

Subnet Mask

- Usage : Distinguish network and host address parts
- example

192.168.10.0 /24

IP : 192.168.10.0	1100 0000	1010 1000	0000 1010	0000 0000
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Subnet Mask : 24	1111 1111	1111 1111	1111 1111	0000 0000
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(NETWORK ID if Subnet Mask is "1", HOST ID if Subnet Maks is "0")

NETWORK ID	192	168	10	0000 0000
HOST ID	0000 0000	0000 0000	0000 0000	XXXX XXXX 0~255 (2 ⁸)

Applicable IP addresses :
192.168.10.0 ~ 192.168.10.255

172.16.180.0 /18

IP : 172.16.180.0	1010 1100	0001 0000	1011 0100	0000 0000
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Subnet Mask : 18	1111 1111	1111 1111	1100 0000	0000 0000
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NETWORK ID	172	16	1000 0000	0000 0000
HOST ID	0000 0000	0000 0000	00XX XXXX 0~63(2 ⁶)	XXXX XXXX 0~255 (2 ⁸)

Applicable IP addresses:
172.16.0.0 ~ 172.16.63.255
172.16.64.0 ~ 172.16.127.255
172.16.128.0 ~ 172.16.191.255
172.16.192.0 ~ 172.16.255.255

Wildcard Mask

- Usage : Denotes part of an IP address to "check"
- example

IP : 192.168.3.0

W/D : 0.0.32.0

IP : 192.168.3.0	1100 0000	1010 1000	0000 0011	0000 0000
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Wildcard Mask : 0.0.32.0	0000 0000	0000 0000	0010 0000	0000 0000
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Applicable IP	1100 0000	1010 1000	00X0 0011	0000 0000
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Applicable IP addresses: [possibilities : (0 or 1) 2 ^1 spaces = 2 possibilities]

11000000 . 10101000 . 0000 0011 . 00000000 **192.168.3.0**

11000000 . 10101000 . 0010 0011 . 00000000 **192.168.35.0**

IP : 172.0.0.0

W/D : 0.44.0.0

IP : 172.0.0.0	1010 1100	0000 0000	0000 0000	0000 0000
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Wildcard Mask : 0.44.0.0	0000 0000	0010 1100	0000 0000	0000 0000
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Applicable IP	1010 1100	00X0 XX00	0000 0000	0000 0000
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Applicable IP addresses: [possibilities : (0 or 1) 2 ^3 spaces = 8 possibilities]

10101100 . 0000 0000 . 00000000 . 00000000 **172.0.0.0**

10101100 . 0000 0100 . 00000000 . 00000000 **172.4.0.0**

10101100 . 0000 1000 . 00000000 . 00000000 **172.8.0.0**

10101100 . 0000 1100 . 00000000 . 00000000 **172.12.0.0**

10101100 . 0010 0000 . 00000000 . 00000000 **172.32.0.0**

10101100 . 0010 0100 . 00000000 . 00000000 **172.36.0.0**

10101100 . 0010 1000 . 00000000 . 00000000 **172.40.0.0**

10101100 . 0010 1100 . 00000000 . 00000000 **172.44.0.0**

Prefix List

[IP range] [subnet mask]

192.168.10.0/24 ge 24 le 24

- GE = Greater or equal to
- LE = Less than or equal to

- example

172.16.0.0/16 le 18

- IP range :

172.16.0.0	1010 1100	0001 0000	0000 0000	0000 0000
16	1111 1111	1111 1111	0000 0000	0000 0000

Applicable IP :

172.16.0.0 ~ 172.16.255.255

- Applicable IP addresses divided into /16 /17 /18 subnets?

172.16.0.0 /16 = 172.16.0.0~172.16.255.255

172.16.0.0	1010 1100	0001 0000	0000 0000	0000 0000
17	1111 1111	1111 1111	1000 0000	0000 0000

	1010 1100	0001 0000	0XXX XXXX	XXXX XXXX
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172.16.0.0 /17 = 172.16.0.0~172.16.127.255

172.16.128.0 /17 = 172.16.128.0~172.255.255

172.16.0.0	1010 1100	0001 0000	0000 0000	0000 0000
18	1111 1111	1111 1111	1100 0000	0000 0000

	1010 1100	0001 0000	00XX XXXX	XXXX XXXX
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172.16.0.0 /18 = 172.16.0.0~172.16.63.255

172.16.64.0 /18 = 172.16.64.0~172.16.127.255

172.16.128.0 /18 = 172.16.128.0~172.16.191.255

172.16.192.0 /18 = 172.16.192.0~172.16.255.255