**The Five-Layer Network Model**

**LATEST SUBMISSION GRADE**

100%

1.Question 1

**Overview**: As an IT Support Specialist, it’s important that you fully grasp how networks work. You may need to troubleshoot different aspects of a network, so it’s important that you know how everything fits together. This assignment will help you demonstrate this knowledge by describing how networks function.

**What You’ll Do**: In your own words, describe what happens at every step of our network model, when a node on one network establishes a TCP connection with a node on another network. You can assume that the two networks are both connected to the same router.

Your submission must include a detailed explanation of the following:

* Physical layer
* Data link layer
* Network layer
* Transport layer
* MAC address
* IP address
* TCP port
* Checksum check
* Routing table
* TTL

**1 / 1 point**

Physical Layer The Physical layer encodes and decodes the bits found in a frame and includes the transceiver that drives and receives the signals on the network. Data Link Layer The Data Link layer is responsible for creating the frames that move across the network. These frames encapsulate the packets and use MAC addresses to identify the source and destination. Network Layer The Network layer is responsible for creating the packets that move across the network. It uses IP addresses to identify the packet’s source and destination. Transport Layer The Transport layer establishes the connection between applications running on different hosts. It uses TCP for reliable connections and UDP for fast connections. It keeps track of the processes running in the applications above it by assigning port numbers to them and uses the Network layer to access the TCP/IP network. MAC address A media access control address (MAC address) is a unique identifier assigned to a network interface controller (NIC) for use as a network address in communications within a network segment. IP address An Internet Protocol address (IP address) is a numerical label assigned to each device connected to a computer network that uses the Internet Protocol for communication.[1][2] An IP address serves two main functions: host or network interface identification and location addressing. TCP/IP port A number assigned to user sessions and server applications in an IP network. Port numbers, which are standardized by the Internet Assigned Numbers Authority (IANA), reside in the header area of the packet being transmitted and thus identify the purpose of the packet (Web, email, voice call, video call, etc.). Checksum A checksum is a small-sized datum derived from a block of digital data for the purpose of detecting errors that may have been introduced during its transmission or storage. By themselves, checksums are often used to verify data integrity but are not relied upon to verify data authenticity. Routing table n computer networking a routing table, or routing information base (RIB), is a data table stored in a router or a network host that lists the routes to particular network destinations, and in some cases, metrics (distances) associated with those routes. The routing table contains information about the topology of the network immediately around it. Time to live Time to live (TTL) or hop limit is a mechanism that limits the lifespan or lifetime of data in a computer or network. TTL may be implemented as a counter or timestamp attached to or embedded in the data. Once the prescribed event count or timespan has elapsed, data is discarded or revalidated. In computer networking, TTL prevents a data packet from circulating indefinitely. In computing applications, TTL is commonly used to improve the performance and manage the caching of data.

**Correct**

Thank you for your submission! If you had issues explaining any step of the network model, we invite you to revisit the respective lectures.