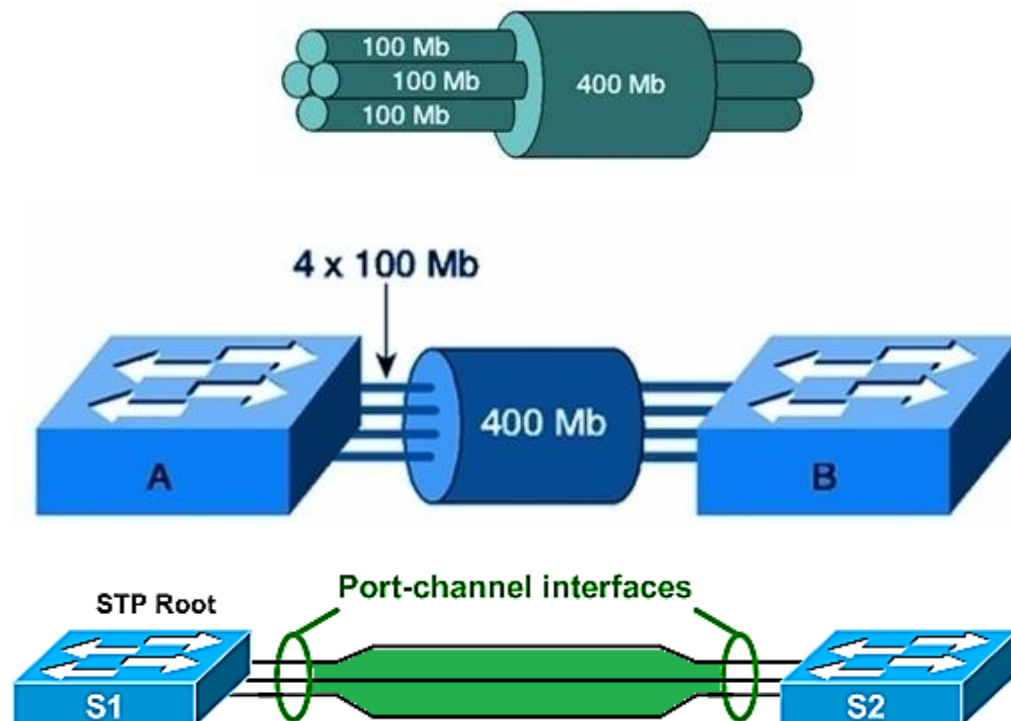


StackWise, VSS, and vPC:

The available Cisco technologies that support this are StackWise, VSS, and vPC. Now, a single switch is not going to support all three of these. Different platforms of switches support different options, and if a switch does support one, it will only be one. The switch will either support StackWise, or it will support VSS, or it will support vPC, not two or three at the same time. This is only supported on the higher-end switches. If you got one of Cisco's lower-end switches, then this is not going to be supported.

Port-Channel:

Port-Channel is the simplest and oldest technology that combines two or more interfaces. In return, it gives the benefits like load balancing across links, redundancy in case any link goes down, increased bandwidth since you combined two or more links, and a single spanning-tree view of the links. However, these benefits come at the cost of connecting all the links within a bundle to a single device. And if that single device fails, you will lose everything connected to that switch. However, port channels are still common in networks because of their simplicity and vendor-neutral approach. This traditional port channel can't bundle the links which are connected to two different devices.



