Subnetting contd

 Private cidrs

192.168.0.0/16

172.16.0.0/12

10.0.0.0/8

# Problem 1

 I need a network for 1000 devices

 This network will have two subnets with 500 devices each  Network

Subnet (2)

Size = 1000

2^n - 2 ~ = 1000

n = 10

N = 22

ip: 192.168.0.0/22

SM: 11111111.11111111.11111100.00000000

Size = 500

2^n-2 ~= 500

n = 9

N = 23

nip: 192.168.0.0/22

nsm: 11111111.11111111.11111100.00000000 ssm: 11111111.11111111.111111\*0.00000000

ip: 192.168.000000\*x.xxxxxxxx

s1ip: 192.168.0000000x.xxxxxxxx => 192.168.0.0/23 s2ip: 192.168.0000001x.xxxxxxxx => 192.168.2.0/23

# Problem 2

 I need a network for 200 devices

 This network will have two subnets with 100 devices each  Network

2^n-2 ~= 200

n = 8

Subnet

N = 24

ip: 10.100.101.0/24

2^n - 2 ~= 100

n = 7

N = 25

nip: 10.100.101.0/24

nsm: 11111111.11111111.11111111.00000000 ssm: 11111111.11111111.11111111.\*0000000

ip: 10.100.101.\*xxxxxxx/25

s1ip: 10.100.101.0xxxxxxx/25 = 10.100.101.0/25

s2ip: 10.100.101.1xxxxxxx/25 = 10.100.101.128/25

# Problem 3

 I need a network for 2000 devices

 This network will have four subnets with 500 devices each  Network

Subnet

2^n ~= 2000

n = 11

N = 21

172.30.0.0/21

2^n ~= 500

n = 9

N = 23

nip: 172.30.0.0/21

nsm: 11111111.11111111.11111000.00000000 ssm: 11111111.11111111.11111\*\*0.00000000

s1ip: 172.30.0000000x.xxxxxxxx/23 = 172.30.0.0/23 s2ip: 172.30.0000001x.xxxxxxxx/23 = 172.30.2.0/23 s3ip: 172.30.0000010x.xxxxxxxx/23 = 172.30.4.0/23 s4ip: 172.30.0000011x.xxxxxxxx/23 = 172.30.6.0/23

# Problem 4

 I need a network for 400 devices

 This network will have four subnets with 100 devices each

Network

2^n ~= 400

n = 9

N = 23

ip: 192.168.0.0/23

Subnet (4):

2^n ~= 100

n = 7

N = 25

nip: 192.168.0.0/23

nsm: 11111111.11111111.11111110.00000000 ssm: 11111111.11111111.1111111\*.\*0000000

sip : 192.168.0000000\*.\*xxxxxxx/25

s1ip: 192.168.00000000.0xxxxxxx/25 = 192.168.0.0/25

s2ip: 192.168.00000000.1xxxxxxx/25 = 192.168.0.128/25 s3ip: 192.168.00000001.0xxxxxxx/25 = 192.168.1.0/25

s4ip: 192.168.00000001.1xxxxxxx/25 = 192.168.1.128/25

# Problem 5

 I need a network for 1000 devices

 This network will have four subnets with 250 devices each

network: 10.0.0.0/22 s1: 10.0.0.0/24

s2: 10.0.1.0/24 s3: 10.0.2.0/24 s4: 10.0.3.0/24

# Problem 6

 I need a network for 8000 devices

 This network will have eight subnets with 1000 devices each  Network

2^n ~= 8000

n = 13

N = 32 -13 = 19

ip: 192.168.0.0/19

Subnets(8)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 2^n  n = | ~= 1000  10 | | | |
| N = | 22 | | | |
| nip: | | 192.168.0.0/19 |  |  |
| nsm: | | 11111111.11111111.11100000.00000000 |  |  |
| ssm: sip:  s1ip: | | 11111111.11111111.11111100.00000000  192.168.000\*\*\*xx.xxxxxxxx/22 192.168.000000xx.xxxxxxxx/22 | = | 192.168.0.0/22 |
| s2ip: | | 192.168.000001xx.xxxxxxxx/22 | = | 192.168.4.0/22 |
| s3ip: | | 192.168.000010xx.xxxxxxxx/22 | = | 192.168.8.0/22 |
| s4ip: | | 192.168.000011xx.xxxxxxxx/22 | = | 192.168.12.0/22 |
| s5ip: | | 192.168.000100xx.xxxxxxxx/22 | = | 192.168.16.0/22 |
| s6ip: | | 192.168.000101xx.xxxxxxxx/22 | = | 192.168.20.0/22 |
| s7ip: | | 192.168.000110xx.xxxxxxxx/22 | = | 192.168.24.0/22 |
| s8ip: | | 192.168.000111xx.xxxxxxxx/22 | = | 192.168.28.0/22 |

# Problem 7

 I want a network of 800 devices with 8 subnets of 100 each  Network

Subnets (8)

2^n ~= 800

n = 10

N = 22

ip: 172.16.0.0/22

2^n ~= 100

n = 7

N = 25

nip: 172.16.0.0/22

nsm: 11111111.11111111.11111100.00000000

ssm: 11111111.11111111.11111111.10000000

sip: 172.16.000000\*\*.\*xxxxxxx/25

s1ip: 172.16.00000000.0xxxxxxx/25 = 172.16.0.0/25

s2ip: 172.16.00000000.1xxxxxxx/25 = 172.16.0.128/25 s3ip: 172.16.00000001.0xxxxxxx/25 = 172.16.1.0/25

s4ip: 172.16.000000\*\*.\*xxxxxxx/25 = 172.16.1.128/25 s5ip: 172.16.000000\*\*.\*xxxxxxx/25 = 172.16.2.0/25

s6ip:

s7ip: s8ip:

172.16.000000\*\*.\*xxxxxxx/25 = 172.16.2.128/25

172.16.000000\*\*.\*xxxxxxx/25 = 172.16.3.0/25

172.16.000000\*\*.\*xxxxxxx/25 = 172.16.3.128/25

# Principle 3

 We can establish connections between private networks only when the network ranges of them do not collide