

NETWORK DEVICES

Computer Networks

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Outline

1 Cables

2 Devices

3 Conclusion



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Cables

loss + speed

- **Cables** are the most important part of a network.
- They are the **physical** medium through which data is transmitted.
- There are different types of cables, and each one has its own characteristics.
- The most common types of cables are: **Coaxial, Twisted Pair, and Fiber Optic.**



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Coaxial Cables

- **Coaxial cables** are used in cable television systems, telephone companies, and the Internet.
- They are made of a **copper** core, surrounded by a **plastic insulator**, and a **metal shield**.
- They are used for **long-distance** communication, and can carry **high-speed** data.
- They are more **expensive** than twisted pair cables, but they are more **reliable** and have a longer **lifespan**.



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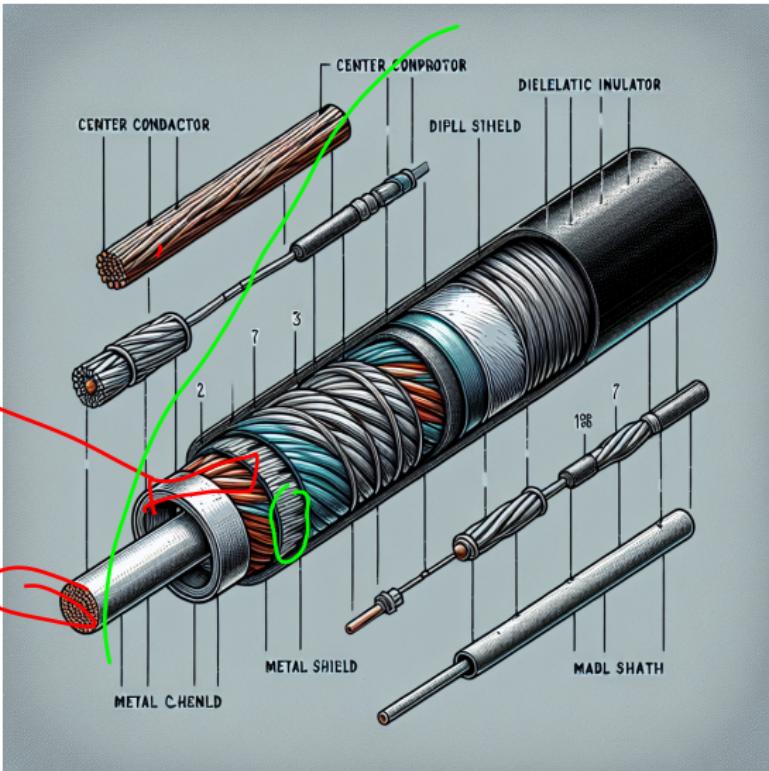
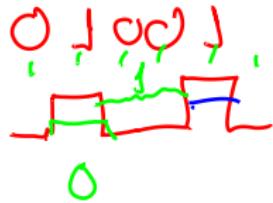


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Twisted Pair Cables

- **Twisted pair cables** are the most common type of cable used in computer networks.
- They are made of two **copper** wires twisted together, and are used for **short-distance** communication.
- They are used in **Ethernet** networks, and can carry **high-speed** data.
- They are **inexpensive**, **easy** to install, and **flexible**.



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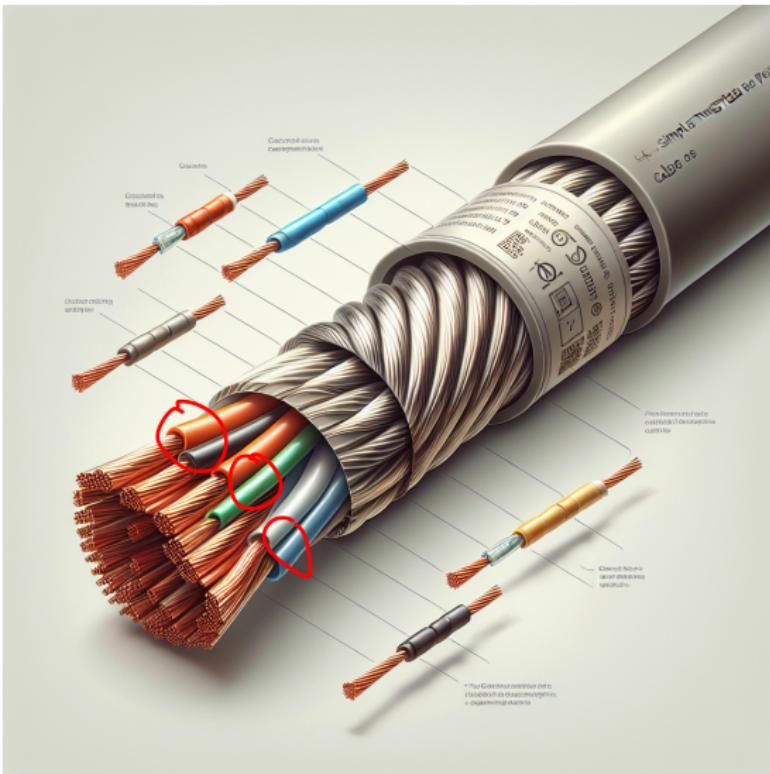


