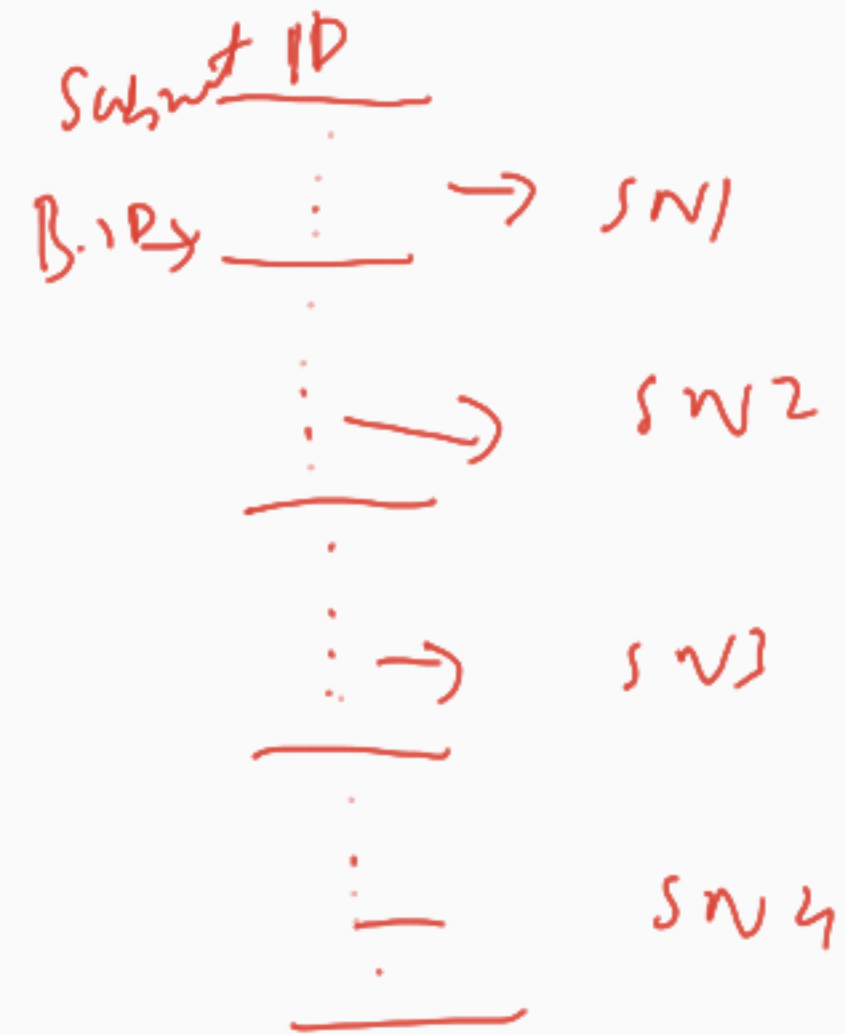


Designing Interesting Subnets



172.16.150.41

255.255.192.0

/18

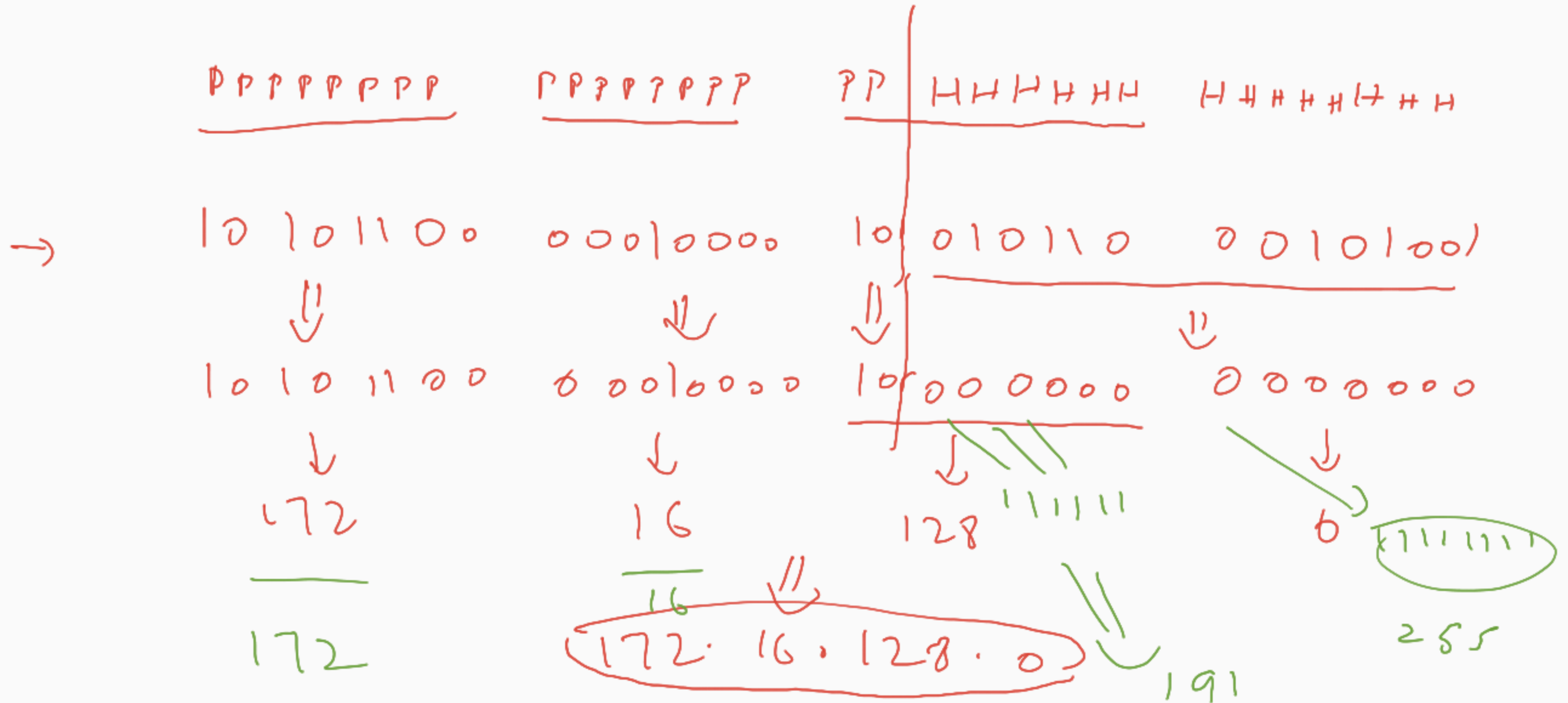
$$2^5 = 2^2 = \boxed{4}$$

00000000	0	0
10000000	128	1
11000000	192	2
11100000	224	3
11110000	240	4
11111000	248	5
11111100	252	6
11111110	254	7
11111111	255	8

Subnet 10???

172.16.150.41

/18 \Rightarrow 32-12
=



$$172 \cdot 16 \cdot 150 \cdot 41 \quad / 17$$

$$\begin{array}{l} \hookrightarrow 172 \cdot 16 \cdot 128 \cdot 0 \\ \quad \vdots \\ 172 \cdot 16 \cdot 191 \cdot 0 \end{array} \quad \begin{array}{l} \leftarrow \\ \updownarrow \\ \leftarrow \end{array}$$

130.4.102.1 → 255.255.252.0

↳ Subnet ID ?
Broadcast Add !

Binary Mask Octet	Decimal Equivalent	Number of Binary 1s
00000000	0	0
10000000	128	1
11000000	192	2
11100000	224	3
11110000	240	4
11111000	248	5
11111100	252	6
11111110	254	7
11111111	255	8

0, 255

255.0.0.0 →
255.255.0.0 →
255.255.255.0 →

Mathematic easy.

