Computer Networks Lab 11

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Task 1 : Determine Network Address of the following IP Address

Solution:

Address: 10.128.240.50 00001010.10000000.11110000.001100 10
Net-mask: 255.255.255.252 = 30 11111111.11111111.11111111.111111 00
Wildcard: 0.0.0.3 00000000.00000000.00000000.000000 11

Network: 10.128.240.48/30 00001010.10000000.11110000.001100 00 (Class A)
Broadcast: 10.128.240.51 00001010.10000000.11110000.001100 11
HostMin: 10.128.240.49 00001010.10000000.11110000.001100 01

HostMax: 10.128.240.50 00001010.10000000.11110000.001100 10
Hosts/Net: 2 Private Internet

Task 2 : Determine the network and broadcast addresses and number of hosts bits

and hosts for the given IPv4 addresses and prefixes in the following table.

Solution:

Task 2 :

IPv4 Address/Prefix	Network Address	Broadcast Address	Total Number of Host Bits	Total Number of Hosts
192.168.100.25/28	192.168.100.16	192.168.100.31	4	14
172.30.10.130/30	172.30.10.128	172.30.10.131	2	2
10.1.113.75/19	10.1.96.0	10.1.127.255	13	8190
198.133.219.250/24	198.133.219.0	198.133.219.255	8	254

Task 3: Network Topology A

In Part 1, you have been given the 192.168.10.0/24 network address to subnet, with the following

topology. Determine the number of networks needed and then design an appropriate addressing

scheme.

Solutiion:

Step 1: Determine the number of subnets in Network Topology A.

A: 2

B: 1

C: 126

D: 255.255.255.128

E: 0

Subnet number	Subnet address	First useable host address	Last useable host address	Broadcast address
0	192.168.10.0	192.168.10.1	192.168.10.126	192.168.10.127
1	192.168.10.128	192.168.10.129	192.168.10.254	192.168.10.255

Task 4: Network Topology B

The topology has changed again with a new LAN added to R2 and a redundant link between R1 and R3.

Use the 192.168.10.0/24 network address to provide addresses to the network devices. Also provide an IP

address scheme that will accommodate these additional devices. For this topology, assign a subnet to each

network.

Solution:

A: 6

B: 3

C: 30

D: 255.255.255.224

E: 2

Subnet Number	Subnet Address	First Usable Host Address	Last Usable Host Address	Broadcast Address
0	192.168.10.0	192.168.10.1	192.168.10.30	192.168.10.31
1	192.168.10.32	192.168.10.33	192.168.10.62	192.168.10.63

Subnet Number	Subnet Address	First Usable Host Address	Last Usable Host Address	Broadcast Address
2	192.168.10.64	192.168.10.65	192.168.10.94	192.168.10.95
3	192.168.10.96	192.168.10.97	192.168.10.126	192.168.10.127
4	192.168.10.128	192.168.10.129	192.168.10.158	192.168.10.159
5	192.168.10.160	192.168.10.161	192.168.10.190	192.168.10.191
6	192.168.10.192	192.168.10.193	192.168.10.222	192.168.10.223
7	192.168.10.224	192.168.10.225	192.168.10.254	192.168.10.255

a.

Device	Interface	IP Address	Subnet Mask
R1	GigabitEthernet 0/1	192.168.10.1	255.255.255.224
	Serial 0/0/0	192.168.10.33	255.255.255.224
	Serial 0/0/1	192.168.10.65	255.255.255.224
R2	GigabitEthernet 0/1	192.168.10.97	255.255.255.224
	Serial 0/0/0	192.168.10.34	255.255.255.224
	Serial 0/0/1	192.168.10.129	255.255.255.224
R3	GigabitEthernet 0/1	192.168.10.161	255.255.255.224
	Serial 0/0/0	192.168.10.66	255.255.255.224
	Serial 0/0/1	192.168.10.130	255.255.255.224