Twisted Pair Cables

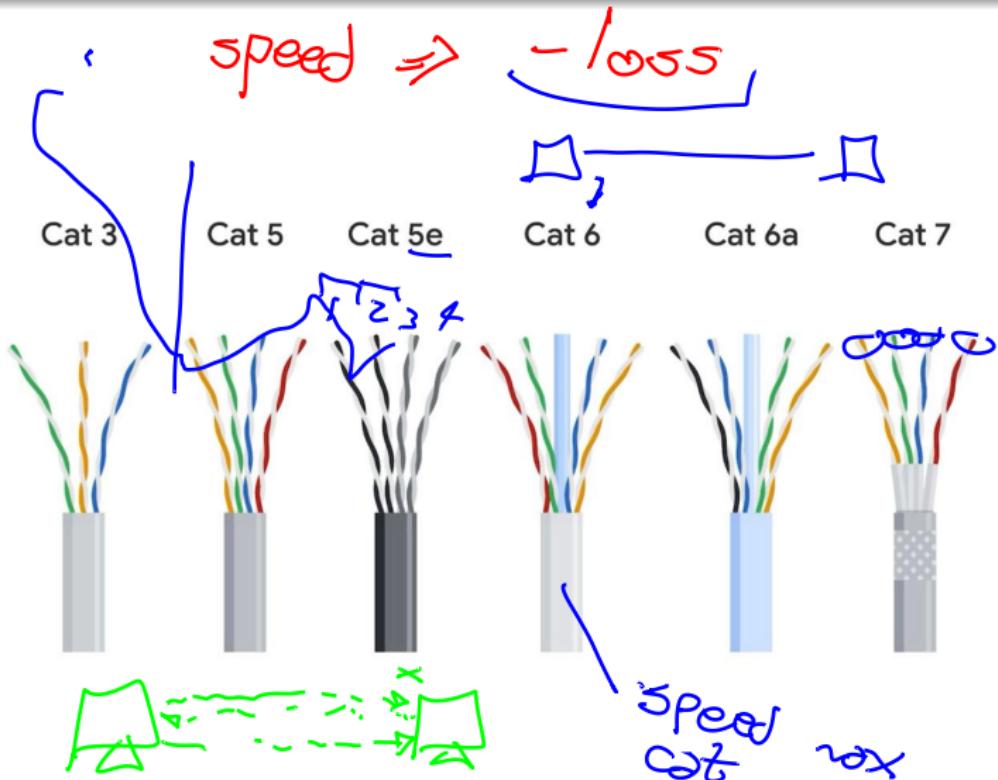
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Twister Pair Cables



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Fiber Optic Cables

- **Fiber optic cables** are used in high-speed networks, such as the Internet and cable television systems.
- They are made of glass or plastic fibers, and use light to transmit data.
- They are used for long-distance communication, and can carry high-speed data.
- They are more expensive than coaxial and twisted pair cables, but they are more reliable and have a longer lifespan.



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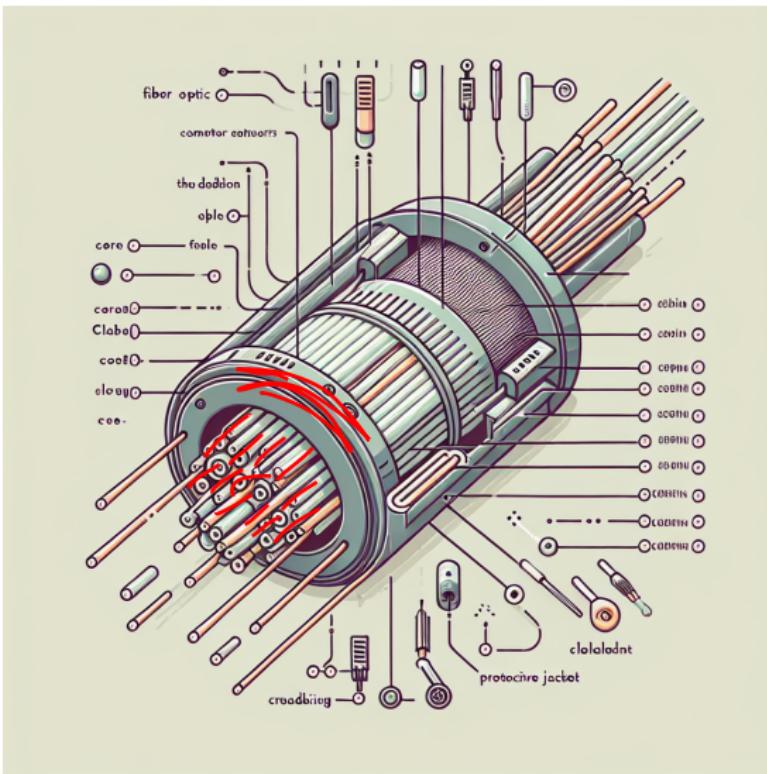


