ALGONQUIN COLLEGE

WEEK 8 REVIEW

Important Terminology

Network ID = Network Address

- host bits = 0

Subnet ID = Subnet Address

- host bits = 0
- includes borrowed host bits

Directed Broadcast

- broadcast for a specific subnet (i.e. 192.168.1.255/24)
- compare to local broadcast (i.e. 255.255.255.255)

Convert /17 to dotted decimal notation.

11111111.11111111.10000000.00000000

17 bits

128 64 32 16 8 4 2 1

11111111.11111111.10000000.00000000

255. 255. 128. 0

Convert /30 to dotted decimal notation.

11111111.11111111.11111111.11111100

30 bits

128 64 32 16 8 4 2 1

11111111.11111111.11111111.11111100

255. 255. 255. 252

Convert /10 to dotted decimal notation.

11111111.11000000.00000000.00000000

10 bits

128 64 32 16 8 4 2 1

11111111.11000000.00000000.00000000

255. 192. 0. 0

Convert 255.240.0.0 to slash notation.

255. 240. 0. 0

128 64 32 16 8 4 2 1

11111111.11110000.00000000.00000000

11111111.11110000.00000000.00000000

12bits

/12

Convert 255.255.255.192 to slash notation.

255. 255. 255. 192

128 64 32 16 8 4 2 1

11111111.11111111.11111111.11000000

11111111.11111111.11111111.11000000

26bits

/26

What is the Subnet ID of host 82.35.67.102/15

	82.	35.	67.	102
		128 64 32 16 8 4 2 1		
host	82	.00100011.	67.	102
mask	11111111.11111110	.00000000	.00000000	
		15 bits		
host AND mask	82.	00100010.	0.	0

82.34.0.0/15

What is the Subnet ID of host 82.35.67.102/23

	82.	35.	67.	102
			128 64 32 16 8 4 2 1	
host	82	.35	.01000011	.102
mask	11111111	.11111111	.1111111	0.00000000
			23 bits	
host AND mask	82	.35	.01000010	.0

82.35.66.0/23

Partition the network address 192.168.24.0/23 into 16 subnets. What are the subnet 0 and 3 IDs?

192 .168 .24 .0

128 64 32 16 8 4 2 1

192 .168 .00011000 .0

23 bits

16 subnets requires that we borrow 4 bits

128 64 32 16 8 4 2 1 128 64 32 16 8 4 2 1

192 .168 .0001100s.sss00000

27 bits

Subnet 0;
ssss=0000
mask= /27

192 .168 .24 .0 /27

Subnet 3;
ssss=0011;
mask = /27

192 .168 .24 .96 /27

Partition the network address 192.168.0.0/14 into 30 subnets. What are the subnet 0 and 10 IDs?

192 .168 .0 .0

128 64 32 16 8 4 2 1 128 64 32 16 8 4 2 1

192 .10101000 .00000000 .0

14 bits

128 64 32 16 8 4 2 1 128 64 32 16 8 4 2 1

30 subnets requires that we borrow 5 bits

192 .101010ss .sss00000 .0

19 bits

Subnet 0; sssss=00000 mask= /19

192 .168 .0 .0 /19

Subnet 10; sssss=01010; mask = /19

192 .169 .64 .0 /19

For the 10th subnet, what are the first, last, broadcast addresses and number of hosts?

192 .169 .64 .0 /19

128 64 32 16 8 4 2 1

192 .169 . 01000000 .00000000

Host = 13 bits

	128 64 32 16 8 4 2 1			
directed broadcast	192	.169 .	01011111	.11111111
	192	.169	.95	.255
First = Net ID + 1	192	.169	.64	.1
Last = Broadcast - 1	192	.169	.95	.254

Number of hosts = $2^{13} - 2 = 8{,}190$

For Subnet ID 10.0.196.0/22 find: broadcast, first, last, number of hosts?

	10	.0	.196	.0 / 22
			128 64 32 16 8 4 2 1	
	10	.0	.11000100	.00000000
				Host = 10 bits
			128 64 32 16 8 4 2 1	
directed broadcast	10	.0	.11000111	.11111111
	10	.0	.199	.255
First = Net ID + 1	10	.0	.196	.1
Last = Broadcast - 1	10	.0	.199	.254

Number of hosts = $2^{10} - 2 = 1{,}022$