Module 3: Network Module 3 PT4

Network Layer - Layer 3 - Packets - Day 2

Vocabulary and Links

ARP
IPV6 - Unicast, Multicast, etc..
Subnet Masked Explained
IPv4 and IPv6 - Messer
IPv4 vs IPv6 Tutorial

Classful
Classless
CIDR - Classless Inter-Domain Routing
VLSM - Variable Length Subnet Mask

Mr Darryl's Chart
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128	64	32	16	8	4	2	1
128	192	224	240	248	252	254	255
2	4	8	16	32	64	128	x

Beyond 128 bits:
128 | 192 | 224 | 240 | 248 | 252 | 254 | 255
# of bits (#number of devices within subnet assignment):
128 | 64 | 32 | 16 | 8 | 4 | 2 | 1
#of Subnet Blocks:
2 | 4 | 8 | 16 | 32 | 64| 128 | x

128	192	224	240	248	252	254	255	IP Address
128	64	32	16	8	4	2	1	
/1	/2	/3	/4	/5	/6	/7	/8 (Default)	Subnet Mask
/9	/10	/11	/12	/13	/14	/15	/16 (Default)	
/17	/18	/19	/20	/21	/22	/23	/24 (Default)	
/25	/26	/27	/28	/29	/30	/31	/32 (Default)	

Variable-Length Subnet Mask

Example: The request is for 15 subnets. IP Address 172.20.0.0. What are the possible subnets? How many hosts per subnet?

Class B 172.20.0.0 255.255.0.0 /16

APIPA - No internet access. - 169.x.x.x

ARP (Address Routing Protocol) - "MAPS" MAC <-> IP
ARP is used every time the computer is used.
It is layer 2 and layer 3 protocol. It operates on a LAN. It uses ARP table

DNS (Domain Name Service) - "MAPS" Domain Names <-> IP
Default Gateway

- Device configured to deliver packets to a remote network.
- Makes it possible for devices in one network to communicate with devices in another network
- Intermediate device between locale network and Internet

Example:
Router
Firewall - Filters traffic

SOHO Router Firewall
DHCP
DNS
NAT

Example 3:

Numbers to choose from						
.3	.4	.5	.7	.8	.14	.15
.16	.21	.31	.33			

Laptop: 172.31.5.17 /28
Find the following:

Network
172.31.5._
BCAST
172.31.5._
Gateway
172.31.5._

<u>First Block</u>
172.31.5.0 NetID
172.31.5.15 BCAST

<u>Second Block</u>
172.31.5.16 NetID
172.31.5.31 BCAST

172.31.5.21 Default Gateway

Server 172.31.5.10 /29
Network 172.

In IPv6, there is no broadcast address/domain. Instead IPv6 uses multicast.

IPv4 - Unicast (1 to 1), Multicast (group 1 to many), Broadcast (all)
IPv6 - Unicast (1 to 1), Multicast (group 1 to many), Anycast (1 to nearest association. Typically used by routers. Multiple routers can have the same anycast address)