

## Two-Tier & Three-Tier Architectures:

### Core Layer:

- o Core Layer consists of biggest, fastest & most expensive routers with highest model.
- o In the Three Tier Architecture, the Core Layer is the one coordinating everything.
- o Its only role is to forward traffic, the fastest it can, here you don't apply any policy.
- o Where several distribution switches, Core Layer is considered as backbone of networks.
- o Core Layer routers or switches are used to merge geographically separated networks.
- o The Core Layer routers or switches move information on the network as fast as possible.
- o Core switches talk with distribution switches using dynamic routing protocols, like OSPF.
- o At this layer, most advanced & expensive switches used ones with modular form factor.
- o The Core Layer can provide the high-speed switching, reliability and fault tolerance.



### Distribution Layer:

- o The Distribution Layer is located between the Access Layer and the Core Layers.
- o This layer is to provide boundary definition by implementing access lists & other filters.
- o The Distribution Layer defines policy for network and include high-end Layer 3 switches.
- o Distribution Layer ensures that packets are properly routed between subnets and VLANs.
- o The Distribution Layer can provide, Aggregation of Local Area Network or WAN links.
- o This Layer provide Policy-based security in form of access control lists (ACLs) and filtering.
- o Also Provide, Routing services between LANs and VLANs and between routing domains.
- o Distribution Layer provide Redundancy, load balancing , aggregation & summarization.
- o Broadcast domain control, routers or multilayer switches do not forward broadcasts.

## Core & Distribution Switches



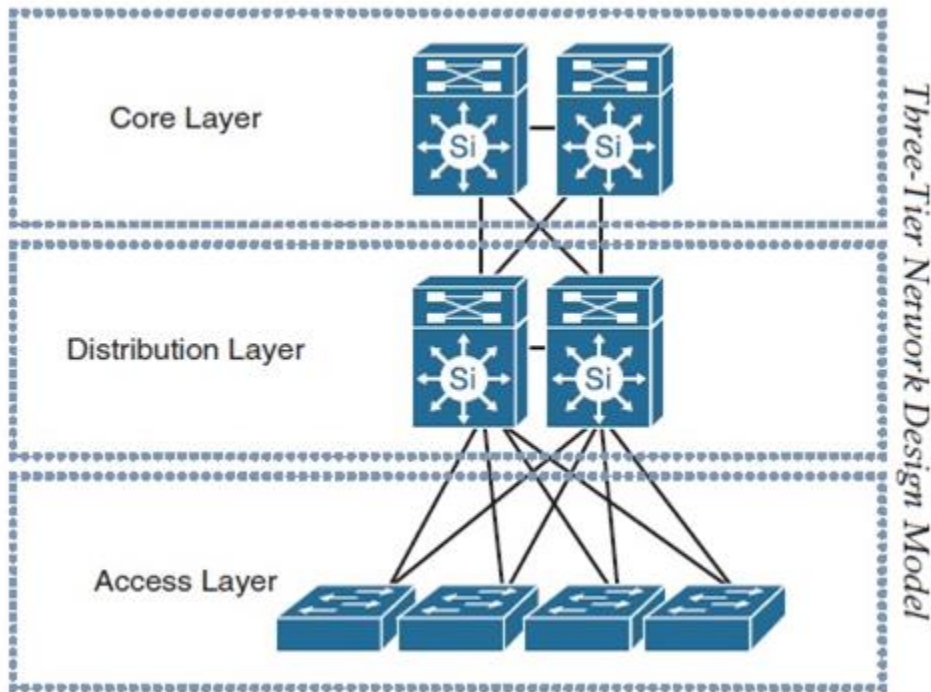
## Access Layer:

- o The Access Layer is the one closer to the users, at this layer we find the users themselves.
- o The Access layer includes access switches which are connected to the end devices.
- o Access layer switches ensures that packets are delivered to the end points or devices.
- o The main purpose of the Access Layer is to physically connect users to the network.
- o There is just a cable between end-user or end points PCs and access-layer switches.
- o These are security policies we want to enforce in order to allow access to the network.
- o For example, we can configure port-security and Network Access Control in this layer.
- o The Access Layer can provide, Layer 2 switching, High availability, and Port security etc.
- o Also provide, QoS classification, address Resolution Protocol (ARP) inspection & VLANs.
- o Virtual access control lists (VACLs), Spanning tree, Power over Ethernet (PoE) and VoIP.



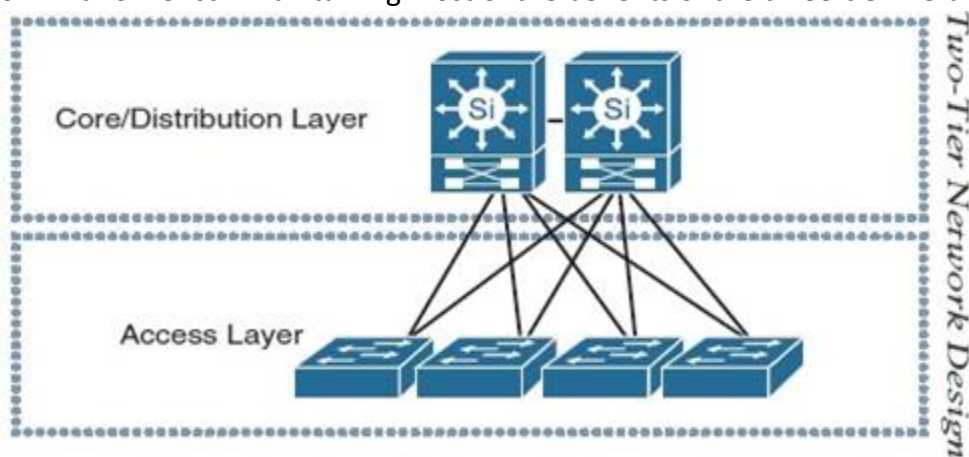
### Three Tier:

- o The Three Tier (3 Tier ) Architecture is a great solution for large enterprises.
- o Cisco suggests 3 Tier hierarchical network model, that consists of three layers.
- o The Three Tier are the Core layer, the Distribution layer, and the Access layer.
- o Cisco Three-Layer network model is the preferred approach to network design.
- o Maximizes performance, network availability & ability to scale network design.



### Two Tier:

- o Two Tier design model is more suitable for small to medium-size campus networks.
- o Core & distribution functions can be combined into one, also known as collapsed core.
- o Collapsed Core is when distribution & core layer functions are implemented by a single device.
- o The primary motivation for the collapsed core design is to reduce the network cost.
- o In two Tier still maintaining most of the benefits of the three-tier hierarchical model.



### Benefits of Hierarchical Model:

- o Main benefits helps to design, deploy & maintain scalable hierarchical internetwork.
- o Three-Layer or 2-layer network model allows in creating high performance networks.
- o It allows better network management and isolate causes of network trouble & issue.
- o Cisco Three Layer Network Model allows better filter & policy creation application.
- o Cisco Three Layer Network Model allows us to efficiently accommodate future growth.
- o Three Layer or Two Layer Network Model provides better redundancy & availability.
- o Multiple links across multiple devices provides better redundancy and availabilities.
- o If one switch is down, we have another alternate path to reach the destination.
- o When network grows, we can easily add more distribution or access layer switches.