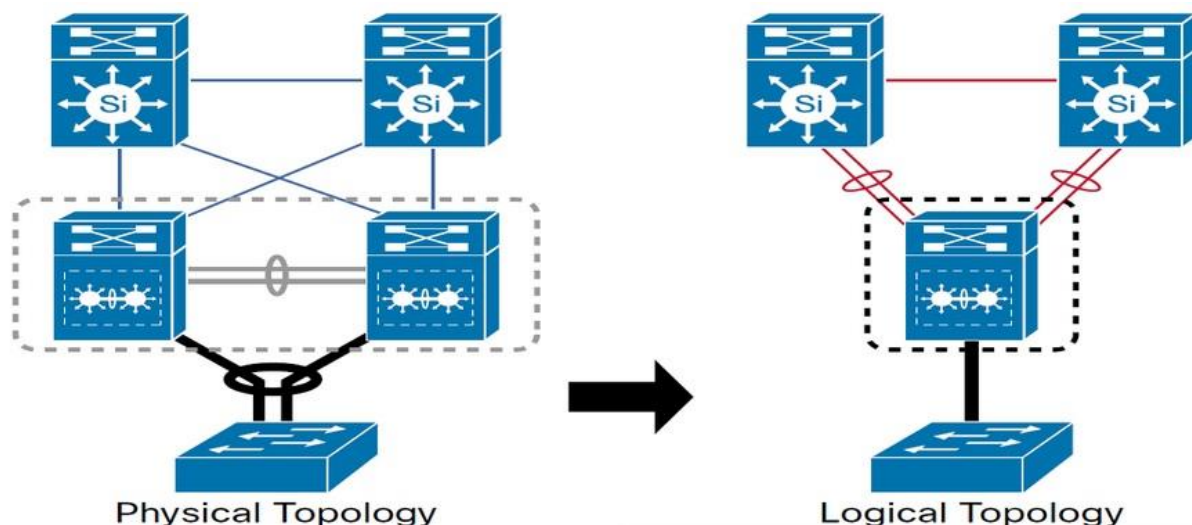
Cisco VSS:

Virtual Switching System (VSS) is a virtualization technology that pools multiple Cisco Catalyst Switches into one virtual switch, increasing operational efficiency, boosting nonstop communications, and scaling system bandwidth capacity. VSS was first available in the Cisco 6500 series and was later introduced to the Cisco 4500, the newer 4500X, 6800 Series switches and the Catalyst 3850.

Cisco introduced Cisco Catalyst 6500 in late 1999's with the MEC (multi-Etherchannel) feature, which offered to combine two links in a bundle going to the two different 6500 switches. And because the end device is cabled to two separate 6500 switches, it provided a better resiliency than a simple port channel. This technology is called Cisco VSS (Virtual Switch System). That was a huge advantage, and almost all enterprises purchased Cisco 6500's due to this feature alone.

The Virtual Switching System (VSS) allows two Cisco Catalyst 6500 or 4500 chassis to bond together so that is seen as a single virtual switch to the rest of the network. Other devices will see the VSS configured 6500 as a single device which means it's possible to use multi-chassis etherchannel and protocols like spanning-tree will only see a single switch.

A VSS is a pair of combined 6500 switches acting as a single network element with redundancy and load balancing over port-channels (etherchannels). One switch becomes the master or active chassis and the other one becomes the VSS standby.



Cisco Stackwise:

Switch stacking is a feature of certain Cisco access layer switches which allows for the creation of a single logical device from many individual devices via a backside stack port connected by several stack cables. Stackable switches logically become one switch.

Switch stacking technology makes a stack of physical switches act like one switch. The stacking cables together make a ring between the switches. The switches connect in series, with the last switch connecting again to the first. Switch stacking, STP, CDP and VTP run on one switch, not multiple switches. Switch Stacking is one logical switch the port density is increased very much. Switch stacking is a feature of certain Cisco access layer switches. Stackable switches logically become one switch. The stacked switches effectively operate as a single larger switch.

