



# **SNS College of Engineering Coimbatore - 641107**



## **UNIT 1**

### **INTRODUCTION AND PHYSICAL LAYER**

Computer Networks and Internet – Network Types –  
Performance – OSI Model – Transmission Media

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# NETWORK



- A network is a collection of two or multiple connected computer systems that may share resources, such as an internet connection, an app, a printer, etc.



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# TYPES



- There are four types:
  - PAN (Personal Area Network)
  - LAN (Local Area Network)
  - MAN (Metropolitan Area Network)
  - WAN (Wide Area Network)



# PAN (Personal Area Network)



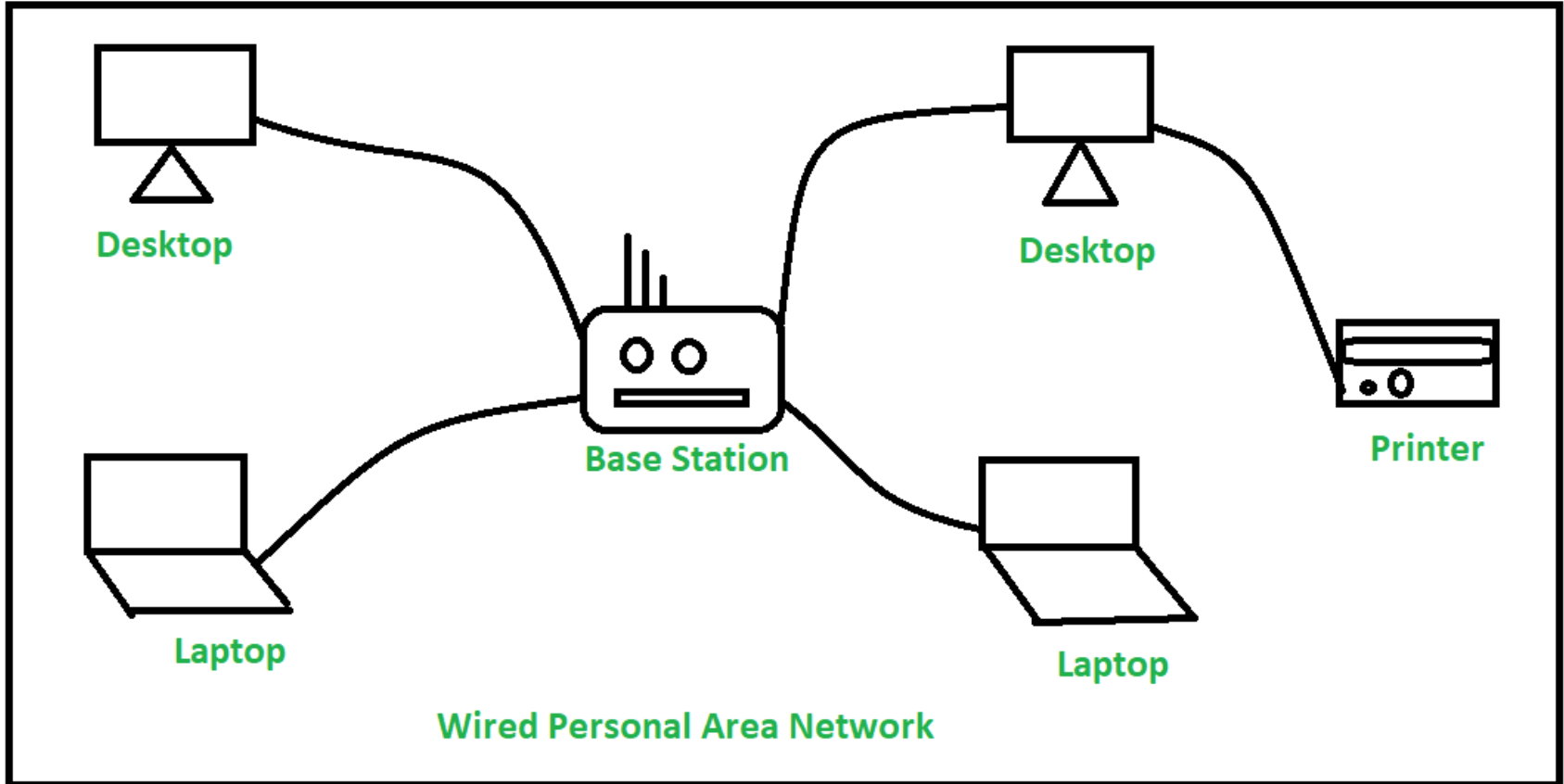
- It is an interconnection between devices like smartphones, tablets, computers, and other digital devices.
- PAN has a range of 10 meters.

