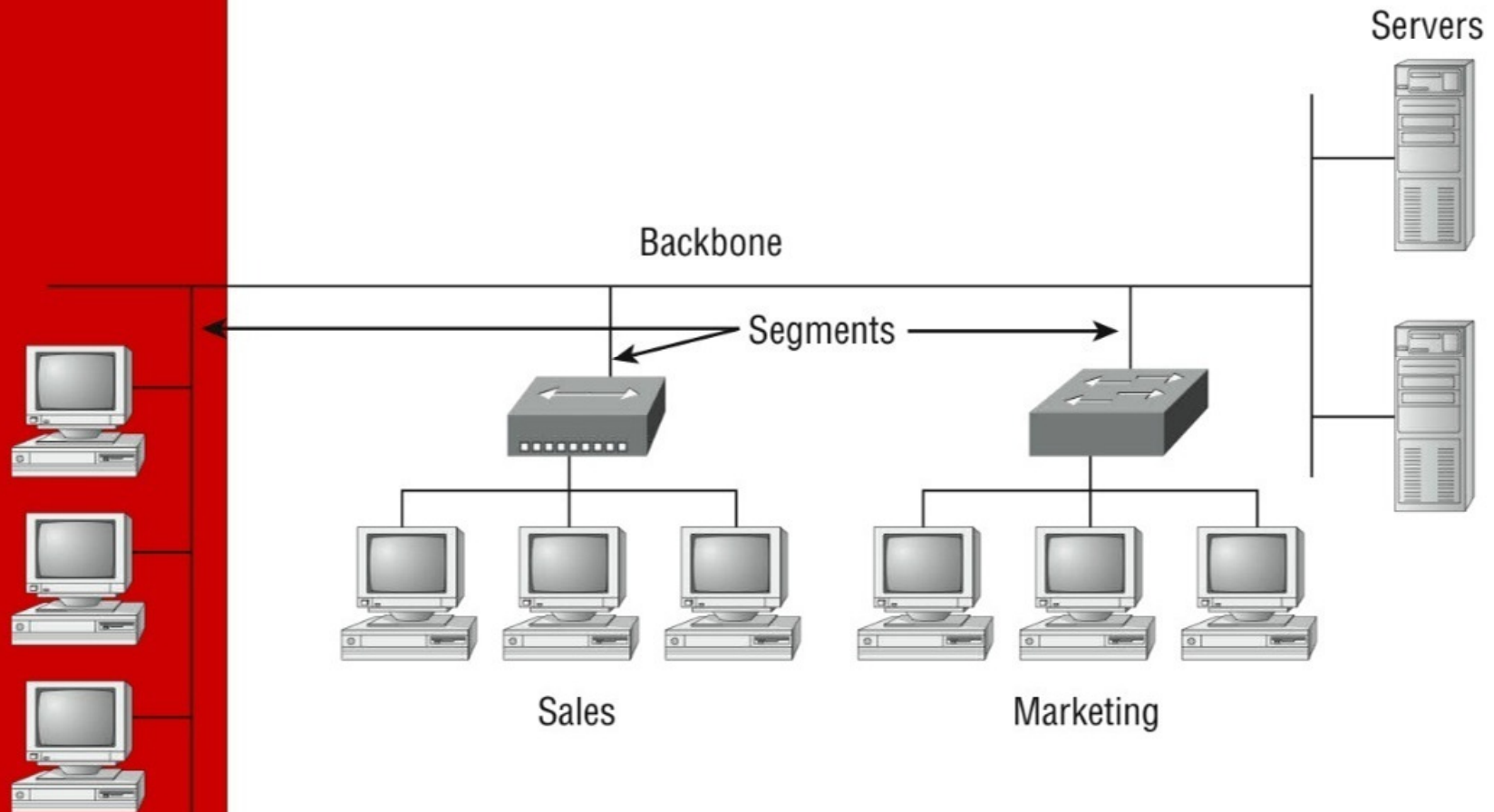


Backbones and Segments



Backbone Networks

- Cabling connecting hubs, switches, routers
- More throughput
- Large organizations
 - Fiber-optic backbone
 - Cat 5 or better for hubs, switches
- Enterprise-wide network backbones
 - Complex, difficult to plan
- Enterprise
 - Entire organization
 - Significant building block: backbone

