



Chapter 1: Introduction to Switched Networks



Routing and Switching

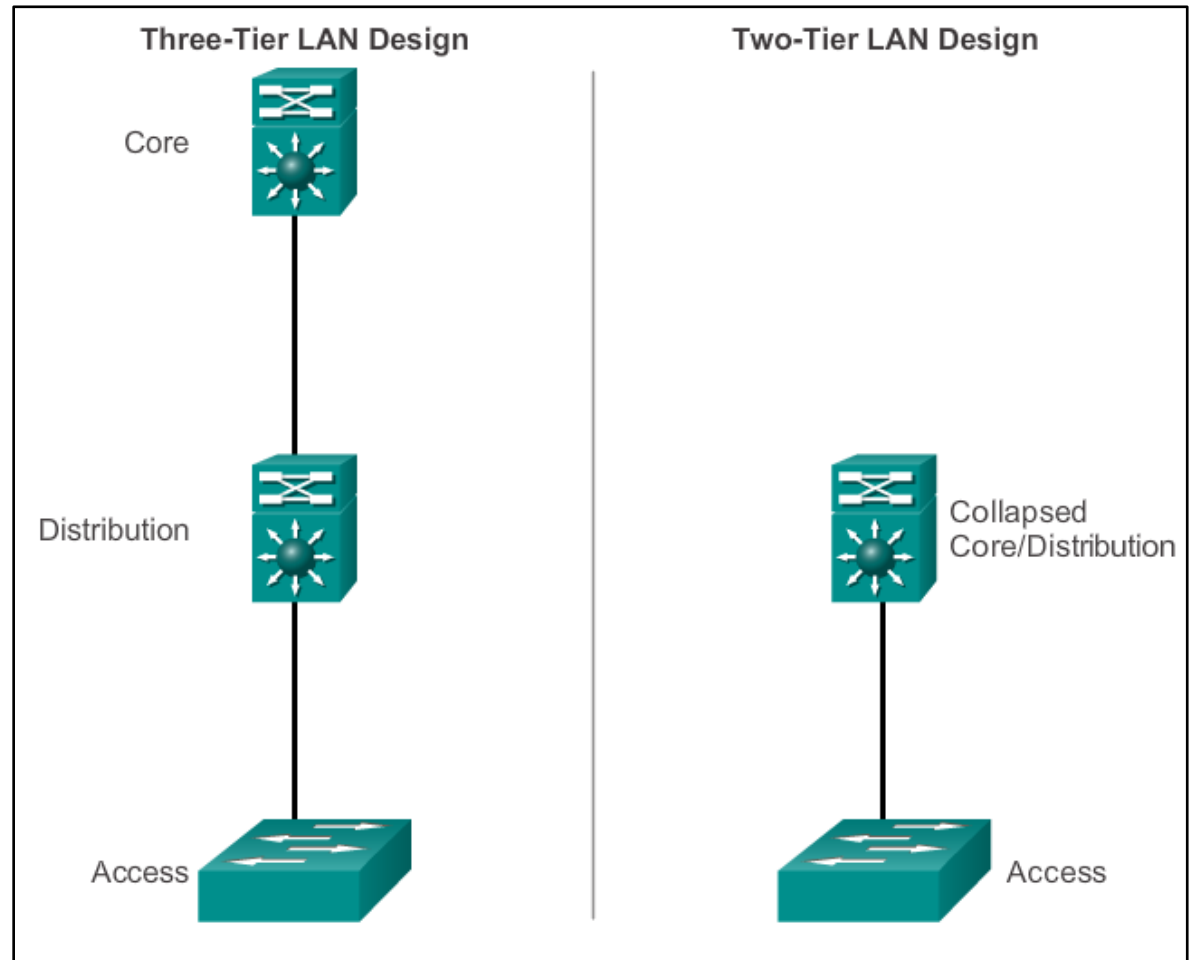
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Converged Networks

Hierarchy in the Borderless Switched Network

Borderless switched network design guidelines are built upon the following principles:

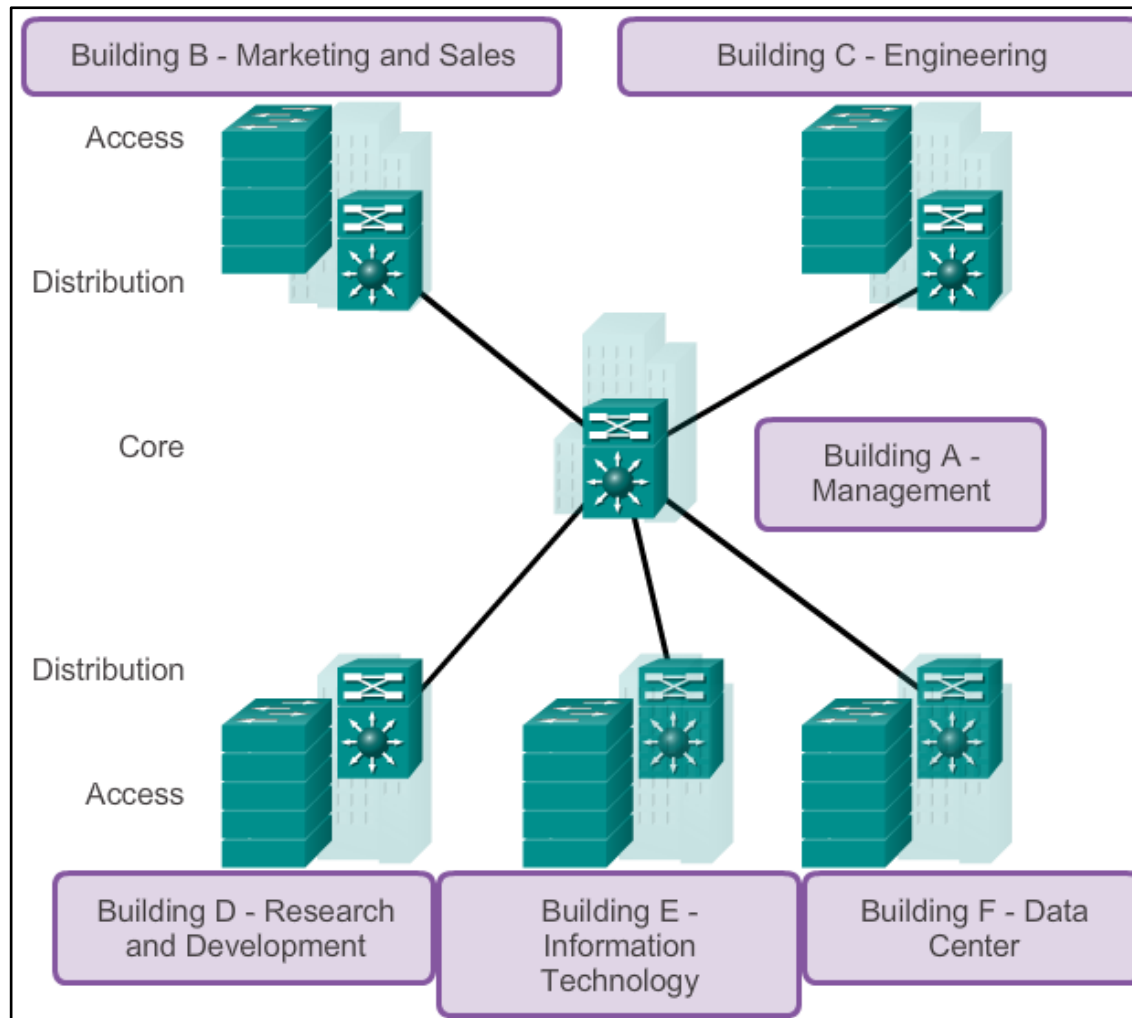
- Hierarchical
- Modularity
- Resiliency
- Flexibility





Converged Networks

Core, Distribution, Access





Switched Networks

Form Factor

Fixed Platform



Features and options are limited to those that originally come with the switch.



Switched Networks

Form Factor (cont.)

Modular Platform



The chassis accepts line cards that contain the ports.



Switched Networks

Form Factor (cont.)

Stackable Platform



Stackable switches, connected by a special cable, effectively operate as one large switch.



Frame Forwarding

Switch Forwarding Methods

Add a header

Store-and-Forward



A store-and-forward switch receives the entire frame, and computes the CRC. If the CRC is valid, the switch looks up the destination address, which determines the outgoing interface. The frame is then forwarded out the correct port.

