Switching course extra topics

Khaled Awdallah
CCIE#35993
Cisco Switches Models

- We can divide Cisco switches into two main categories based on H/W as follows:
  - Modular Switches:
    - Catalyst 6500 Series.
    - Catalyst 4500 Series.
    - Nexus 7000 Series.
  - Fixed Configuration Switches:
    - Cisco Catalyst 4500–X Series
    - Cisco Catalyst 3750–X Series
    - Cisco Catalyst 3750–E Series
    - Many other series you can find it [here](#).
Now the question is how could you choose the appropriate switch for your LAN which fits your network with minimum cost?

- “Cisco Catalyst Switch Solution Finder” helps you to find what you need.
- Also you can use “Cisco Feature Navigation” to select precisely the IOS which support features you need.
- Also you can find all Cisco switches guide [here](#).
Cisco Catalyst Switches
Cisco Catalyst Switches

- We will talk here about 4 series of Cisco Catalyst switches and navigate some of its new H/W and S/W features:
  - Cisco Catalyst 3750 stackable switches.
  - Cisco Catalyst 4500–E switches.
  - Cisco Catalyst 6500 Switches.
  - Cisco Catalyst 6800 Switches.
Cisco Catalyst Switches “3750 switches”

- **Cisco Catalyst 3750 series** is a small to medium size switches.
- Cat 3750 V2 switches is using **Cisco EnergyWise** technology which save more power and therefore reduce energy.
- The most interesting feature of 3750 series is the **Cisco StackWise** feature and **Cisco StackPower** technology.
Cisco Catalyst Switches “3750 switches”

- LAB 1 StackWise & StackPower Technology
  - Let’s have here a small lab introducing the Cisco StackWise technology on Cisco 3750X and Cisco 2960S switches.
  - There are many helpful youtube videos to understand Cisco StackWise tech. and Cisco StackPower tech.
  - Refer to this [web page](#) to know the difference between StackWise and StackWisePlus.
  - Cisco 2960–S switches is using sub–technology from StackWisePlus called Cisco FlexStack, to know more about it and the difference between then, refer to this [page](#).
Cisco Catalyst Switches “4500 switches”

4500-X series

4500-E series
Cisco Catalyst Switches “4500 switches”

- The **4500-X** is a fixed configuration switch.
  - It is the bigger brother of 3750-X series as it is supports more features like VSS with forwarding speed of 1.6Tbps and with high performance of H/W based features.
  - Although it is a fixed configuration which means that its ports are fixed but it has a small module can be changed which supports the 10G interfaces.
Cisco Catalyst Switches “4500 switches”

- The 4500–E switch is a modular switch:
  - It supports up to 928Gbps switching capacity with the 8–E supervisor.
  - It supports Cisco VSS technology for speed up to 1.8Tbps.
  - This switch consists of many components:
    - Chassis
    - Dual Power Supply (use Cisco power calculator to know how much power do you need.)
    - Fan Tray
    - Supervisor
    - Line Cards
Cisco Catalyst Switches “6500 switches”

- One of the most powerful Cisco LAN switches:
  - The most useful investment for the customers in LAN switching as Cisco claims that it may be useable till 2025 as per this report.
  - Physical H/W separation between Data Plane and Control Plane.
  - It can forward up to 2Tbps frames with the new Supervisor 2T.
  - Forwarding speed can be increased to be 4Tbps using Cisco VSS and it may be much larger in VSS Phase II.
Cisco Cat 6500 Switch IOS

- Cisco 6500 switch was working using Cisco Cat-OS which was old OS used in Cat 6000 series.
- Cat 6500 now is working using Cisco IOS which all Cisco engineers are familiar with.
- It configuration is typically as all other Cisco Catalyst switches with some new features.
- It was working on IOS 12.2 but now it supports IOS 15.0 which add many new features to it as VSS.
Cisco Cat 6500 Switch Models

- It has many models:
  - 6503–E
  - 6504–E
  - 6506–E
  - 6509–E
  - 6509–V–E
  - 6513–E

- It naming as 65xx where xx is the number of slots.
- 6509–V–E is a version of 6509–E but using vertical line cards and its air flow from front to back for customers who has a problem in right to left air flow in all other models.
Cisco Cat 6500 Switch component

- It consists of many components:
  - Chassis
  - One of two power supply
  - Fan Tray
  - Supervisor
  - Line cards
  - Service Modules
Cisco Cat 6500 Switch component

- **Chassis**: it has multiple chassis depending on the customer requirement.
- **Power supply**: it can contain one or two power supplies in redundant mode or power-share mode.
- **Fan tray**: is the fans card for each model, a single fan can’t be changed the full tray should be changed.
- **Line cards**: many types of Line cards are supported covering all customer requirements.
Switching Course Extra Topics

Cisco Cat 6500 Switch component

Service Modules:

- cards can be installed on 6500 switch to support certain functions.
- It provide very high capability and functionality due to its application dedicated H/W.
- There are many modules for different security features, network analysis and wireless services.
- Here you can find all types of supported service modules.
Cisco Cat 6500 Switch component

- **Supervisor:**
  - It is the main component of modular switches.
  - It is the processing card of the switch which play the control plane role and controls the forwarding plan.
  - There are many types of supervisors depending on its speed.
  - The latest one is the SUP–2T which supports 2Tbps forwarding speed in full-duplex mode.
  - All 6500 switch models support up two SUP–2T
Cisco Cat 6500 Switch SUP-2T

- **SUP-2T** supports many new features:
  - VSS support up to 4Tbps forwarding speed.
  - A configurable Out Of Band Configuration management port (CMP) for remote access the switch in case of supervisor Route Processor failure.
  - It contains daughter card called MSFCv5 which is responsible of control plane processing for the whole switch.
  - It also contains another daughter card called PFC4 which is responsible for all forwarding plane and other features line L2 rewrite and ACL apply.
  - It support Line cards with DFC4 for maximum forwarding speed.
Cisco Nexus Switches
Cisco Nexus switches

- Data centers was supported by Cisco 6500 switches.
- Cisco Nexus switches is a new series of switches that made specially for Data Centers.
- It provides many features that are very useful for Data Centers and port density and forwarding speed that are suitable for large data centers.
- It has many *models* that fits all data centers sizes.
Cisco Nexus switches
Cisco Nexus switches use the Cisco NX-OS which much like the normal IOS but with some differences that accommodates with data centers nature.