****Case Study: Star Topology****

****Title:**** Star Topology

****Objectives:****

1. To Design Star Topology
2. To understand how star topology works.
3. To know its advantages and drawbacks.

****Procedure:****

Follow the process for designing star topology:

step 1: Keep the Networking Devices i.e. Switch/Hub in a center.

Step 2: Connect the computer system and central device using the wire.

Step 3: Assign the unique IP address to each devices.

Step 4: Test the communication

****Contents:****

1. ****Understanding Star Topology:****   
   In a star topology, each device in the network is connected to a central hub or switch, forming a star-like structure. The central hub plays a crucial role in managing communication between devices. Unlike other topologies, the failure of one device does not affect the entire network, making it a robust and scalable option.

****2. Advantages of Star Topology:****

* ****Centralized Management:**** The central device allows for centralized management, making it easier to monitor and control the network.
* ****Easy to Install and Expand:**** Adding or removing devices is simple, making star topology a flexible and scalable choice for growing networks.
* ****Isolation of Faults:**** If a device fails or a cable is disconnected, it does not impact the rest of the network, enhancing reliability.
* ****High Performance:**** Each device has a dedicated link to the central device, leading to efficient and high-performance communication.

****3. Drawbacks of Star Topology:****

* ****Dependency on Central Hub:**** The entire network relies on the central hub; if it fails, the entire network may become inaccessible.
* ****Cost of Implementation:**** The initial setup cost, including the central hub and cabling, can be higher compared to other topologies.
* ****Limited Scalability:**** While star topology is easily scalable, the central hub may become a bottleneck as the network grows larger.

****Conclusion:****   
In conclusion, star topology offers a robust and easily manageable network structure. Its advantages, such as centralized management and isolation of faults, make it an attractive choice for small to medium-sized networks. However, the dependency on the central hub and potential scalability limitations need to be considered when planning a network infrastructure.