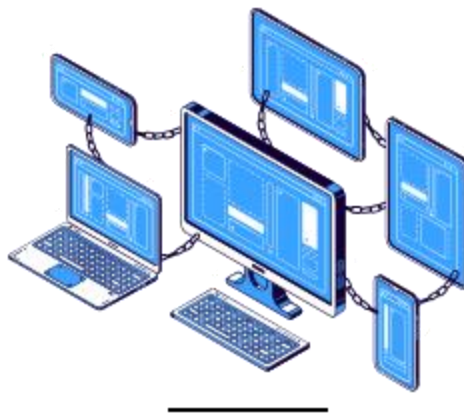


Bansilal Ramnath Agarwal Charitable Trust's

**Vishwakarma Institute of Technology, Pune-37**

# **Department Of Artificial Intelligence and Data Science**

## **COMPUTER NETWORK Activity 3**



Class: - SY BTECH

Branch: - AIDS

Batch 1- Group 4

23. Avishkar Ghodke

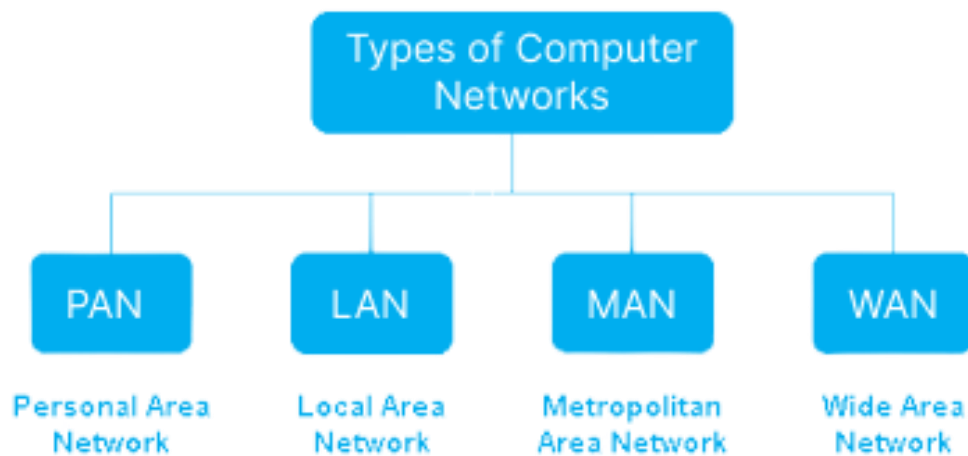
26. Jineshwari Bagul

40. Devang Deshpande

55. Anuj Gosavi

57. Hardik Rokde

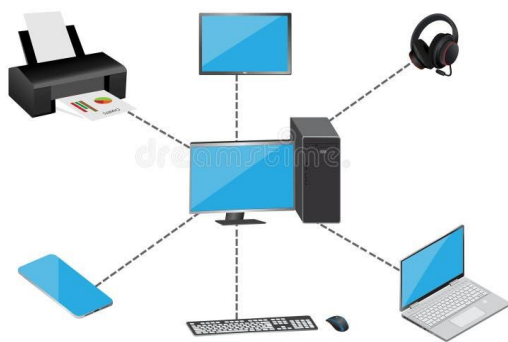
# COMPUTER NETWORK & ITS TYPES



## PAN : Personal Area Network

A Personal Area Network (PAN) is a small network designed for personal or individual use, connecting personal devices over a short range, typically using Bluetooth, Wi-Fi, or USB.

PAN: Personal Area Network



*Figure 1: Personal Area Network*

Example: A Smart Home Setup

A person uses a PAN to connect their smartphone, smartwatch, wireless earbuds, and laptop via Bluetooth and Wi-Fi.

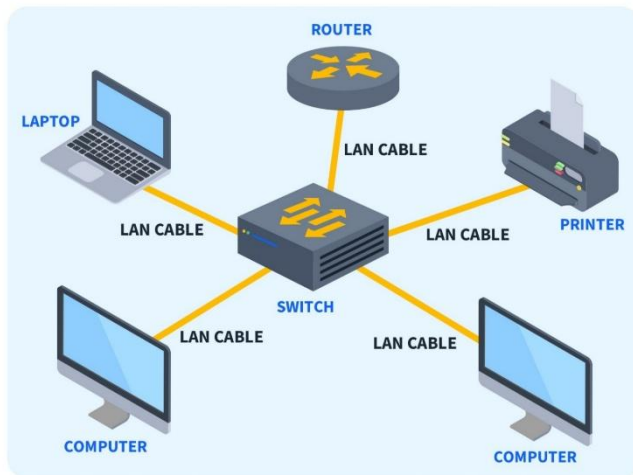
This allows:

- Wireless file transfer between devices.
- Syncing notifications from the phone to the smartwatch.
- Streaming music from the phone to wireless earbuds.

