



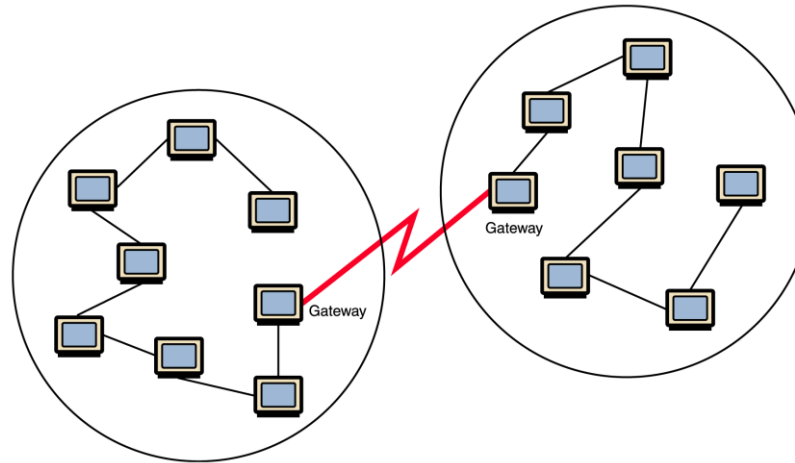
# IT Network Security



# Network Fundamentals & Types of Networks

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- What is a Computer Network
  - A collection of computing devices connected in order to communicate and share resources  
Connections between computing devices can be physical using wires or cables or wireless using radio waves or



# Network Fundamentals & Types of Networks

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- **Node (host)**

Any device on a network

- **Data transfer rate (bandwidth)**

The speed with which data is moved from one place to another on a network

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# Network Components

- **Network Interface Card (Layer 2 (Data Link Layer))**

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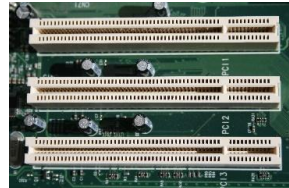
wireless network interface



Usb Wireless Network Interface Card



Internal Network Cards



Peripheral Component Interconnect



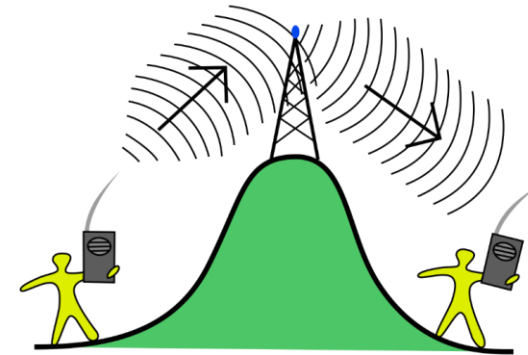
Industry Standard Architecture



External Network Cards

# Network Components

- **Repeater** (First layer (physical layer))



# Network Components

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- **Hub** (Layer 1 (Physical Layer))



# Network Components

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- **Switches** (Layer 2 and Layer 3)
  - Sends a “Frames” to destination port **using MAC** (Layer 2)
    - MAC- address table
  - Route Packet with help of **IP address** (Layer 3)
    - Virtual Local area network)



# Network Components

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- **Routers** (Layer 3 (Network Layer))
  - Network-to-network Communication

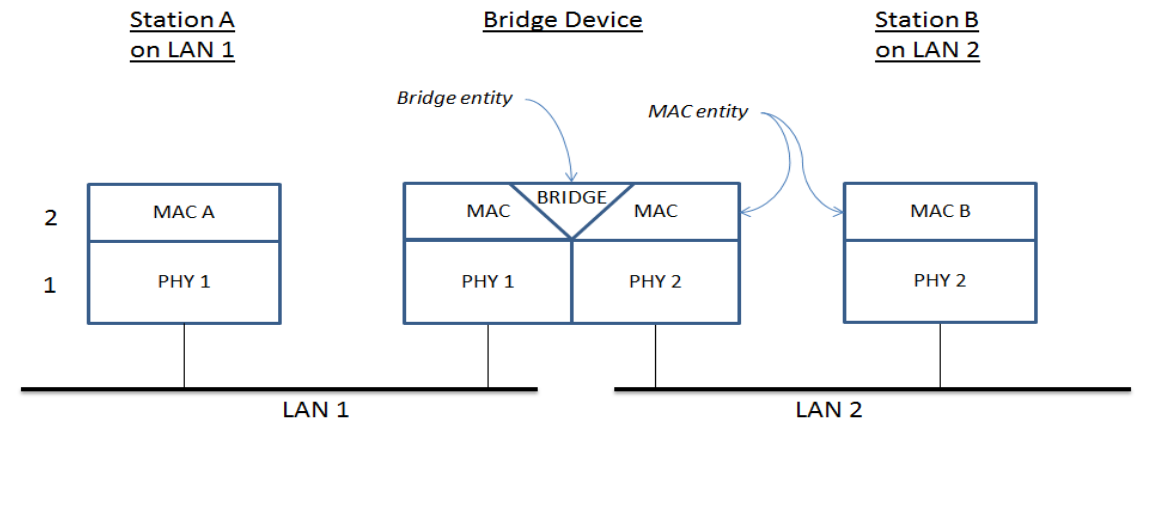




# Network Components

- **Bridges** (Layer 2 (Data Link Layer))

A bridge connecting two LAN segments



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# Network Components

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- Gateways (Layer 3(Network Layer))
    - Broadcasting IP datagrams and caching the MAC address
    - ARP table stored on the host
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# Standard Network Models

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- Open Systems Interconnection (OSI) Model
- Transmission Control Protocol/Internet Protocol (TCP/IP) Model
- Comparison between OSI & TCP/IP models