10.77.55.3 1 2 3 4
 255.255.255.0 / 24



Subnet ID
Broadcast ID

10.77.55.0 → Subnet ID

10.77.55.255 → Broadcast ID

→ octet 255 → ✓
copy decimal IP

→ octet 0 →

write zero / 255
Subnet Broadcast

$$1.99.53.76 \quad / 8$$

$$\text{Subnet 17} \Rightarrow 1.0.0.0 \Rightarrow$$

$$\text{Broadcast} \Rightarrow 1.255.255.0 \Rightarrow$$

$$192.168.6.54 \quad | \quad 24$$

$$\text{Subnet ID} \Rightarrow 192.168.6.0$$

$$\text{Broadcast ID} \Rightarrow 192.168.6.255$$

110

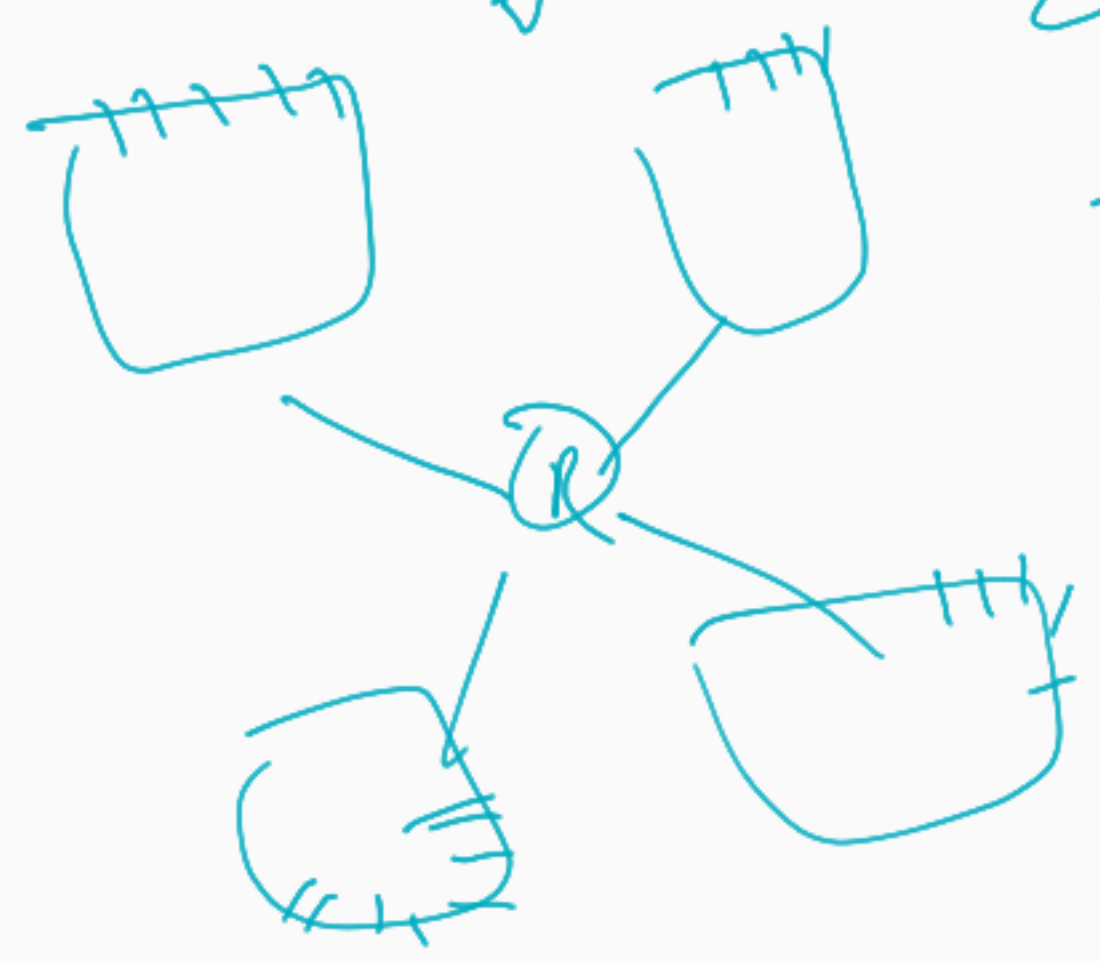
→ Vnet (0, 255)
interesting output

172.16.150.41 / 18

255.255.192.0 →

Subnet?

- SW1 →
- SW2 →
- SW3 →
- SW4 →



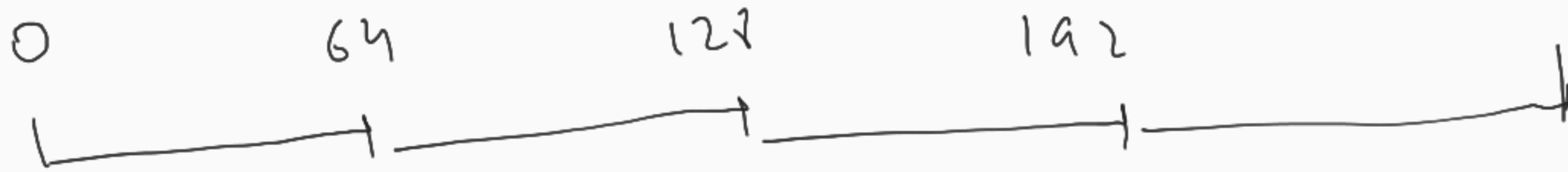
2 bits for subnet

$2^2 = 4$

192 Multiplies

128 64 32 16 8 4 2 1
1 1 0 0 0 0 0 0

0 64 128 192



$$(72 \cdot 16 \cdot 192 \cdot 4)$$

$$2^H$$

$$2^{14} - 2 \rightarrow$$

→

①

$$72 \cdot 16 \cdot 0 \cdot 0$$

②

$$72 \cdot 168 \cdot 64 \cdot 0$$

③

$$72 \cdot 168 \cdot 128 \cdot 0$$

④

$$72 \cdot 168 \cdot 192 \cdot 0$$

Σ

255.255.128.0

?

Binary Mask Octet	Decimal Equivalent	Number of Binary 1s
00000000	0	0
10000000	128	1
11000000	192	2
11100000	224	3
11110000	240	4
11111000	248	5
11111100	252	6
11111110	254	7
11111111	255	8

→ 172.22.55.77
→ 255.255.254.0

}

Binary Mask Octet	Decimal Equivalent	Number of Binary 1s
00000000	0	0
10000000	128	1
11000000	192	2
11100000	224	3
11110000	240	4
11111000	248	5
11111100	252	6
11111110	254	7
11111111	255	8