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Fiber Optix Cables



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Network Devices

- **Network devices** are the hardware components that make up a network.
- They are used to connect computers, printers, and other devices to the network.
- There are different types of network devices, such as **routers**, **switches**, and **hubs**.
- Each device has its own function, and is used to perform specific tasks on the network.



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Routers

- **Routers** are used to connect different networks together.
 - They are used to **route** data between networks, and to **filter** and **forward** data packets.
 - They work at the **network** layer of the OSI model, and use **IP addresses** to determine the best path for data to travel.
 - They use the Border Gateway Protocol (BGP) to exchange routing information with other routers.

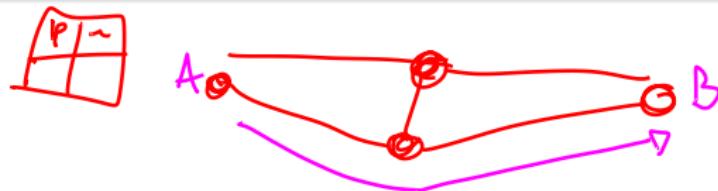


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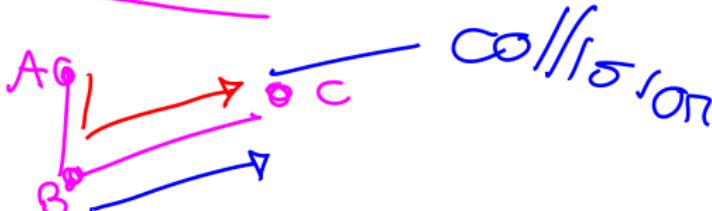
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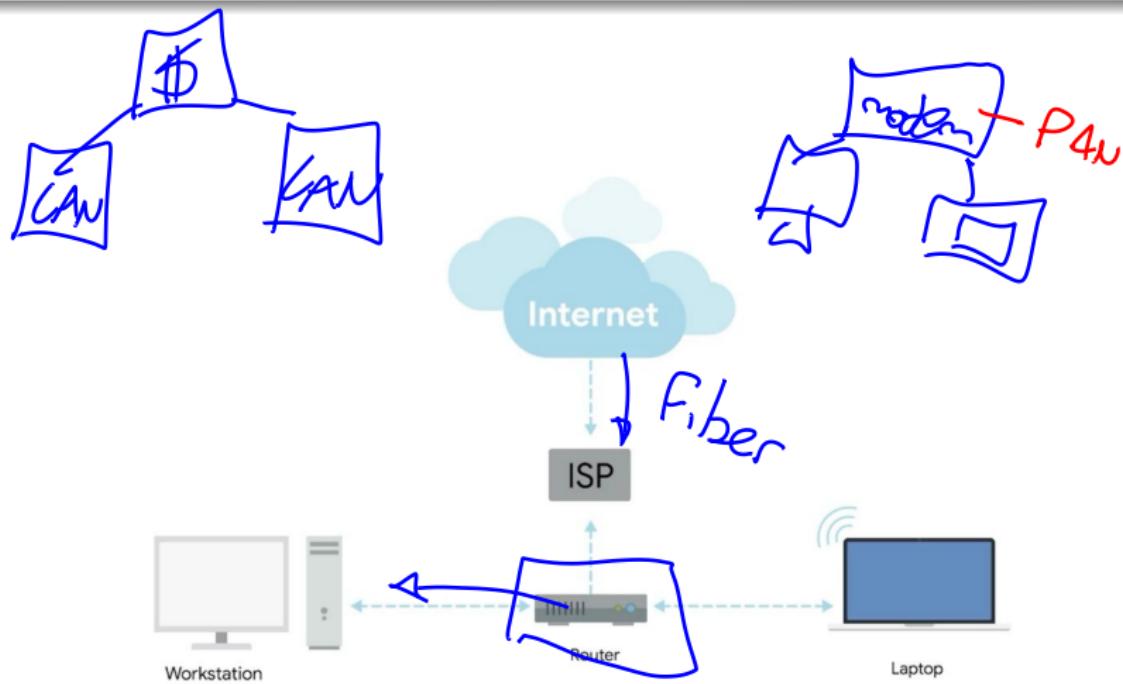
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Routers