Types:

- Wired PAN
- Wireless PAN



# Wired PAN



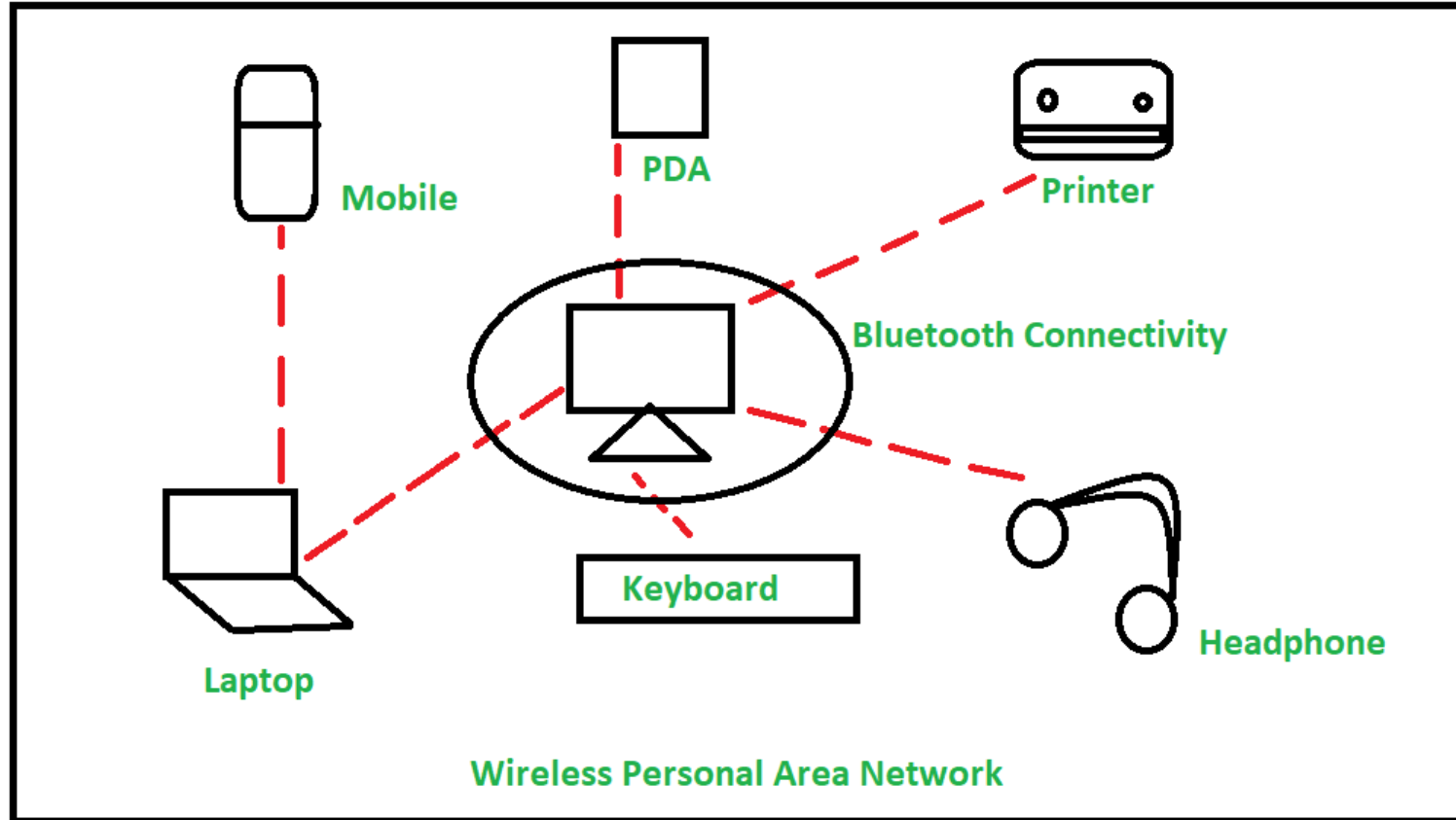
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# Wireless PAN





