

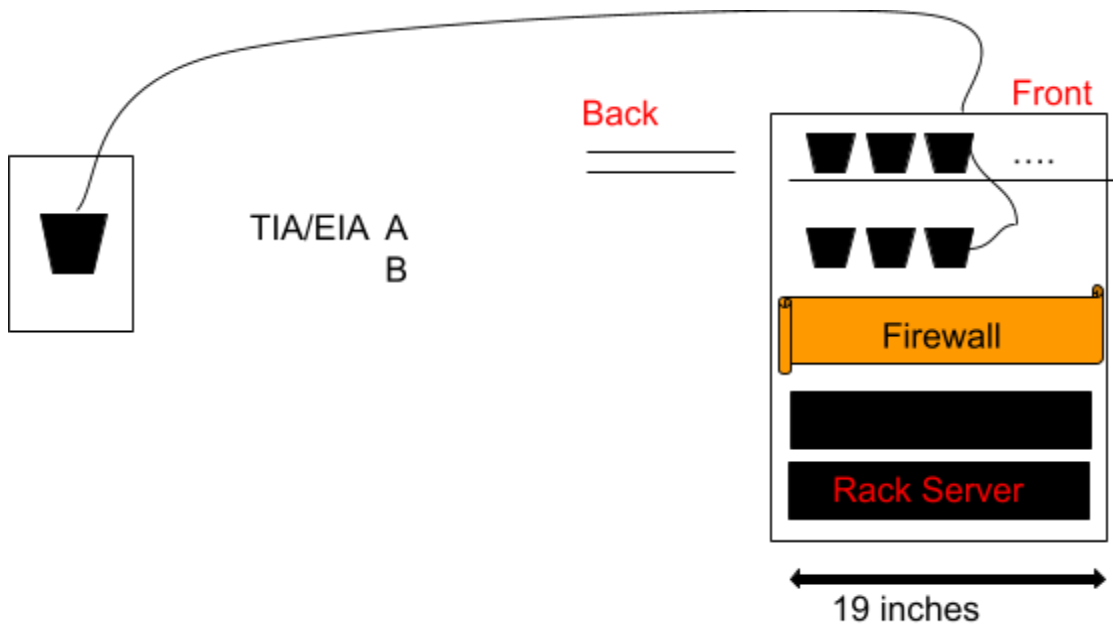
# Module 3: Network Module 3 PT2

## Data Link Layer - Layer 2 - Frames

[Straight through, Crossover, rollover cable](#)

Ethernet UTP(Unshielded Twisted Pair) Patch Cable

- Also known as patch cord with RJ-45 connectors on both the ends.
- Used to connect two electronic devices
- A UTP patch cable is relatively short.
  - One stranded wire is made of a bundle of tiny and thin wire strands.



