation: The most common form of network segmentation, macro-segmentation is the practice of dividing a computer

Can anyone tell me what some of the implications of having two different subnets on the same switch would be if

Layer 2 switches work at the data link layer and forward data frames based on MAC addresses, and they must use

Each network segment acts as its own network, which provides security teams with increased control over the traffic that flows into

Why can't 2 or more network segment work on same switch (without VLAN configuration)? It seems like switch should

Learn more about network segmentation best practices and how you can limit the spread of a potential cyber attack.

Learn how Layer 2 network devices evolved from hubs to modern switches, and how they manage traffic, reduce collisions, and

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When different servers or storage devices are in different network segments, the switch connects these segments to

What is network segmentation in cybersecurity? Learn about the benefits, common strategies, challenges with

In my organization, we have 2 networks. A network for staff and another network for public Wi-Fi. I will have to use a

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