A PAN enables seamless communication between personal gadgets, enhancing convenience and productivity.

## LAN : Local Area Network

A **Local Area Network (LAN)** links computers and other i/o devices within a confined geographical area, such as an office, or school. It allows devices to share resources like files, printers, and internet connections.



*Figure 2 Local Area Network*

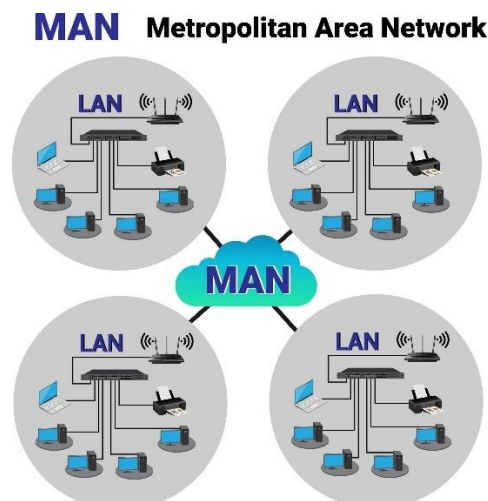
In an office, multiple employees work on desktop computers and laptops. They need to access shared resources like files, printers, and the internet. Here's how a LAN functions in this scenario:

- **Computers & Laptops:** Employees use computers and laptops, all connected via LAN cables to a central switch.
- **Switch:** The switch acts as a hub, connecting all devices in the network.
- **Router:** The router connects the LAN to the internet, allowing all devices to access online services.

- **Printer:** A shared printer is connected to the LAN, so employees can print documents from any computer without direct connections.
- **File Sharing:** Employees can easily share files and collaborate within the LAN.

## MAN : Metropolitan Area Network

A Metropolitan Area Network (MAN) spans a large campus or a city, connecting multiple LANs over a wider area. This network is larger than a LAN but smaller than a WAN, and often uses high-speed fiber optics for communication.



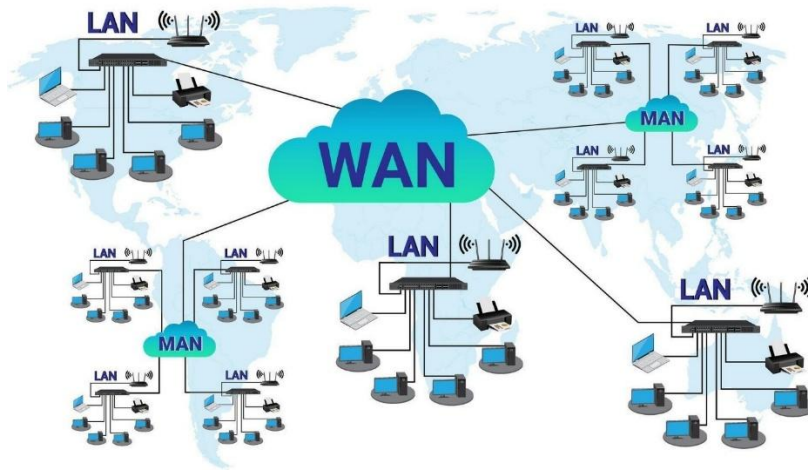
*Figure 3 : Metropolitan Area Network*

A real-life example of a Metropolitan Area Network (MAN) is a citywide university network similar to our Vishwakarma Group network.

In a large university with multiple campuses spread across a city, each campus has its own Local Area Network (LAN) connecting computers, printers, and servers. However, to enable seamless communication, resource sharing, and centralized management, all these campus LANs are interconnected through a MAN using high-speed fiber-optic connections.

## WAN : Wide Area Network

A Wide Area Network (WAN) connects multiple MANs and LANs across larger geographical areas, such as different cities or countries. It typically uses telecommunication networks, satellites, or the internet for connectivity.