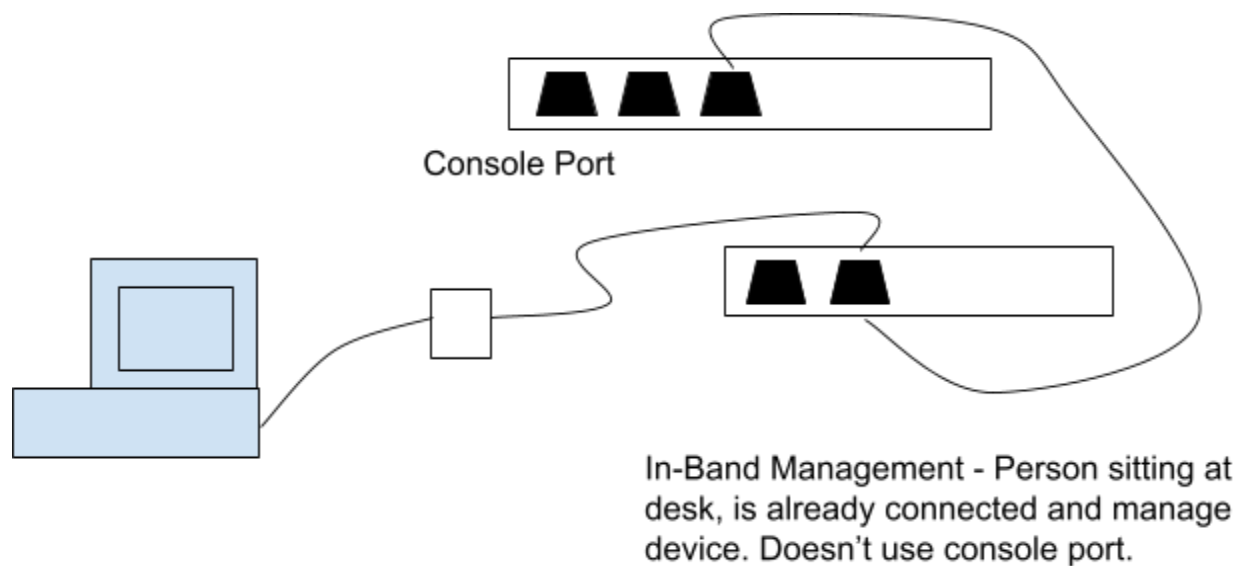
Straight - Different layer

Cross - Same layer

Rollover - Crossover cable

3	Routers Servers PC (MDI Devices)
2	Switch (MDI-X devices)
1	Hub (MDI-X devices)

Router <-----Straight-----> Switch  
 Router <-----Straight-----> Hub  
 PC / Server <-----Straight-----> Switch  
 PC /Server <-----Straight-----> Hub  
 Router <-----Cross-----> Router  
 Router <-----Cross-----> PC/Server  
 PC <-----Cross-----> PC  
 Switch <-----Straight-----> Hub  
 Hub <-----Cross-----> Hub  
 Switch <-----Cross-----> Switch



- Out-of-Band Management - Physically plug into **console port** - using a rollover cable, plug into laptop and plug into and manage switch.
- Console port - manage the switch device.
- [Temp](#)
- [Cable or MDI](#)
  - MDI - MDI-X
    - Auto switches

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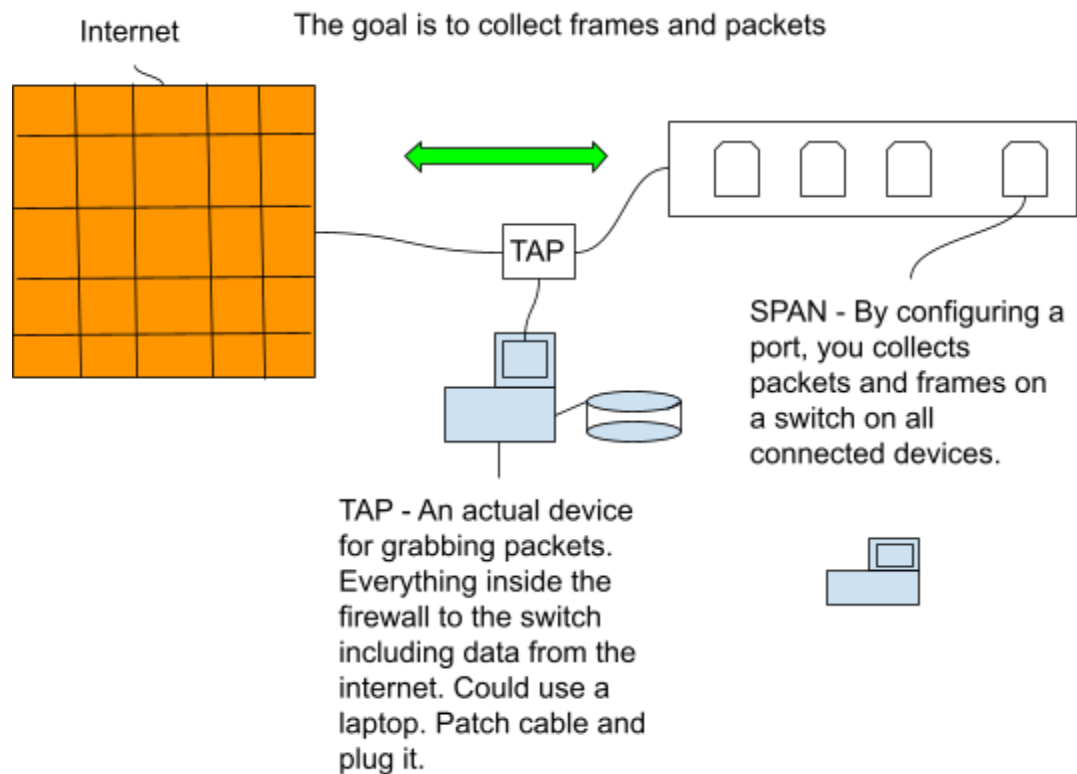
## Frames and Packets

