**SCHOOL OF COMPUTER SCIENCE**

**UNIVERSITY OF PETROLEUM AND ENERGY STUDIES**

**DEHRADUN, UTTARAKHAND**



**IT DATA SECURITY LAB**

**LABORATORY FILE**

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**For**

**Vth Semester**

**Submitted To: Submitted By:**

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**LAB EXPERIMENT – 1**

**OSI MODAL AND DEVICES**

**OSI MODAL**

The OSI Modal consist of seven different interconnected layers: -

1. Physical Layer
2. Data Link Layer
3. Network Layer
4. Transport Layer
5. Session Layer
6. Presentation Layer
7. Application Layer

1. Physical Layer: - It’s the lowest layer of the OSI Modal which helps to create the physical layer connections between multiple devices. It is use to transmit data in the form of bits connecting one node to another. On receiving data signals from somewhere it converts it into the 0s and 1s form. Hubs, Repeaters, Modems are the physical layer devices.

2. Data Link Layer: - It basically helps to connect the nodes and helps to convert the packets into frames for further transacts to the physical layer. Switch and Bridges are the devices of the Data Link Layer.

3. Network Layer: - It helps in the transmission of the data from a host to different other locations. The data are in the form of packets in the network layer. It also helps the routing connection of the devices using their IP Addresses as the headers of the Data.

4. Transport Layer: - It helps in conversion of segments to the smaller units using headers as the locations of the data.

5. Session Layer: - It usually is use for establishment of connection, maintenance of sessions, and authentication, and also helps in secure environment between the user and the server.

6. Presentation Layer: - Encryption/ Decryption: Data encryption translates the data into another form or code. The encrypted data is known as the ciphertext and the decrypted data is known as plain text. A key value is used for encrypting as well as decrypting data.

7. Application Layer: The Application layer which is implemented by the network applications. These applications produce the data to be transferred over the network. This layer also serves as a window for the application services to access the network and for displaying the received information to the user.

**The OSI MODAL DEVICES**

**HUB: -**

* It basically belongs the first layer of the OSI modal that is the physical layer.
* It usually belongs to broadcast data in the interconnected devices of a LAN.
* These are not smart enough to circulate the data from a particular host to a particular device as it transits the data to all the devices present in a LAN.
* These are cheaper than the switches and routers.
* These are insecure nowadays as it broadcast the data to every layer in the network.

**Switch: -**

* It basically belongs to the 2nd layer of the OSI Modal that is the data link layer.
* It is quite smarter than the hub as it is the next gen. modal with some new functionalities.
* It helps to transit the data from a particular device to another particular device using IP Addresses without broadcasting like HUBS.
* These are quite expensive than HUBS and quite cheaper than routers.

**ROUTERS: -**

* It basically belongs to the third layer of the OSI modal that is the network layer.
* It usually belongs to transmit data using the MAC addresses of the devices and create a interconnection between the two LAN Area Networks which can communicate between each other.
* It has the latest technology and most advanced features as its intelligence is more as compared to hubs and switches.
* These devices are expensive that the HUBS and Switches.