Switches

\Rightarrow PoE

LAN

Power of Ethernet

- **Switches** are used to connect devices on the same network.
- They are used to **forward** data packets between devices, and to **filter** and **forward** data packets.
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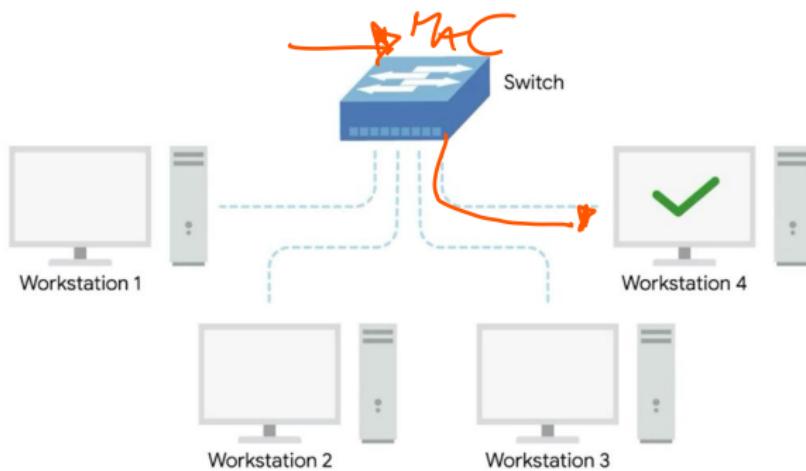


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Hubs

- **Hubs** are used to connect devices on the same network.
- They are used to **broadcast** data between devices, and to **forward** data packets to all devices on the network.
- They work at the **physical layer** of the OSI model, and use **electrical signals** to transmit data between devices.



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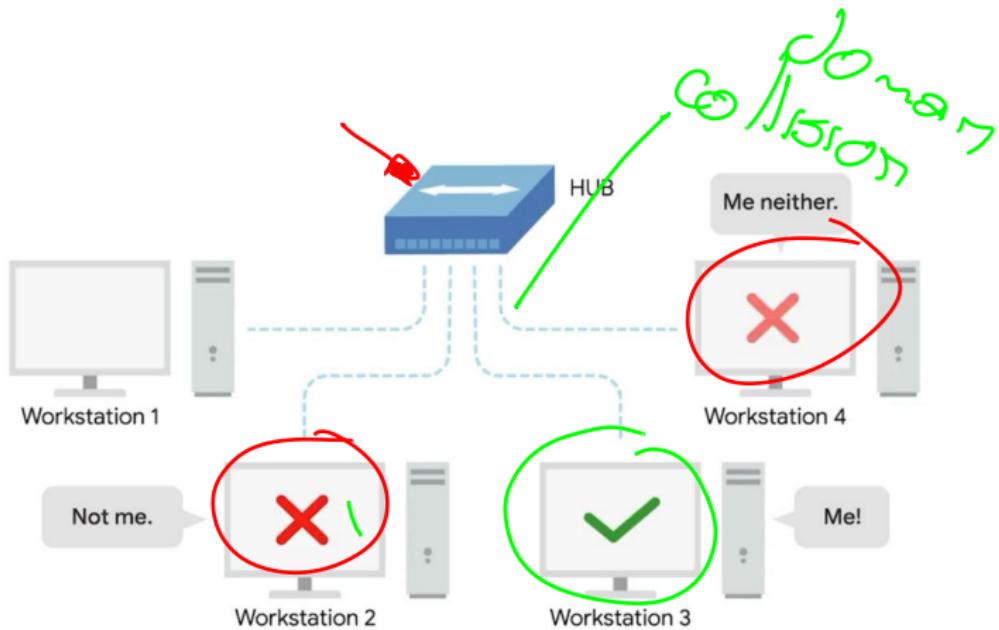


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Hubs



Repeaters

- **Repeaters** are used to extend the range of a network.
- They are used to **amplify** and **retransmit** data signals between devices.
- They are sometimes called **signal boosters**, and are used to overcome the **attenuation** of data signals over long distances.
- Also, they could be known as bridges, and are used to connect two networks together.



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Thanks!

Questions?



Repo:

 github.com/engandres/ud-public/main/tree/computer-networks



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