Tap - Test Access Point

- Physical device
- Looks at traffic between devices and firewalls

**Software** - Used to collect frames and packets.

- Wireshark
- TCP Dump



### Videos on TAP and SPAN

- [Taps vs Span](#)
- [Benefits of Taps compared to SPAN](#)

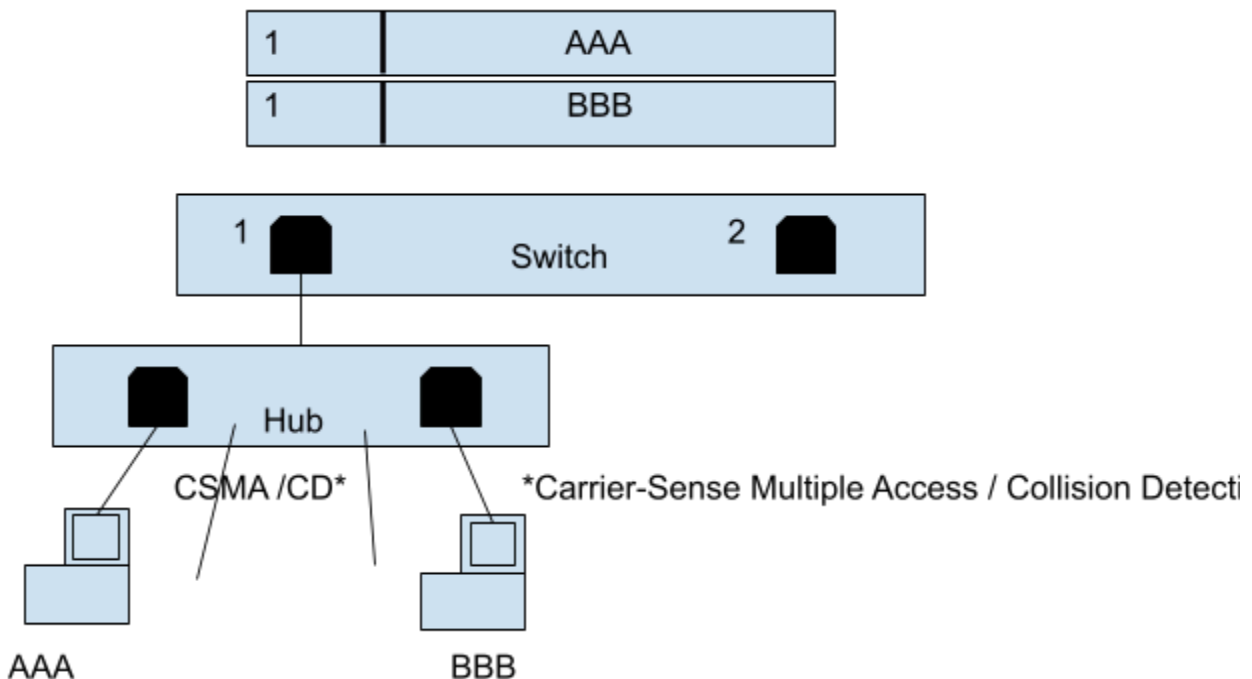
### Vocabulary for today

- TAP
- SPAN - "Port Mirroring"
- MAC Table "CAM"
  - `show mac-address-table`
- Straight
- Cross

- Rollover - console port
  - MDI / MDI-X
  - In-Band Management
  - Out-of-band Management
  - TCP dump / Wireshark
  - Port Aggregation
  - NIC, Bridge Switch, WAP
- 

## Collision Detection

- [Collision Domain vs Broadcast Domain \(Sunny Classroom\)](#)
- [Collision Domain vs Broadcast Domain](#)



Collision occurs at the hub (layer 1)

MAC Address: FF-FF-FF-FF-FF-FF (Broadcast out to all devices on a network) to learn MAC addresses of those devices.

ARP (Address Resolution Protocol)

POE - Power over Ethernet

- [POE explained](#)
- Delivers power to a networking device.
- Uses frequencies to send data and power.