Serial Backbone

- Simplest backbone
 - Two or more internetworking devices
 - Connect using single daisy-chain cable
- Daisy-chain
 - Linked series of devices
- Benefit
 - Logical growth solution
 - Modular additions
 - Low-cost LAN infrastructure expansion
 - Easily attach hubs

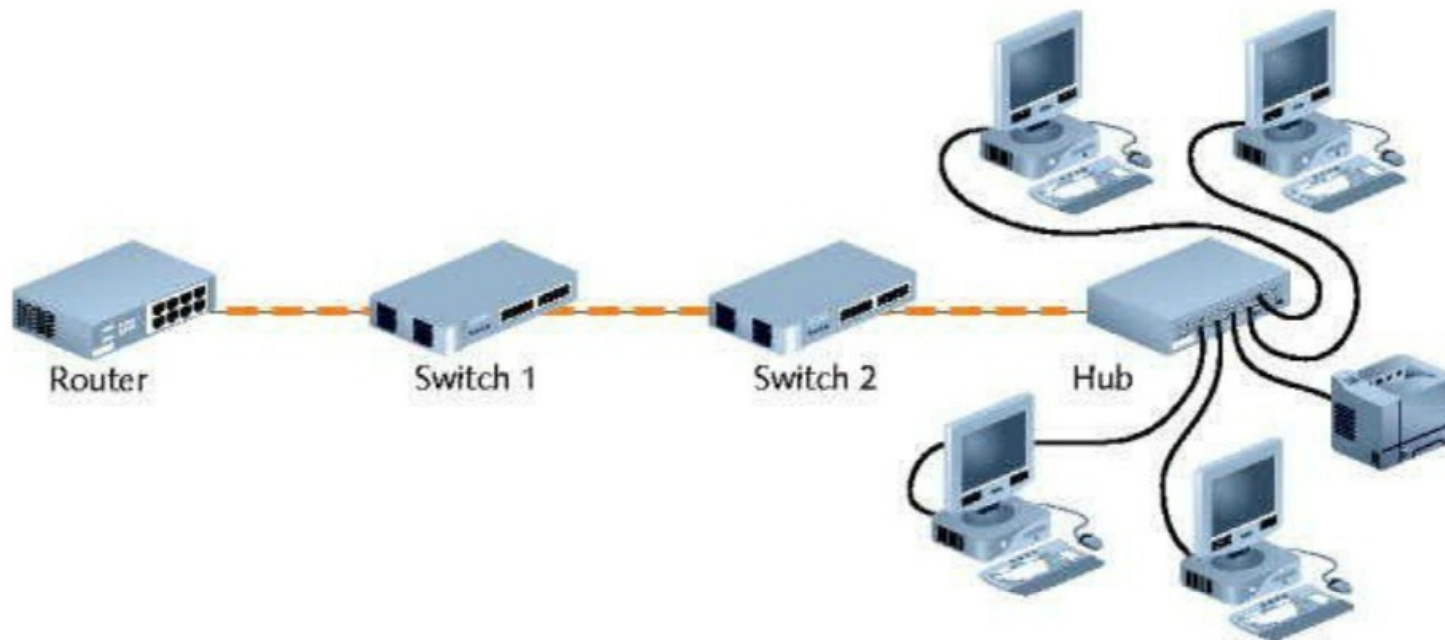


Figure 5-6 A serial backbone

- Backbone components
 - Hubs, gateways, routers, switches, bridges

Serial Backbone (cont'd.)