Example : Global Corporate Network

A multinational company with offices in different countries uses a WAN to connect all its branches. Each office has its own LAN, but they communicate through a WAN using leased lines, VPNs, or cloud-based services.

*Figure 4: Wide Area Network*

# Network Devices

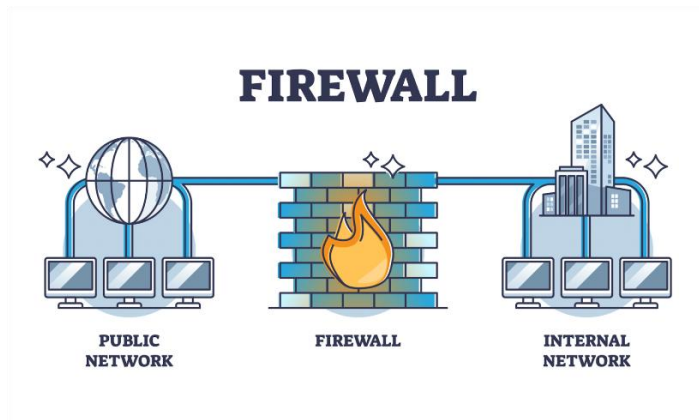


Figure 5: (Firewall)

**Firewall-** A firewall is a network security weapon which controls traffic between a trusted internal network and an untrusted external network. It safeguards the networks against unauthorized access, misuse, and potential cyber threats.



Figure 6: Switch

**Switch-**The Switch is a network device that segments a network into multiple subnets or LANs in order to manage the filtering and forwarding of packets between those LAN segments based on their MAC addresses.

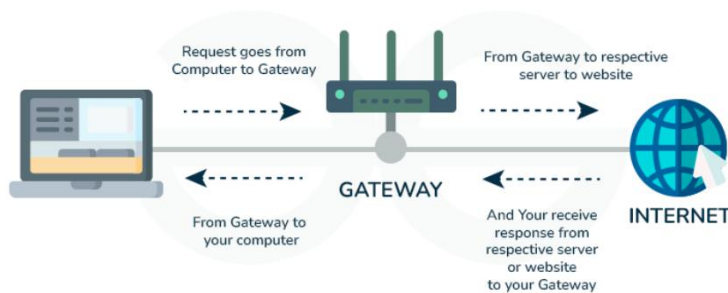


Figure 7: Gateway working

**Gateway-** A gateway connects two dissimilar networks, usually with respect to the protocols or data formats used for information transmission. Gateways provide interconnection between networks and the internet.

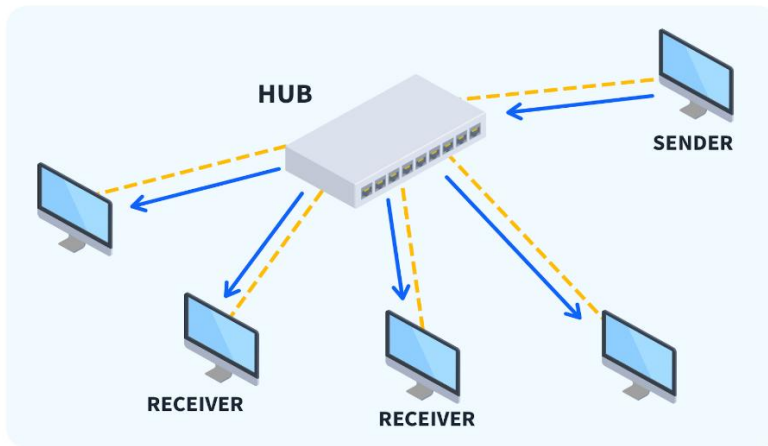


Figure 8 : Hub Connecting multiple devices

**Hub-** A hub is a networking device that serves as a central connecting point for devices within a Local Area Network (LAN). The hub receives transmission signals from a device on the LAN and broadcasts that signal to all systems connected to the LAN, regardless of the ultimate destination of that transmission.