# Advantages



- No extra space requires
- Connect to many devices at a time
- Cost effective
- Easy to use
- Reliable
- Secure
- Portable

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# Disadvantage



- Less distance range
- Slow data transfer
- Interfere with radio signal
- Infrared signal travel in a straight line
- Costly in terms of communication devices
- Health problem





# LAN (Local Area Network)



- It is a computer network that interconnects computers within a limited area such as a residence, school, laboratory, university campus, or office building.
- It ranges from about 500 meters to 1 kilometer

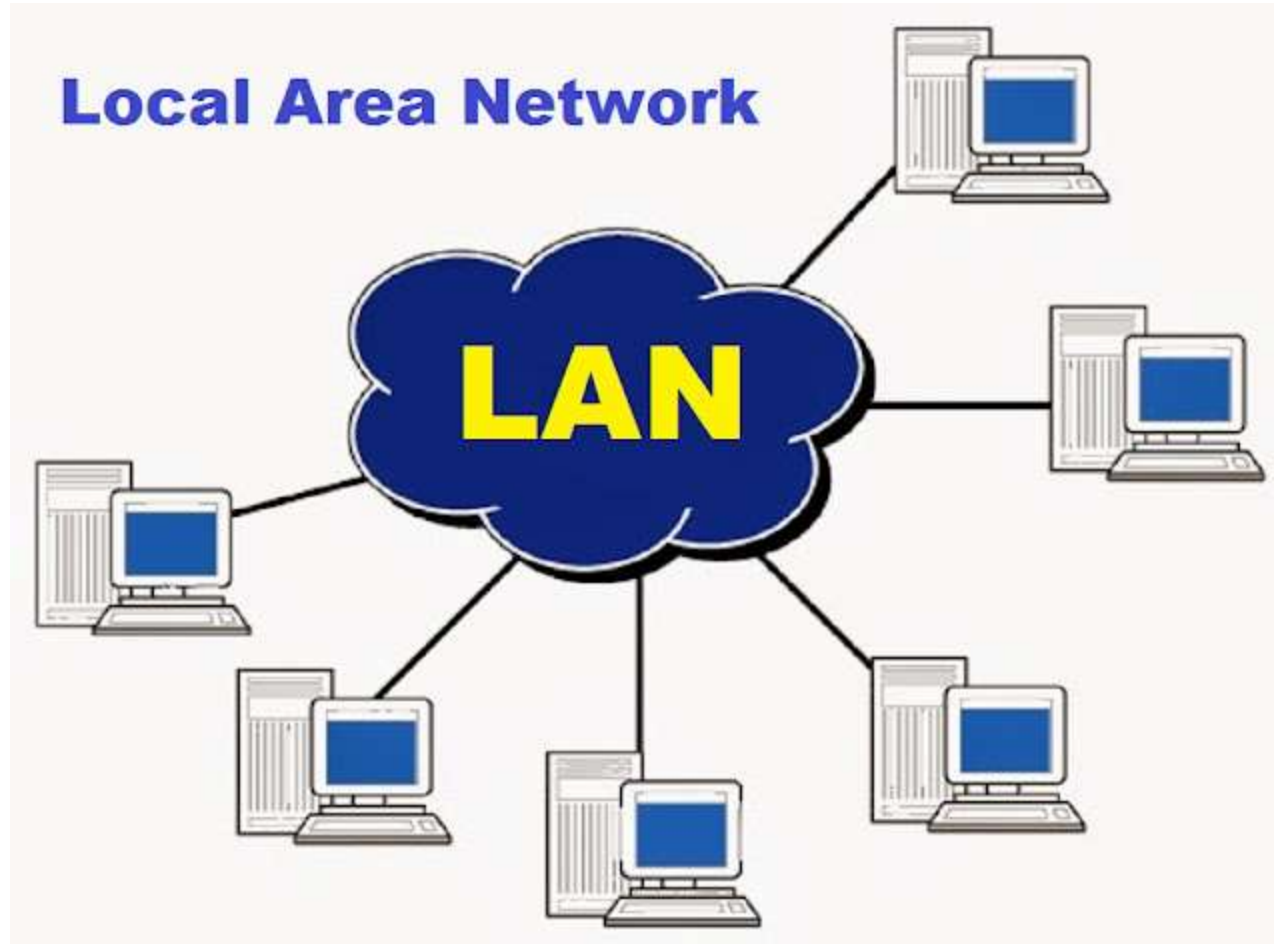
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# LAN





