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TNE20003 – Internet and Cybersecurity for Engineering Applications

OSI & TCP/IP Comparison

Aims:

- To compare and contrast the 2 main networking models
- IP Addressing Classification

Preparation:

View Lect 1 - Comms in a Connected World & Lect 2- Network Basics – OSI & TCP_IP models & IPv4 Addressing

Due Date:

Nil. In-class activity.

Using the lecture notes for weeks 1 & 2 please answer the following questions

Question 1

What is a communications protocol? Set of rules for establishing the communication

Question 2

- a) How many layers are there in the OSI model? 7

- b) List the layers write a 1 sentence description of what they do.

Physical layer: encapsulate the data frames from the up layer which is datalink layer to the dididal bits 0 and 1 for the transmission to the next device.

Question 3

- a) How many layers are there in the TCP/IP model?

4 layers

- b) List the layers write a 1 sentence description of what they do.

Transport layer: manage the traffic route between two hosts and ensure the complete data transfer

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Question 4

Give an example of what is shared at layer 2 of OSI model. Explain its use in network communications.

Question 5

Give an example of what is shared at layer 2 of TCP/IP model. Explain its use in network communications.

Question 6

Give an example of what is shared at layer 3 of TCP/IP model. Explain its use in network communications.

Question 7

List the 3 possible transmission media in network communications.

Question 8

Why did a layered approach to networking result in a quicker and better solution?

Question 9

What is an IP address?

Question 10

Identify the class of the following IP addresses.

12.23.45.65/8 class A

21.21.21.21/18 class A

10111000.23.11001100.45/16 class B

200.100.50.10/24 class C

188.88.8.1/20 class B

11010000.55.44.33/26 class C

01010111.11100011.10100001.00110011/17 class A

288.100.100.100/24 no valid

228.100.55.44/28 class D

10.255.255.255/8 class A

Class A: 1.0.0.0 to 126.0.0.0 (1-126 in the first octet)
Class B: 128.0.0.0 to 191.255.0.0 (128-191 in the first octet)
Class C: 192.0.0.0 to 223.255.255.0 (192-223 in the first octet)
Class D: 224.0.0.0 to 239.255.255.255 (224-239 in the first octet)
Class E: 240.0.0.0 to 255.255.255.255 (240-255 in the first octet)