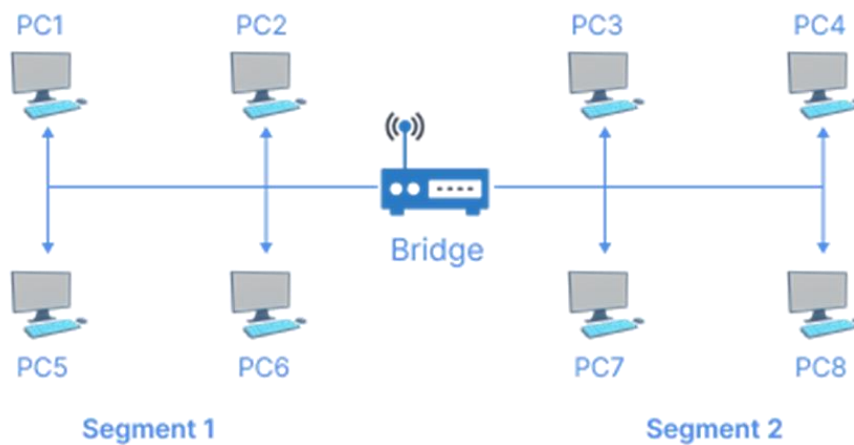


Figure 9: Bridge

**Bridge-** Connects two or more LANs and filters traffic to reduce collisions and improve efficiency. It provides an interconnection between several computer networks that use the same protocol. A bridge connects multiple LANs to form a larger and extended LAN.

# cn activity 3 new[1].docx

 Vishwakarma Group of Institutions

---

## Document Details

### Submission ID

trn:oid:::3618:80862546

### Submission Date

Feb 2, 2025, 11:32 PM GMT+5:30

### Download Date

Feb 2, 2025, 11:34 PM GMT+5:30

### File Name

cn activity 3 new[1].docx

### File Size

1.2 MB

6 Pages

278 Words

1,498 Characters





# 9% Overall Similarity

The combined total of all matches, including overlapping sources, for each database.




## Filtered from the Report

- Bibliography
- Cited Text
- Small Matches (less than 9 words)
- Abstract

## Match Groups

-  **5** Not Cited or Quoted 9%  
Matches with neither in-text citation nor quotation marks
-  **0** Missing Quotations 0%  
Matches that are still very similar to source material
-  **0** Missing Citation 0%  
Matches that have quotation marks, but no in-text citation
-  **0** Cited and Quoted 0%  
Matches with in-text citation present, but no quotation marks

## Top Sources

- 9%  Internet sources
- 2%  Publications
- 0%  Submitted works (Student Papers)

## Integrity Flags

### 0 Integrity Flags for Review





No suspicious text manipulations found.

Our system's algorithms look deeply at a document for any inconsistencies that would set it apart from a normal submission. If we notice something strange, we flag it for you to review.




A Flag is not necessarily an indicator of a problem. However, we'd recommend you focus your attention there for further review.



## Match Groups

- 
**5** Not Cited or Quoted 9%  
 Matches with neither in-text citation nor quotation marks
- 
**0** Missing Quotations 0%  
 Matches that are still very similar to source material
- 
**0** Missing Citation 0%  
 Matches that have quotation marks, but no in-text citation
- 
**0** Cited and Quoted 0%  
 Matches with in-text citation present, but no quotation marks

## Top Sources

- 9%  Internet sources
- 2%  Publications
- 0%  Submitted works (Student Papers)

## Top Sources

The sources with the highest number of matches within the submission. Overlapping sources will not be displayed.