# Types



- LAN with cable
  - It is connected with a network cable, such as with one computer, another computer is also connected to the same cable and with the same printer, scanner, mouse, keyboard etc.
- Wired LAN
  - It connects two or more computers using communication.



# MAN

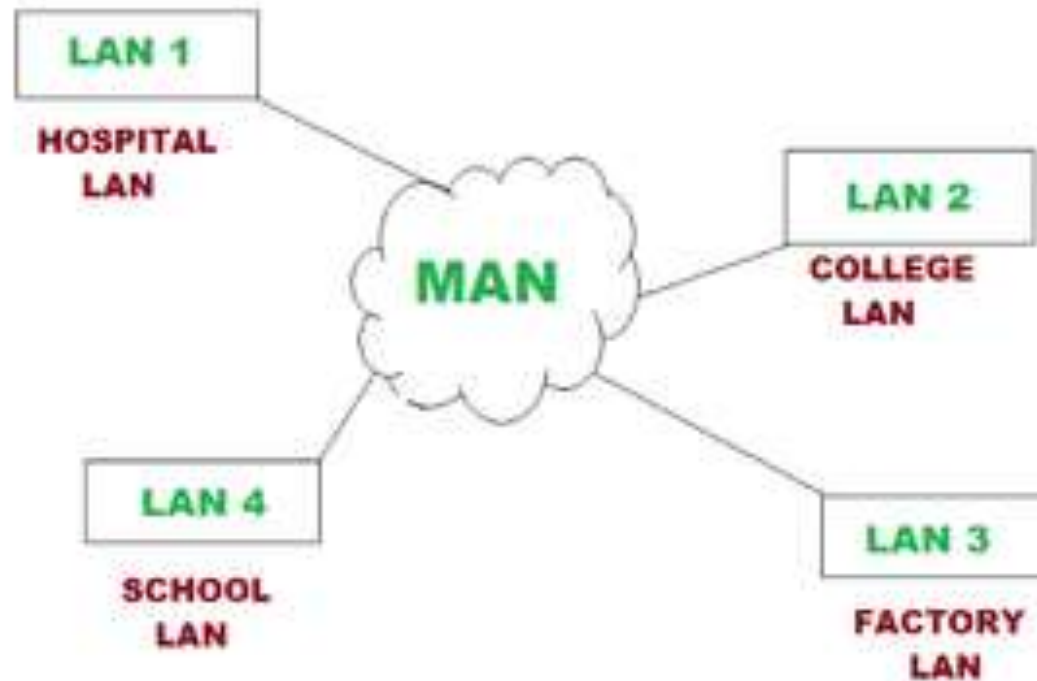
(Metropolitan Area Network)



- It is a computer network that is larger than a single building local area network (LAN)
- It is located in a single geographic area that is smaller than a wide area network (WAN).



# MAN



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# Advantages



- Provides high-speed connectivity than LAN
- Can be used by multiple customers.
- Offers higher data transfer rates than WAN in some cases.



# Disadvantages



- Expensive to set up and maintain.
- congestion and network performance issues
- Limited fault tolerance and security



# WAN (Wide Area Network)



- WAN or Wide Area Network is a computer network that extends over a large geographical area
- within the bounds of a state or country. WAN has a range of above 50 km.

