SNS COLLEGE OF TECHNOLOGY

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COURSE CODE & NAME : 23CSB302 & COMPUTER NETWORKS

Topic: Types of Connections , Topologies

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Types of Connections , Topologies

Peer-to-Peer printing using TCP/IP

1.Router

2.Network printer

Network Shared printing

1.Network Shared

2.Also known as “Server” or “Print server”

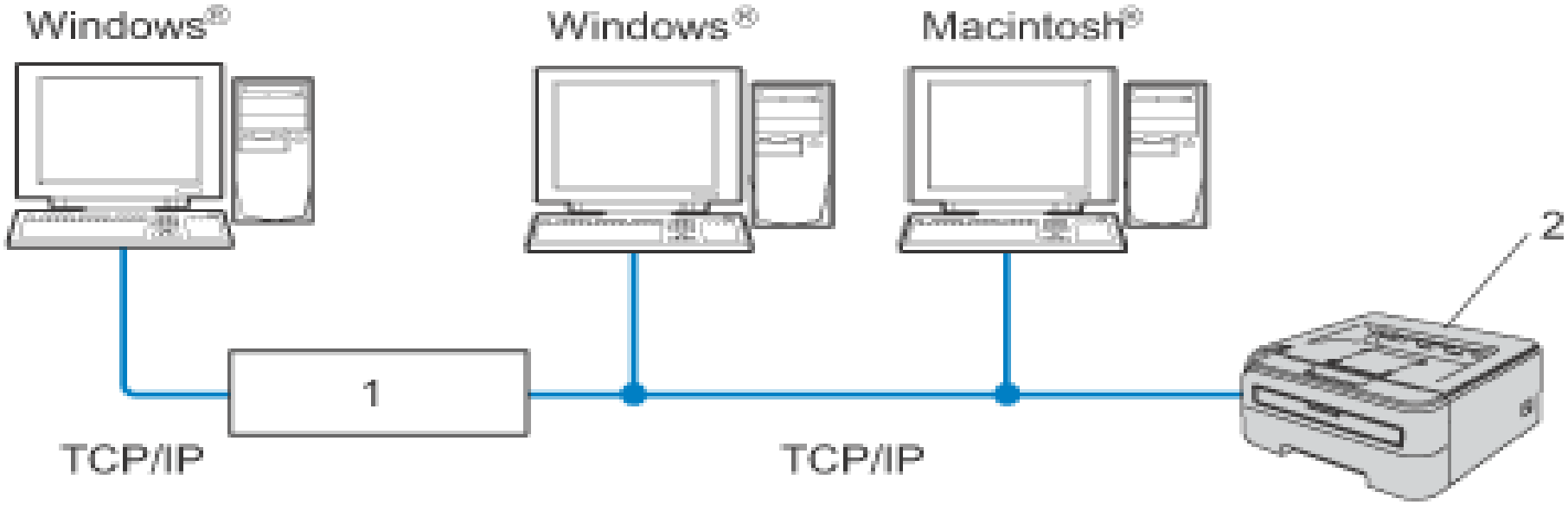
3.Printer

4.TCP/IP or USB

Topologies:

Peer-to-Peer printing using TCP/IP

- In a Peer-to-Peer environment, each computer directly sends and receives data to each device.
- There is no central server controlling file access or printer sharing.