1	Internet	
www.coursehero.com		5%
2	Internet	
www.calt.insead.edu		2%
3	Internet	
www.manualzz.com		1%

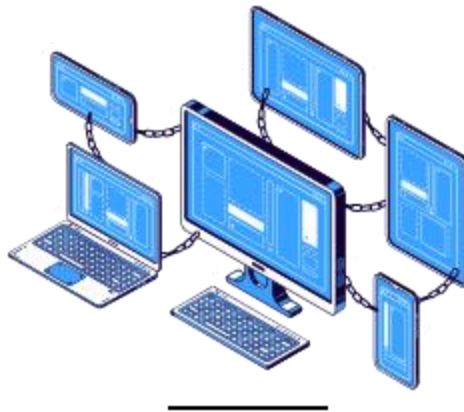
1

**Bansilal Ramnath Agarwal Charitable Trust's**

**Vishwakarma Institute of Technology, Pune-37**

# **Department Of Artificial Intelligence and Data Science**

## **COMPUTER NETWORK Activity 3**



Class: - SY BTECH

Branch: - AIDS

Batch 1- Group 4

23. Avishkar Ghodke

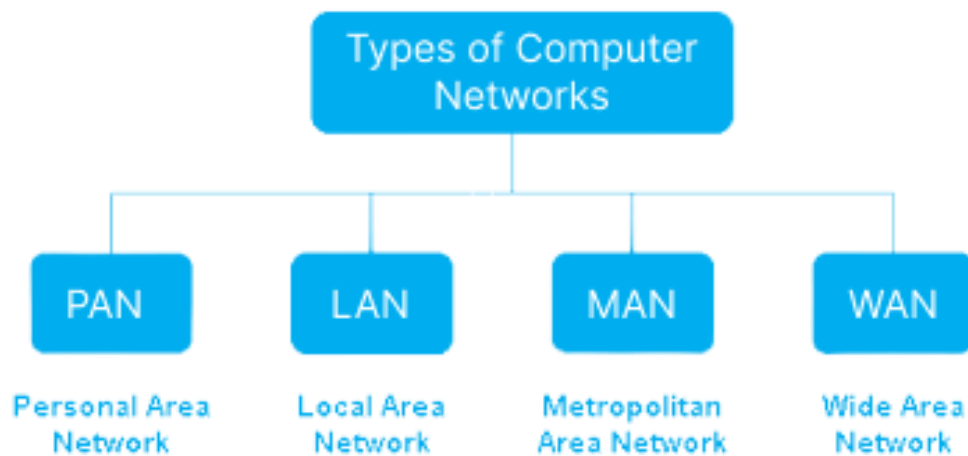
26. Jineshwari Bagul

40. Devang Deshpande

55. Anuj Gosavi

57. Hardik Rokde

# COMPUTER NETWORK & ITS TYPES



## PAN : Personal Area Network

A Personal Area Network (PAN) is a small network designed for personal or individual use, connecting personal devices over a short range, typically using Bluetooth, Wi-Fi, or USB.

PAN: Personal Area Network

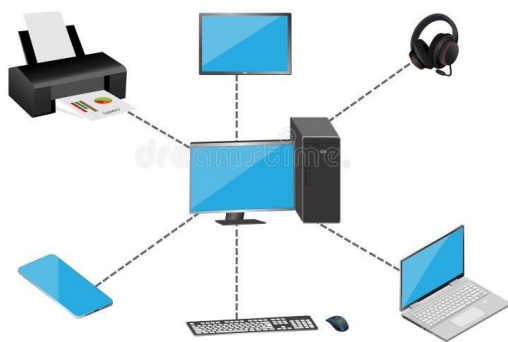


Figure 1: Personal Area Network

Example: A Smart Home Setup

A person uses a PAN to connect their smartphone, smartwatch, wireless earbuds, and laptop via Bluetooth and Wi-Fi.

This allows:

- Wireless file transfer between devices.
- Syncing notifications from the phone to the smartwatch.
- Streaming music from the phone to wireless earbuds.

A PAN enables seamless communication between personal gadgets, enhancing convenience and productivity.

## 2 LAN : Local Area Network

A **Local Area Network (LAN)** links computers and other i/o devices within a confined geographical area, such as an office, or school. It allows devices to share resources like files, printers, and internet connections.

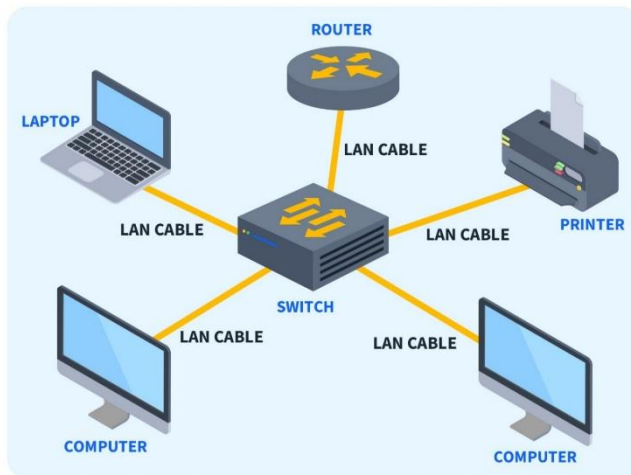


Figure 2 Local Area Network

In an office, multiple employees work on desktop computers and laptops. They need to access shared resources like files, printers, and the internet. Here's how a LAN functions in this scenario:

- **Computers & Laptops:** Employees use computers and laptops, all connected via LAN cables to a central switch.
- **Switch:** The switch acts as a hub, connecting all devices in the network.
- **Router:** The router connects the LAN to the internet, allowing all devices to access online services.

