Module 2: Linux Fundamentals PT9

Intro to Hex

2001 0010 0000 0000 0001
0000 0000 0000 0000 0000
3238 0011 0010 0011 1000
DFE1 1101 1111 1110 0001
0063 0000 0000 0110 0011
FEFB 1111 1110 1111 1011

238.129.32.254 = 11101010.10000001.00100000.11111110
126.55.0.240 = 01111110.00111001.00000000.11110000
20.248.252.253 = 00010100.11111000.11111100.11111101
130.35.168.128 = 10000010.0101

11000000.10011001.00100010.00000101 = 192.153.34.5

128 64 32 16 8 4 2 1
128 192 224 240 248 252 254 255

A = 10
B = 11
C = 12
D = 13
E = 14
F = 15

OSI Model

Made up of 7 layers

First layer is *Physical*

- Wire
    - (Copper Wire) Twisted pair cable, Coaxial cable
    - (Glass Wire) Fibre Optic
- Wireless
    - Antenna
        - Uses bits

Second layer is Data Link
NIC (Network Interface Card) - Takes data and places into a Frame.
MAC - Media Access Control
Token
Chaos Theory - Probability - Ethernet

Rule for sharing the media

Bridge - a device that uses wires

Access Point (AP) - Device that has an antenna.

Network card connects to the Bridge

Switch - A bridge on steroids

Physical Address associated with a network card

Third layer is Network

Logical address
Protocol Rule - IPv4,IPv6
Information at this layer is"Packet"
Router that routes packet
The router will forward a packet.

-Fourth layer is Transport
Reliability layer - TCP IP UDP
TCP - Segment - loves flow control, sequencing, Hand Shake
UDP - Datagram -

-Five layer is Session
Start, maintain, stop

-Sixth layer is Presentation
Data format translation - ASCII or Unicode(UTF)

Encryption/Decryption
Compression

-Seventh layer is Application
Port Number:
HTTP - 80
HTTPS - 443
FTP - 20, 21
SMTP - 25
DNS - 53
DHCP - 67,68
SSH - 22

Please Do Not Throw Sausage Pizza Away
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Physical, Data Link, Network, Transport, Session, Presentation, Application