- Serial connection of repeating devices
 - Essential for distance communication
- Standards
 - Define number of hubs allowed
 - Exceed standards
 - Intermittent, unpredictable data transmission errors

Distributed Backbone

- Connectivity devices
 - Connected to hierarchy of central connectivity devices
- Benefit
 - Simple expansion, limited capital outlay
- More complicated distributed backbone
 - Connects multiple LANs, LAN segments
 - Using routers

Distributed Backbone (cont'd.)

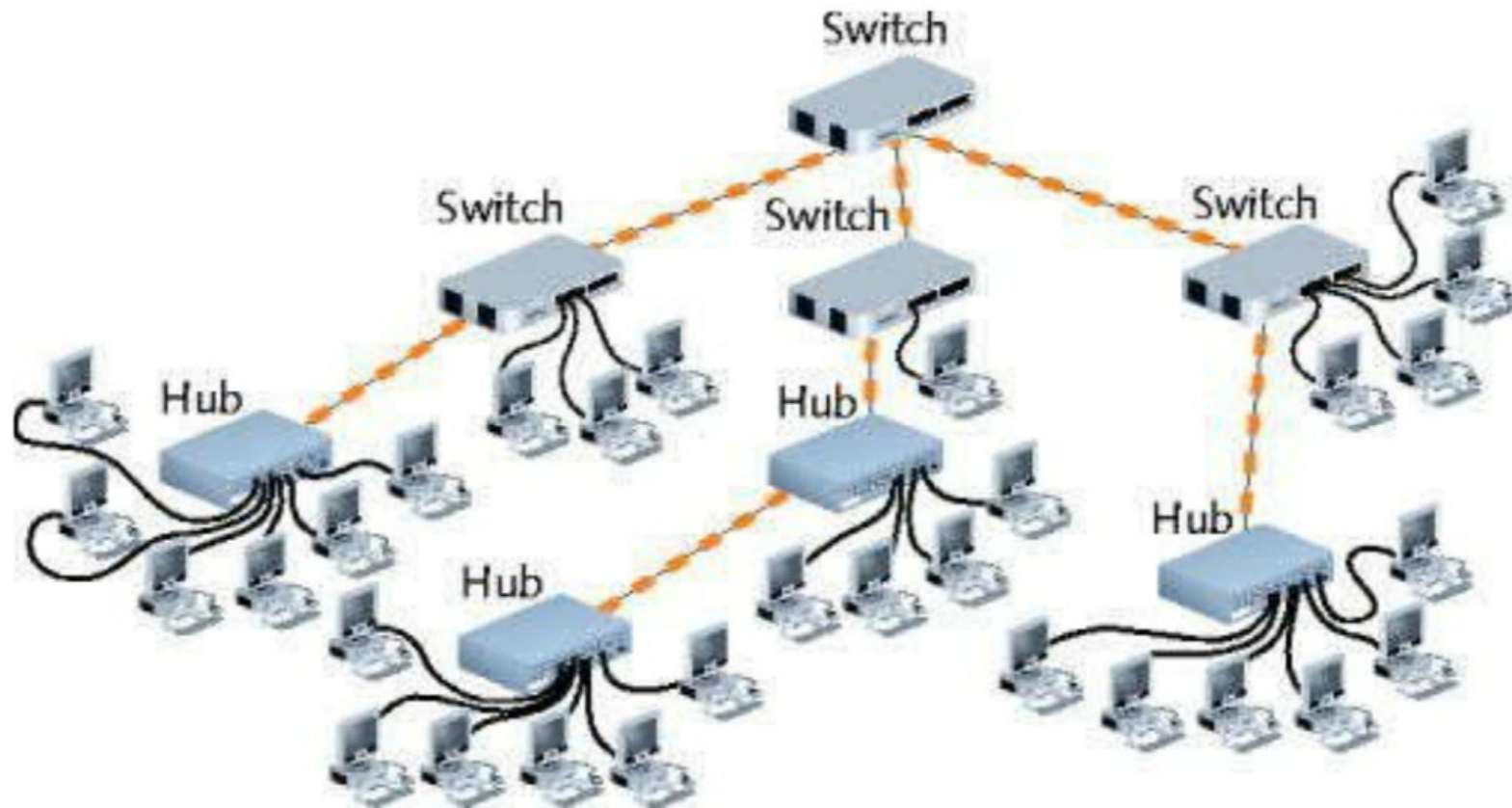


Figure 5-7 A simple distributed backbone

Distributed Backbone (cont'd.)