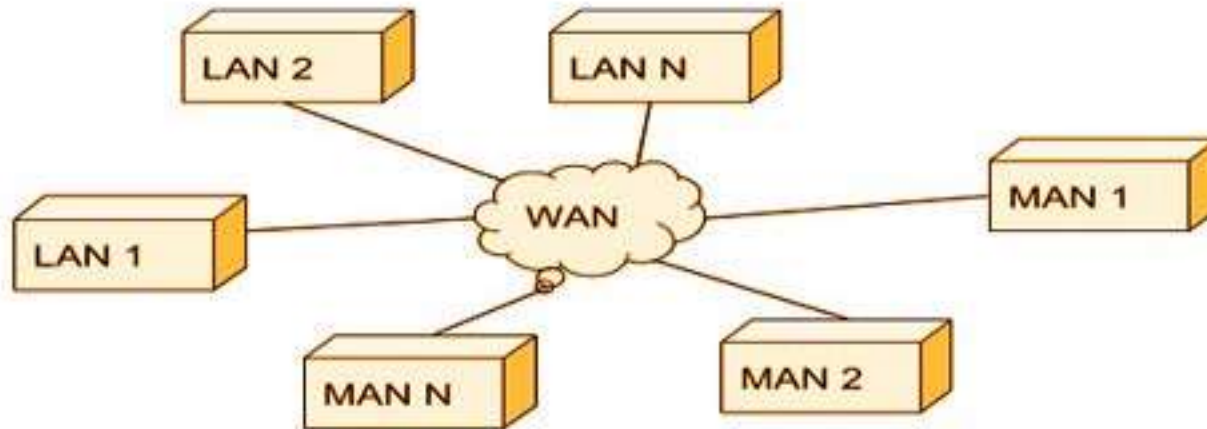




# WAN



## Wide Area Network (WAN)



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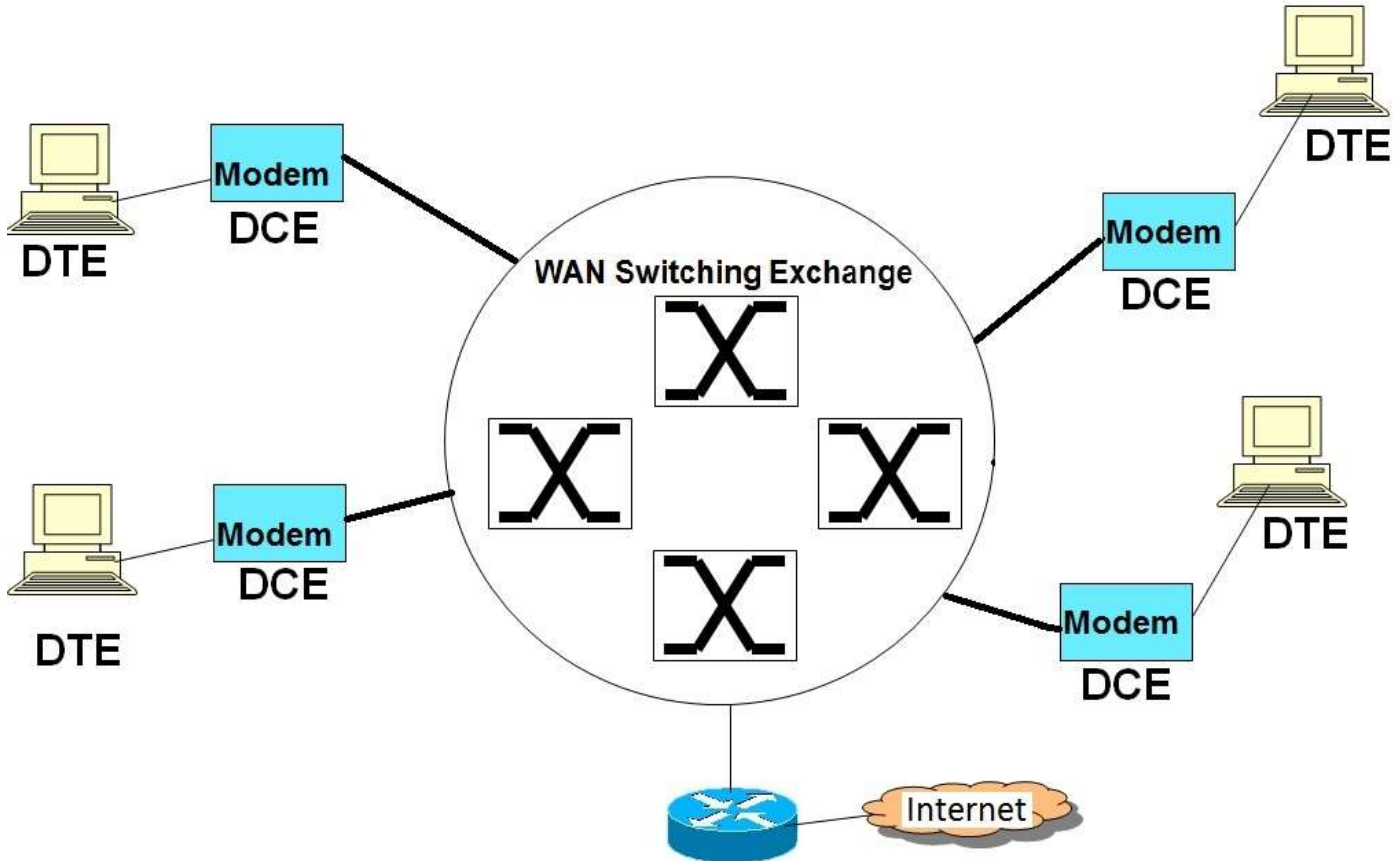
# Types