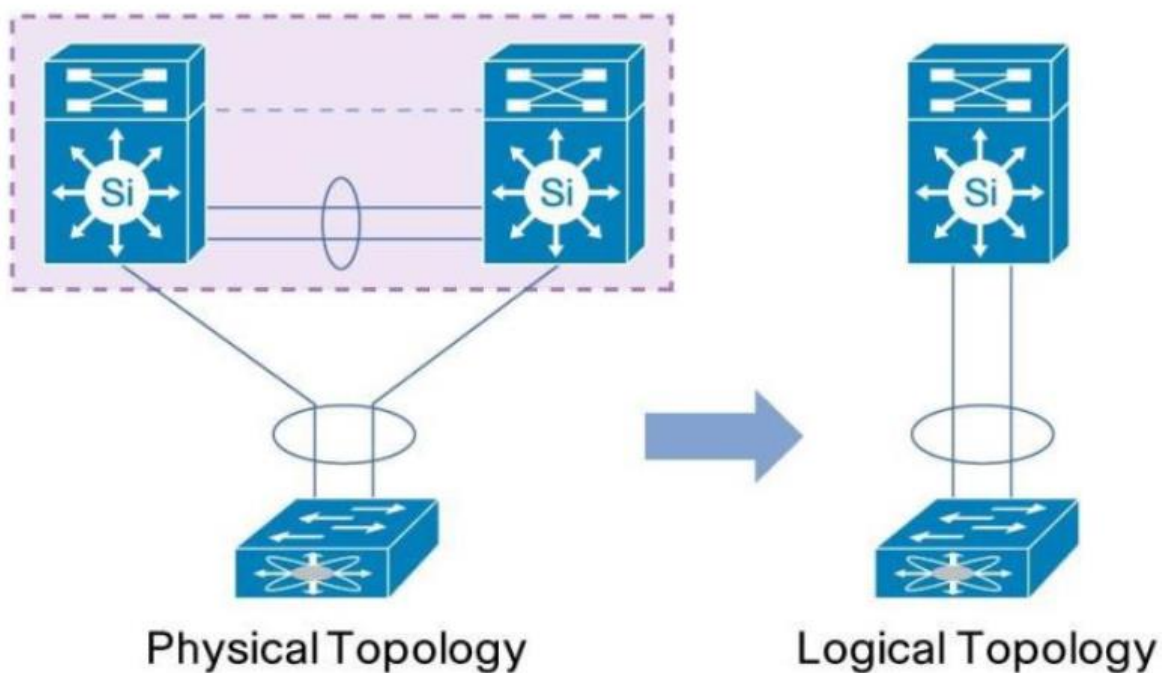
Some network switches have the ability to be connected to other switches and operate together as a single unit. These configurations are called "stacks", and are useful for quickly increasing the capacity of a network.

Switches that support Stackwise use a special stacking cable to connect the switches to each other. Each switch has two stacking connectors that are used to "daisy-chain" (loop) the switches together. Each switch is connected to the one below it and the bottom switch will be connected to the one on top.



vPC:

In the year 2008, Cisco introduced the Nexus series switches which also had the link bundling (Multi-Etherchannel) feature similar to Cisco 6500 VSS, and it was called vPC. Finally, Cisco officially launched vPC in 2009. The main difference between VSS and vPC is that VSS creates a logical switch that combines the control and management plane of the two Cisco 6500 chassis. On the other hand, in Cisco vPC, both Cisco Nexus switches have separate control planes and are managed independently. It enables a device to view cables/links that are physically connected to two separate Cisco Nexus switches as a single port channel. A switch, server, or any other networking device that supports port channels can be that device. A vPC can provide Layer 2 multipathing. The vPC feature is currently not supported by any Cisco Catalyst Series Switches and is available only on the Nexus switches family.



Technology Area	Port-Channel	Cisco VSS	Cisco vPC
Redundancy	between two switches or devices	between three devices making a triangle	between three devices making a triangle
Software	Cisco Catalyst Operating system	Cisco Catalyst Operating system	Cisco NXOS only
Platform	Cisco Catalyst Switches	only Cisco 6500 series Catalyst Switches	Cisco Nexus Series Switches
Control Plane	Separate control plane on single switch	Single control plane on two 6500 switches	Two separate control plane
Etherchannel Protocols support	Static, PAgP, PAgP, LACP	Static, PAgP, PAgP, LACP	Static, LACP
Configuration	Single Configuration on single Cisco Catalyst switch.	Single Configuration on two Cisco 6500 switches.	Two different configurations on two nexus switches
STP as a failback	Yes	Yes	Yes
Loop-free topology	Yes	Yes	Yes
Multi-Chassis Port Channel	No	Yes	Yes
Maximum Physical Nodes	1	2	2
No Disruptive ISSU support	Not required	No	Yes
Layer 3 port channel support	Yes	Yes	Limited
Heart beat link between devices	Not required	VSL is used to transfer data and control messages between the active and standby switches	CFS transmits control messages through Peer Link, and a Peer Link monitor heartbeats
HSRP required for Layer 3 redundancy	HSRP is required	Not required	HSRP is required
Separate Instance for other protocols	Single instance on single switch	On each physical switch in the VSS	On each physical switch in the VPC