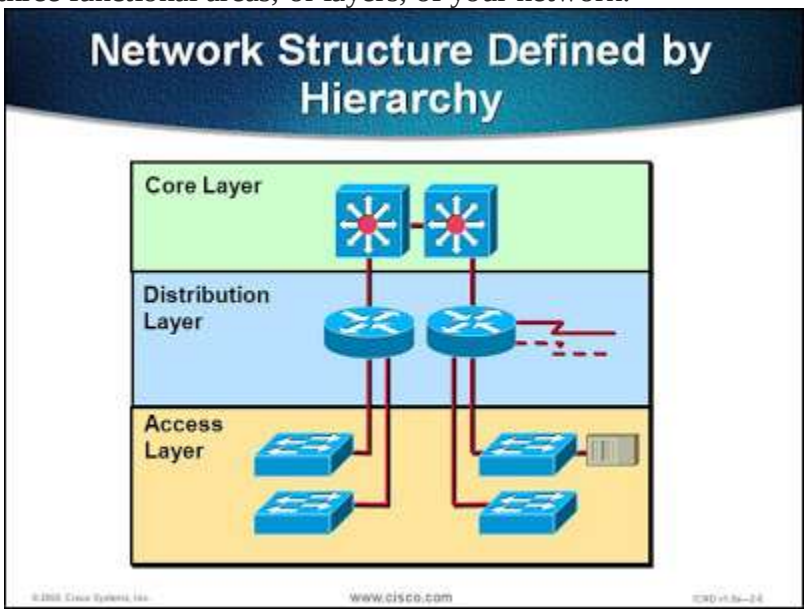
The Cisco Three-Layered Hierarchical Model

Cisco has defined a hierarchical model which simplifies the task of building a reliable, scalable, and less expensive hierarchical internetwork because rather than focusing on packet construction, it focuses on the three functional areas, or layers, of your network:



Core layer: This layer is considered the backbone of the network and includes the high-end switches and high-speed cables such as fiber cables. This layer of the network does not route traffic at the LAN. In addition, no packet manipulation is done by devices in this layer. Rather, this layer is concerned with speed and ensures reliable delivery of packets.

Distribution layer: This layer is also called the Workgroup layer.This layer includes LAN-based routers and layer 3 switches. This layer ensures that packets are properly routed between subnets and VLANs in your enterprise.

Access layer: This layer includes hubs and switches. This layer is also called the desktop layer because it focuses on connecting client nodes, such as workstations to the network. This layer ensures that packets are delivered to end user computers.

Main characteristics of three layers are

*** Access layer:**

+ Low cost per switch port
+ High port density
+ Scalable uplinks to higher layers

+ User access functions such as VLAN membership, traffic and protocol filtering, and quality of service (QoS)
+ Resiliency through multiple uplinks

*** Distribution Layer:**

+ Aggregation of multiple access-layer devices
+ High Layer 3 throughput for packet handling
+ Security and policy-based connectivity functions through access lists or packet filters
+ QoS features
+ Scalable and resilient high-speed links to the core and access layers

*** Core layer:**

+ Very high throughput at Layer 3
+ No costly or unnecessary packet manipulations (access lists, packet filtering)
+ Redundancy and resilience for high availability
+ Advanced QoS functions