- **Printer:** A shared printer is connected to the LAN, so employees can print documents from any computer without direct connections.
- **File Sharing:** Employees can easily share files and collaborate within the LAN.

## 1 MAN : Metropolitan Area Network

A **Metropolitan Area Network (MAN)** spans a large campus or a city, connecting multiple LANs over a wider area. This network is larger than a LAN but smaller than a WAN, and often uses high-speed fiber optics for communication.

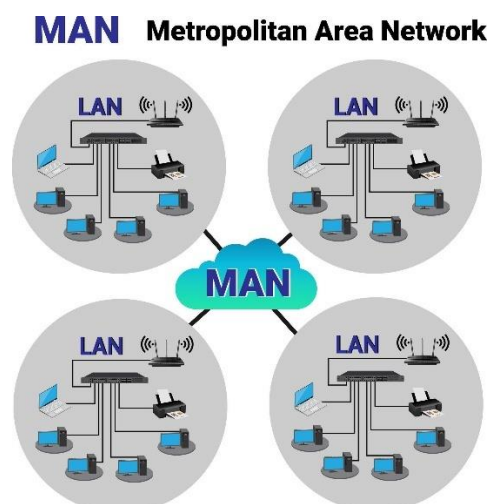


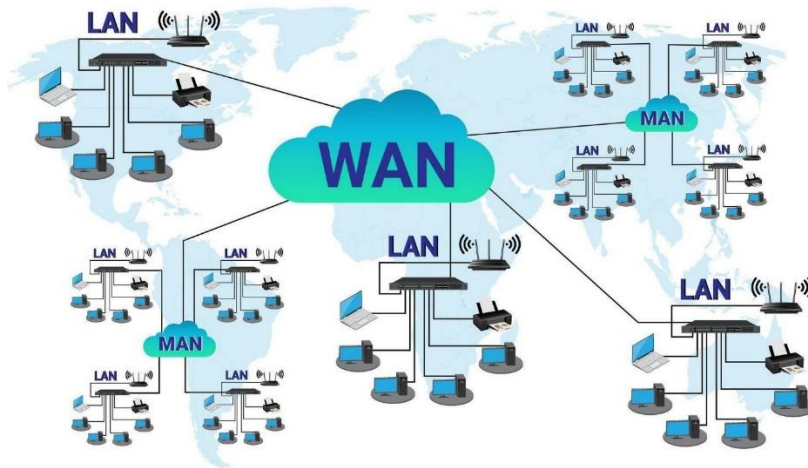
Figure 3 : Metropolitan Area Network

A real-life example of a Metropolitan Area Network (MAN) is a citywide university network similar to our Vishwakarma Group network.

In a large university with multiple campuses spread across a city, each campus has its own Local Area Network (LAN) connecting computers, printers, and servers. However, to enable seamless communication, resource sharing, and centralized management, all these campus LANs are interconnected through a MAN using high-speed fiber-optic connections.

## 3 WAN : Wide Area Network

A Wide Area Network (WAN) connects multiple MANs and LANs across larger geographical areas, such as different cities or countries. It typically uses telecommunication networks, satellites, or the internet for connectivity.



Example : Global Corporate Network

A multinational company with offices in different countries uses a WAN to connect all its branches. Each office has its own LAN, but they communicate through a WAN using leased lines, VPNs, or cloud-based services.

Figure 4: Wide Area Network

# Network Devices

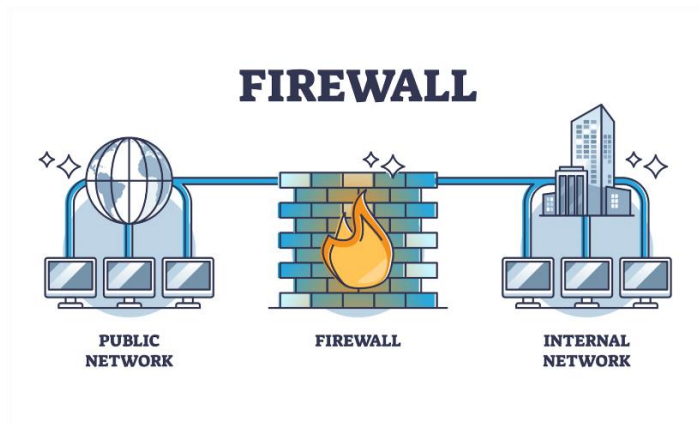


Figure 5: (Firewall)

**Firewall-** A firewall is a network security weapon which controls traffic between a trusted internal network and an untrusted external network. It safeguards the networks against unauthorized access, misuse, and potential cyber threats.