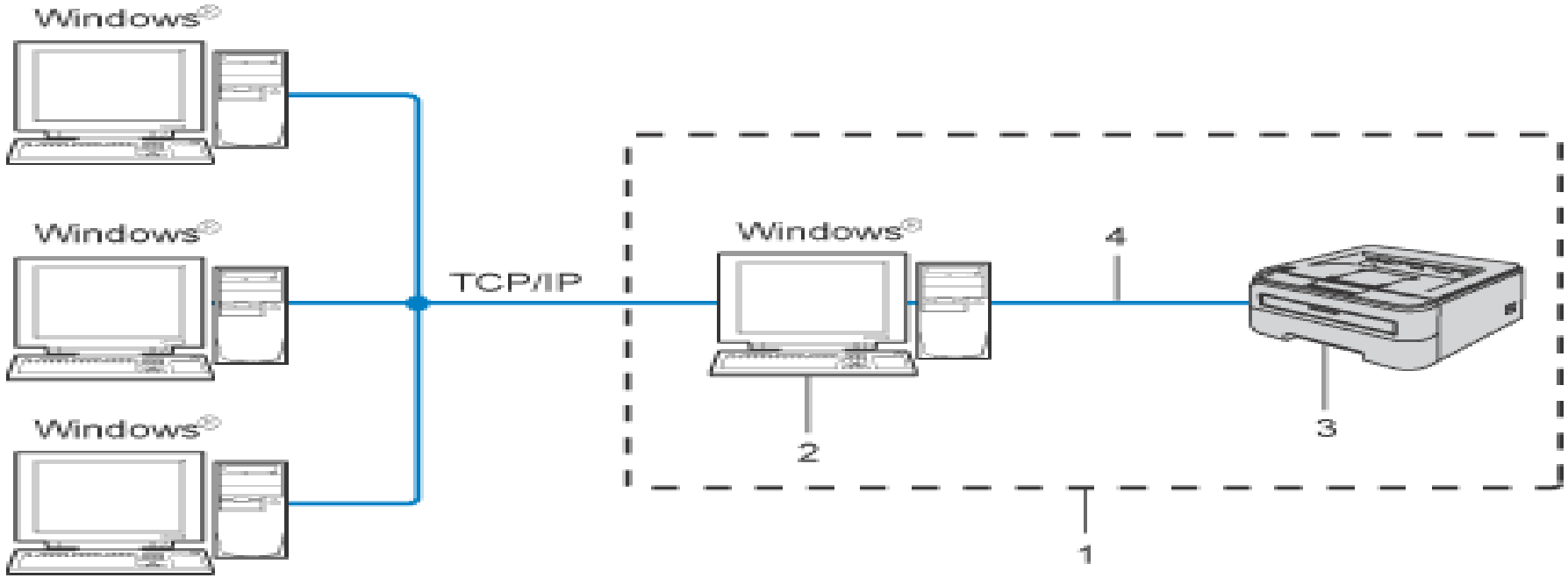


Peer-to-Peer printing using TCP/IP

- In a smaller network of 2 or 3 computers, we recommend the Peer-to-Peer printing method as it is easier to configure than the Network Shared printing method described on the following page.
- Each computer must use the TCP/IP Protocol.
- The Brother printer needs to have an appropriate IP address configuration.
- If you are using routers, the Gateway address must be configured on the computers and the Brother printer.
- The Brother printer can also communicate with Macintosh®. (TCP/IP compatible operating systems)

Network Shared printing

- In a Network Shared environment, each computer sends data via a centrally controlled computer.
- Its job is to control the printing of all print jobs.



Network Shared printing

1 **.Network Shared**

2.Also known as “Server” or “Print server”

3.Printer

4.TCP/IP or USB

- In a larger network, we recommend a Network Shared printing environment.
- The “server” or the “print server” must use the TCP/IP print protocol.
- The Brother printer needs to have an appropriate IP address configuration unless the printer is connected via the USB interface at the server.

Topology https://www.javatpoint.com/computer-network-topologies

- Bus Topology
- Ring Topology
- Tree Topology
- Star Topology
- Mesh Topology
- Hybrid Topology.

Bus Topology

- The bus topology is designed in such a way that all the stations are connected through a single cable known as a backbone cable.
- The most common access method of the bus topologies is **CSMA** (Carrier Sense Multiple Access).
- **CSMA:** It is a media access control used to control the data flow so that data integrity is maintained, i.e., the packets do not get lost.
- There are two alternative ways of handling the problems:
- **CSMA CD:** CSMA CD (**Collision detection**) is an access method used to detect the collision.
- Therefore, it works on "**recovery after the collision**".
- **CSMA CA: CSMA CA (Collision Avoidance)** is an access method used to avoid the collision by checking whether the transmission media is busy or not.
- It does not work on "recovery after the collision".

Bus Topology

Advantages of Bus topology

- **Low-cost cable**
- **Moderate data speeds**
- **Familiar technology**
- **Limited failure**

Disadvantages of Bus topology

- **Extensive cabling**
- **Difficult troubleshooting**
- **Signal interference**
- **Reconfiguration difficult**
- **Attenuation**

Ring Topology

- connected with ends , it is unidirectional ,endless loop ,clockwise direction.
- The most common access method of the ring topology is **token passing**.
  - **Token passing:** It is a network access method in which token is passed from one node to another node.
  - **Token:** It is a frame that circulates around the network.

Working of Token passing :

- A token moves around the network, and it is passed from computer to computer until it reaches the destination.
- The sender modifies the token by putting the address along with the data.
- The data is passed from one device to another device until the destination address matches.
- Once the token received by the destination device, then it sends the acknowledgment to the sender.
- In a ring topology, a token is used as a carrier.

Ring Topology

Advantages of Ring topology:

- **Network Management**
- **Product availability**
- **Cost**
- **Reliable**

Disadvantages of Ring topology:

- **Difficult troubleshooting:**
- **Failure**
- **Reconfiguration difficult**
- **Delay**

Star Topology

- Star topology is an arrangement of the network in which every node is connected to the central hub, switch or a central computer.
- The central computer is known as a **server**, and the peripheral devices attached to the server are known as **clients**.
- Coaxial cable or RJ-45 cables are used to connect the computers.
- Hubs or Switches are mainly used as connection devices in a **physical star topology**.
- Star topology is the most popular topology in network implementation.

Star Topology

Advantages of Star topology

- **Efficient troubleshooting**
- **Network control**
- **Familiar technology.**
- **Easily expandable**
- **Cost effective**
- **High data speeds**

Disadvantages of Star topology

- **A Central point of failure**
- **Cable**

Star Topology

•Tree topology combines the characteristics of bus topology and star topology.

Advantages of Tree topology

Support for broadband transmission

Easily expandable

Easily manageable

Error detection

Limited failure

Point-to-point wiring

Disadvantages of Tree topology

Difficult troubleshooting

High cost

Failure

Reconfiguration difficult

Mesh topology

Mesh topology can be formed by using the formula:

Number of cables = (n*(n-1))/2;

Mesh topology is divided into two categories:

Full Mesh Topology: In a full mesh topology, each computer is connected to all the computers available in the network.

Partial Mesh Topology: In a partial mesh topology, not all but certain computers are connected to those computers with which they communicate frequently.

Advantages of Mesh topology:

Reliable

Fast Communication

Easier Reconfiguration

Disadvantages of Mesh topology

Cost

Management

Efficiency

Hybrid Topology

•the combination of various different topologies is known as **Hybrid topology**.

•A Hybrid topology is a connection between different links and nodes to transfer the data.

Advantages of Hybrid Topology:

- **Reliable**
- **Scalable**
- **Flexible**
- **Effective**

Disadvantages of Hybrid topology:

- **Complex design**
- **Costly Hub**
- **Costly infrastructure**


THANK YOU