Name: _____ Section _____ Activity No. 21

OSI Layers and MTU

Objective : In this lab, you are going to do some research regarding the different devices and protocols that are associated with OSI reference model. You are going also to simulate how the Transport layer breaks down large into segments and back.

Activity 1 : Identify Devices and Protocols

Identify which Devices and Protocols in Fig 1 below belongs to which OSI layer. Write your answer on Fig 2. Use what we have learn so far and for things that are not in our discussions try to research in the Internet.

Fig 1

Protocols	Devices
TCP, Telnet, TCP, UDP, IP, HTTP, FTP, HDLC, Frame Relay, RJ 45, EIA/TIA-232, SMTP, POP3 and PPP	Firewall, Router, Switch, Hub, NIC, Repeater, Cable, Wireless Access Point, DSL Modem, Hosts and Intrusion Detection System

Fig 2

Layer Names	Protocols	Devices
Application, Presentation and Session (5-7)		
Transport (Layer 4)		
Network (Layer 3)		
Data Link (Layer 2)		
Physical (Layer 1)		

Activity 2 : Simulating Transport Layer

- Draw the OSI model on the left side of your paper, being certain to label each layer.
- Suppose the software issues a message to the network that is 3400 bytes in size. Next to the Application layer, Presentation layer and Session layer, draw the PDU (Protocol Data Unit) for this message as it appears at each of these layers (adding the appropriate header at each layer). Label the fields of the PDU, including the original message data.
- At the Transport layer, add a Transport layer header to PDU. Recall that the Transport layer is responsible for breaking down the PDU into smaller units—or segments—that a network can handle. Suppose the network carrying request using Ethernet 802.3 specifies that frames can be no smaller than 64bytes and no greater than 1518 bytes in size. However, the PDU are not frames (until they reach the Data link layer), and those limits include an added minimum of 18 bytes of control information. Thus, at the Transport layer, segments can be between 46 (or 64-18) and 1500 (or 1518-18) bytes in size. Given this information, what is the minimum number of segments the Transport layer will divide this message into?
- Next to the network layer, draw a segment after it has been broken down by the Transport layer, and add a field that represents this segment's sequence number and length.
- To make the segment into packet, next add the Network layer address fields required for the data to be routed over a network.
- Next to the Data link layer, add a header, frame check sequence field, and trailer to transform the packet into frame. The frame is now ready for transmission, via the Physical layer, to the network.