Figure 6: Switch

**Switch-**The Switch is a network device that segments a network into multiple subnets or LANs in order to manage the filtering and forwarding of packets between those LAN segments based on their MAC addresses.

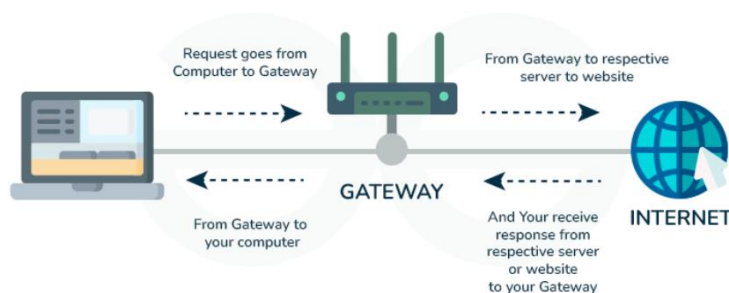


Figure 7: Gateway working

**Gateway-** A gateway connects two dissimilar networks, usually with respect to the protocols or data formats used for information transmission. Gateways provide interconnection between networks and the internet.

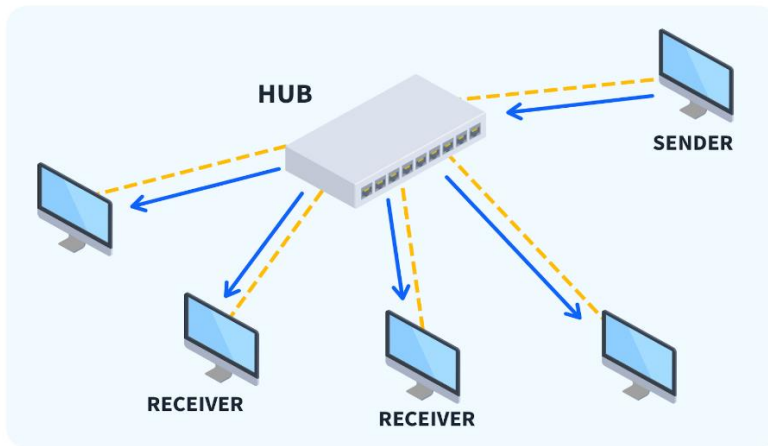


Figure 8 : Hub Connecting multiple devices

**Hub-** A hub is a networking device that serves as a central connecting point for devices within a Local Area Network (LAN). The hub receives transmission signals from a device on the LAN and broadcasts that signal to all systems connected to the LAN, regardless of the ultimate destination of that transmission.

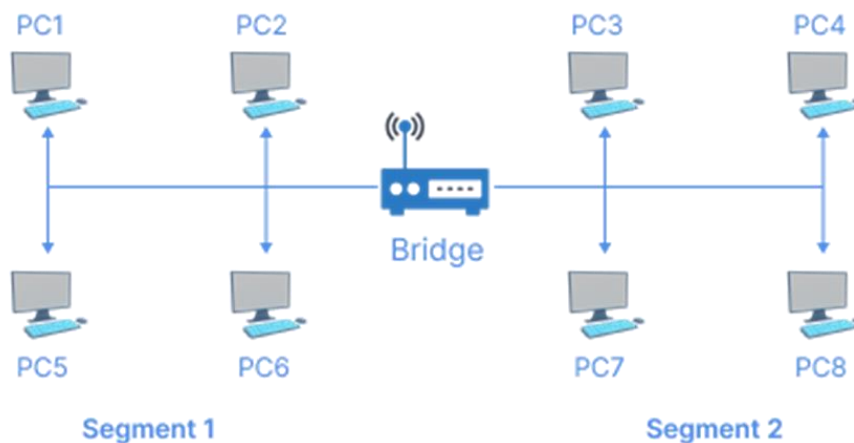


Figure 9: Bridge

**Bridge-** Connects two or more LANs and filters traffic to reduce collisions and improve efficiency. It provides an interconnection between several computer networks that use the same protocol. A bridge connects multiple LANs to form a larger and extended LAN.