### **Networked Computers Analysis**

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**II. Networked Computer Analysis**

1. **Local Area Network (LAN)**

Local Area Networks or LANs are frequently used among retail stores worldwide. A LAN network connects a limited number of devices together, typically in one single physical area. Such a network allows connected devices to utilize a single internet connection, share files among network users, and utilize shared resources.

In order to implement a LAN network, several components are required. Based on existing LAN networks, the hardware components required include; Unshielded twisted pair, RJ-45 connector, a LAN card or a Network interface card installed on all of the devices connecting to the network, switches, and servers to handle requests from clients. While the software requirements include; Server operating system for a centralized network control, File and Printer sharing enabled on connecting devices, TCP/IP for the transport and network layer, as well as Address Resolution Protocol to handle IP addresses and MAC addresses (Devgun, 2020).

1. **TCP/IP**

Transmission Control Protocol/Internet Protocol or TCP/IP is a set of standardized rules that

allow computers to communicate on a network such as the internet. TCP/IP was developed to specify how computers transfer data from one device to another. It puts a lot of emphasis on accuracy.

TCP/IP is a data link protocol that is used on the internet . Its model is split into four layers which are data link layer, internet layer, transport layer, and application layer. Each layer has its own function. The purpose of layers is to keep things standardized, without numerous hardware and software vendors having to manage communication on their own. It also means that certain layers can be updated, such as to improve performance, without having to upgrade the entire thing. (Avast, 2019)

1. **Topology**

Topology is divided into two categories. Physical topology deals with the physical connections between end and intermediary devices, while Logical topology deals with how the network transfers data from one device to another (Cisco Edu, 2008). Stores looking to implement LAN networks into their business often decide to utilize a star topology. In a star topology, there is a central core or device in which other devices are connected to. Other devices do not connect to each other and instead are connected to cores. But ultimately, even if there are multiple cores, there will always be one central core in which all messages are passed to it before being delivered to its respective destination. While this system is highly dependent on the central core to always be working effectively, parts of the network will still be able to function if a cable malfunctions (Cisco, 2018).

1. **Hierarchical Network**

Implementing a hierarchical network model can help ease management of devices on the network. Hierarchical design model is partitioned into three categories; the categories are Core Layer, Access Layer, and Distribution Layer. Core Layer provides fast transport between switches, Distribution Layer provides policy based connectivity, while Access Layer provides user access to the network (Cisco Press, 2014)

**Reference**

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