- Switched WAN
- Point-to-Point WAN.



# Switched WAN



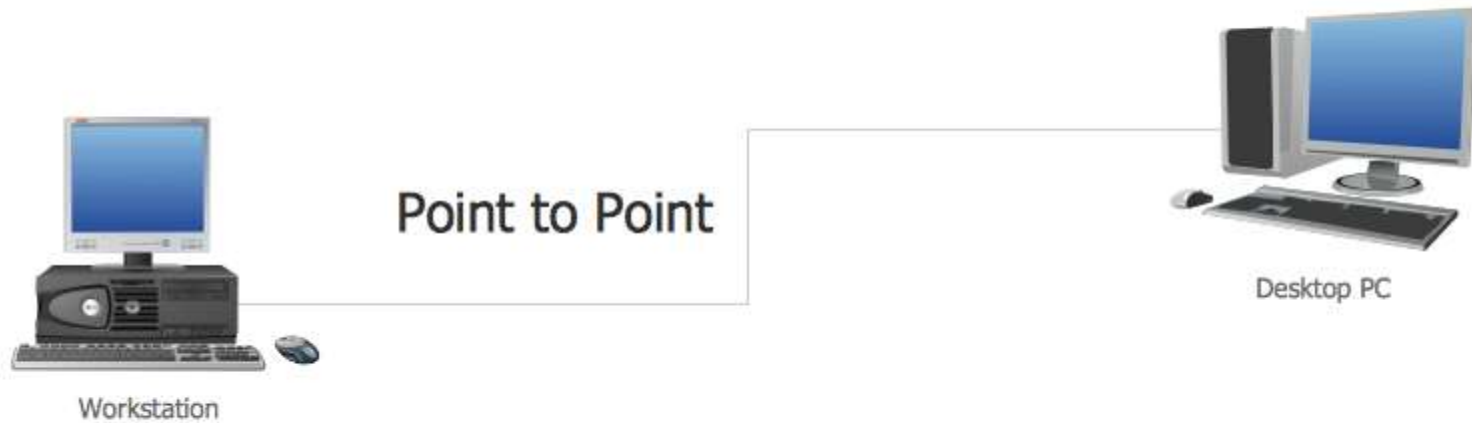
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# Point-to-Point WAN



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# Advantages



- Covers large geographical areas
- Connect remote locations.
- Offers remote access to resources and applications.
- Can support multiple users and applications simultaneously.



# Disadvantages



- Expensive
- Slower data transfer rates than LAN or MAN.
- Lower fault tolerance and security compared to LANs.



# Disadvantages



- Network performance and overall bandwidth limited
- If the central hub fails, all the nodes will be affected