

Design Concern	Layer 2 Access	Layer 3/Routed Access
Multiple path from the access to the distribution	Yes if there is Link Aggregation Group (LAG) or Fabric technologies, no if there is Spanning Tree	Yes, Access to Distribution is layer3, ECMP can work
Default Gateway Node	Distribution switch in 2 and 3 tier hierarchy	Access switch
Spanning Tree Requirement	If there is no Fabric Based Protocols (TRILL, SPB, Fabricpath) or LAG otherwise spanning tree is required	No Spanning Tree
Default Gateway Protocols	HSRP, VRRP, GLBP	No default gateway protocol is required, since there is no HSRP, VRRP or GLBP between Access Switches.
VLAN can be spanned between access switches	Yes	No
Convergence	If there is Spanning Tree, it is slow, if there is LAG, very fast	Fast compare to Spanning Tree, can be sub second with Fast convergence and sub 50ms with Fast Reroute mechanisms. Also ECMP provides software based failover between the paths
Stuff Experience	Well Known	Well Known
Possible network meltdown	If there is Spanning Tree, Spanning Tree Bug can take the network down	No layer 2 loop, Layer 3 IP header has TTL field, even there is a loop, it is a microloop and when topology converge, it stops
Required Protocols	Spanning Tree or LAG and First Hop Redundancy Protocols (HSRP, VRRP, GLBP)	Any Layer 3 routing protocol, including Static Routing can run
QoS Support	Good	Good
Multicast Support	Layer 2 based	Layer 3 based. PIM ASM, SSM, Bidir.
Security	Many first hop security technologies, Dynamic ARP Inspection, DHCP Snooping, Port-Security and so on.	Same as Layer 2 Access
IPv6 Support	Yes	Yes
Default Convergence	Slow	Fast
Places in the network	LAN and Datacenter but LAN mainly.	LAN and Datacenter but Datacenter mainly. Because the requirement of Large scale datacenter is to keep layer 2 domain minimum as possible so starting Layer 3 from the edge of the network