

Local Area Network (LAN)

Aim:

To design, implement, and manage a Local Area Network (LAN) that efficiently supports the communication needs of an organization within a limited geographical area such as a building or campus.

Objectives:

1. **Facilitate Resource Sharing:** Allow users to share resources such as files, printers, and applications.
2. **Enhance Communication:** Enable effective communication through emails, instant messaging, and video conferencing.
3. **Improve Data Management:** Centralize data storage and backup to enhance data security and management.
4. **Increase Efficiency:** Optimize network performance and ensure quick data access and transfer within the organization.
5. **Scalability:** Ensure the network can be expanded easily to accommodate future growth.

Theory:

A Local Area Network (LAN) is a network that connects computers and other devices within a limited area such as a residence, school, laboratory, or office building. A LAN is typically characterized by high data transfer rates, small geographic range, and lack of need for leased telecommunication lines.

Key Components of LAN:

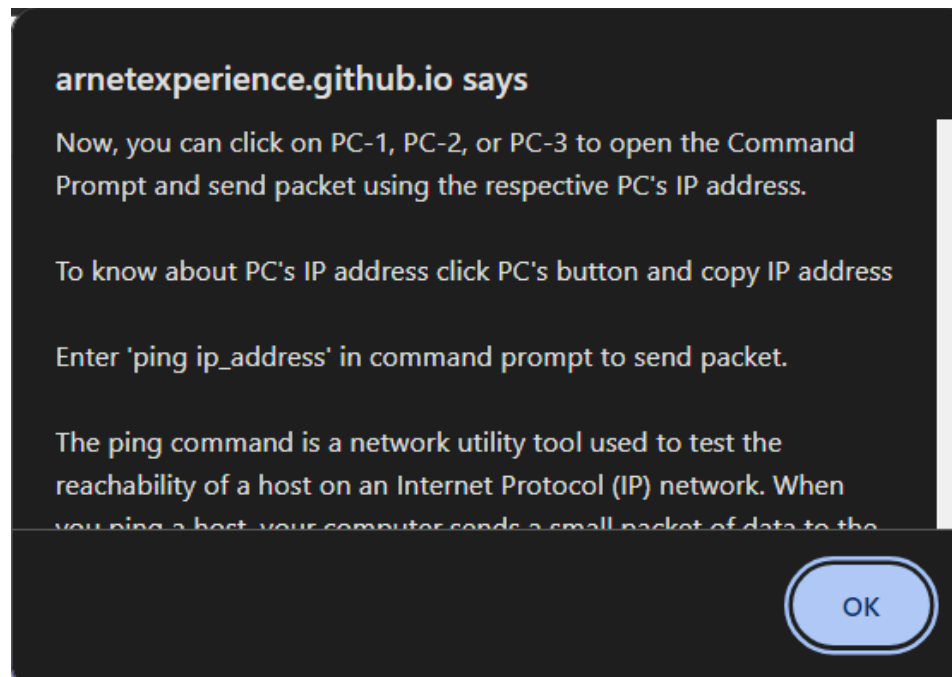
1. **Network Interface Cards (NICs):** Hardware that allows computers to connect to the network.
2. **Switches:** Devices that filter and forward network packets.
3. **Routers:** Devices that route data between different networks.
4. **Cabling and Connectors:** Physical media like Ethernet cables (Cat5, Cat6) that connect devices.

5. Wireless Access Points (WAPs): Devices that allow wireless devices to connect to the network.
6. Servers: Centralized computers that provide resources and services to networked devices.

Conclusion:

A well-designed and implemented Local Area Network (LAN) significantly enhances the operational efficiency of an organization by facilitating seamless communication, resource sharing, and data management.

1) To know how to start implementation read the message carefully.



2) Now click on any of given PC and copy IP address



- 3) Click on another PC open command prompt and enter ping ip_address

PC-2 Command Prompt

```
PC 2 Command Line 1.0
>ping 192.168.11.1

Pinging 192.168.11.1 with 32 bytes of data:

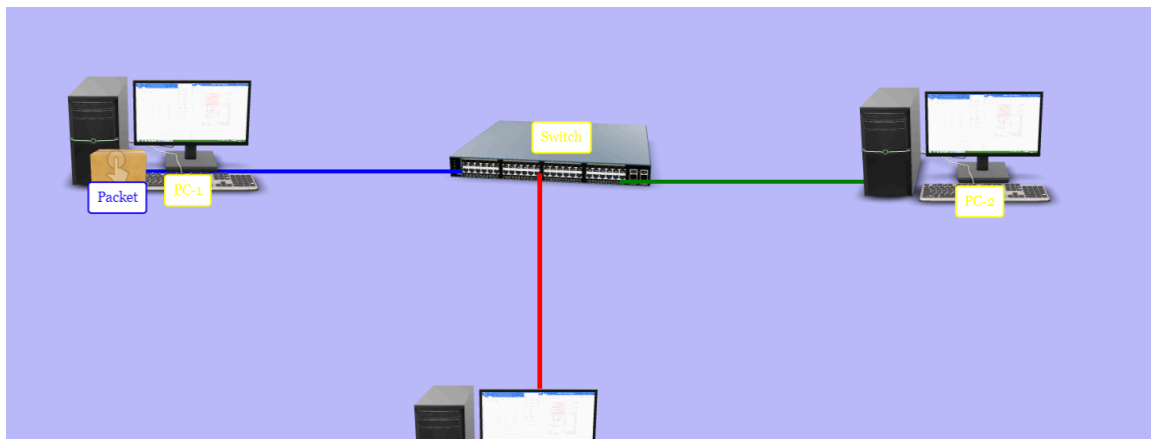
Reply from 192.168.11.1: bytes=32 time=1ms TTL=127
Reply from 192.168.11.1: bytes=32 time<1ms TTL=127
Reply from 192.168.11.1: bytes=32 time=1ms TTL=127
Reply from 192.168.11.1: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.11.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

Type your command here...

Enter

- 4) Close command prompt and observe packets transferring from Pc 2 to PC 1



5) Now you will see a pop-up message.