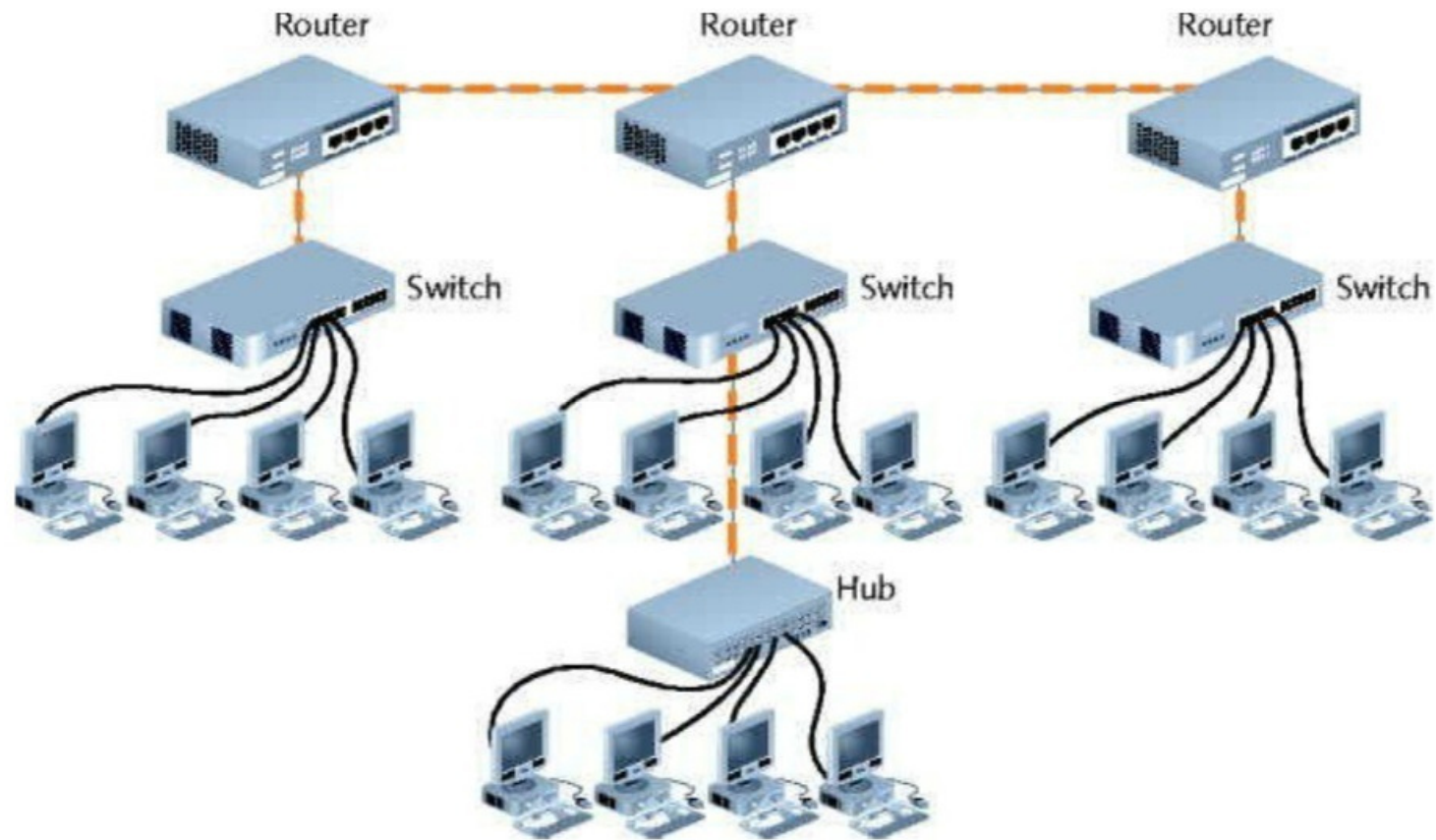


Figure 5-8 A distributed backbone connecting multiple LANs

Distributed Backbone (cont'd.)

- More benefits
 - Workgroup segregation
 - May include daisy-chain linked hubs
 - Consider length
- Drawback
 - Potential for single failure points

Parallel Backbone

- Most robust network backbone
- More than one central router, switch