Cut-Through

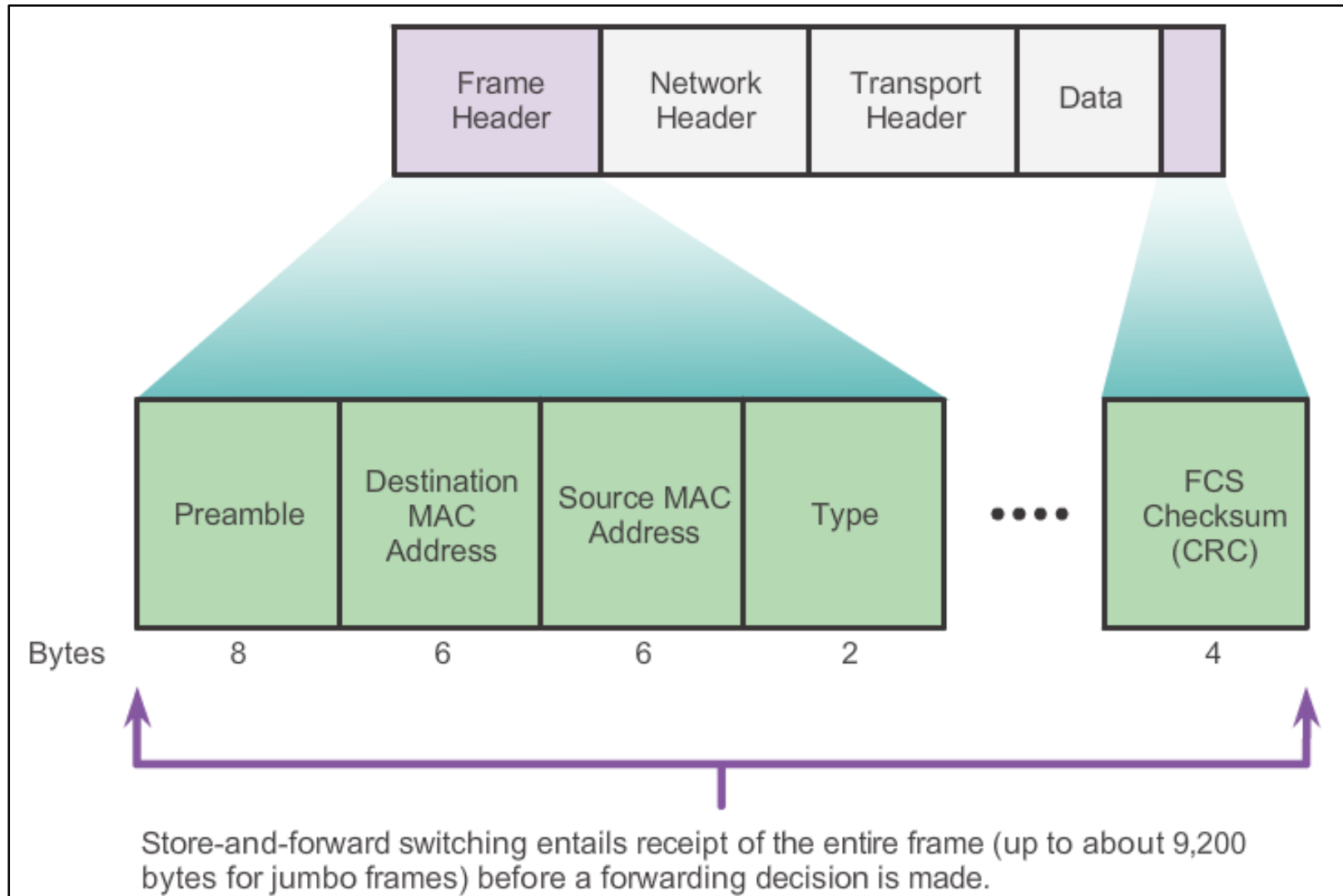


A cut-through switch forwards the frame before it is entirely received. At a minimum, the destination address of the frame must be read before the frame can be forwarded.



Frame Forwarding

Store-and-Forward Switching (cont.)





Switching Domains

Collision Domains

A collision domain is the segment where devices must compete to communicate.

- All ports of a hub belong to the same collision domain.
- Every port of a switch is a collision domain on its own.
- A switch break the segment into smaller collision domains, easing device competition.



Switching Domains

Broadcast Domains

A broadcast domain is the extend of the network where a broadcast frame can be heard.

- Switches forward broadcast frames to all ports; therefore, switches do not break broadcast domains.
- All ports of a switch, with its default configuration, belong to the same broadcast domain.
- If two or more switches are connected, broadcasts are forwarded to all ports of all switches, except for the port that originally received the broadcast.

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