 - Connects to each network segment
- Requires duplicate connections between connectivity devices
- Advantage
 - Redundant links
 - Increased performance
 - Better fault tolerance

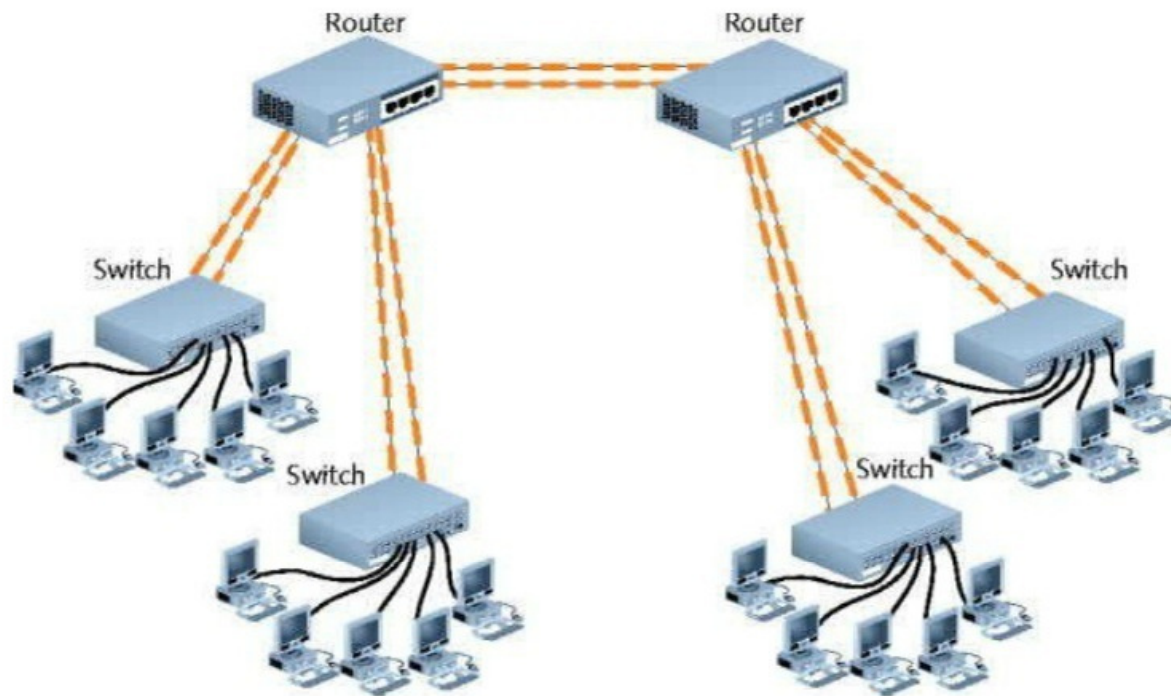


Figure 5-10 A parallel backbone

- Disadvantage
 - More cabling
- Used to connect most critical devices

Summary

- Summary
- Exam Essentials Section
- Written Labs
- Review Questions