

## شبکه های کامپیوتری      آیلین امیدی      401130163

$n = 4$  , 192.168.1.0/24

1)  $2^n = 4 \Rightarrow n = 2$

2) 11111111.11111111.11111111.11000000

192.168.1.0/26

255.255.255.192

3)  $2^{n-2} \Rightarrow 2^{6-2} = 62$

4) بازه آدرس های IP      Broadcast      آدرس شبکه

192.168.1.0 – 192.168.1.63 (192.168.1.1 - 192.168.1.62)

192.168.1.64 – 192.168.1.127 (192.168.1.65 - 192.168.1.126)

192.168.1.128 – 192.168.1.191 (192.168.1.129 - 192.168.1.190)

192.168.1.192 – 192.168.1.255 (192.168.1.193 - 192.168.1.254)

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$n = 16$  , 172.16.0.0/16

1)  $2^n = 16 \Rightarrow n = 4$

2) 11111111.11111111.11110000.00000000

172.16.0.0/20

255.255.240.0

3)  $2^{n-2} \Rightarrow 2^{12-2} = 4096 - 2 = 4094$

4) بازه آدرس های IP      Broadcast      آدرس شبکه

172.16.0.0 - 172.16.15.255 (172.16.0.1 - 172.16.15.254)  
172.16.16.0 - 172.16.31.255 (172.16.16.1 - 172.16.31.254)  
172.16.32.0 - 172.16.47.255 (172.16.32.1 - 172.16.47.254)  
172.16.48.0 - 172.16.63.255 (172.16.48.1 - 172.16.63.254)  
172.16.64.0 - 172.16.79.255 (172.16.64.1 - 172.16.79.254)  
...

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10.0.0.0/8 , n = 64

1)  $2^n = 64 \Rightarrow n = 6$

2) 11111111.11111111.11000000.00000000

10.0.0.0/14

255.255.192.0

3)  $2^{n-2} = 2^{14-2} = 16384 - 2 = 16382$

4) بازه آدرس های IP      Broadcast      آدرس شبکه

10.0.0.0 - 10.0.63.255 (10.0.0.1 - 10.0.63.254)

10.0.64.0 - 10.0.127.255 (10.0.64.1 - 10.0.127.254)

10.0.128.0 - 10.0.191.255 (10.0.128.1 - 10.0.191.254)

10.0.192.0 - 10.0.255.255 (10.0.192.1 - 10.0.255.254)

10.1.0.0 - 10.1.63.255 (10.1.0.1 - 10.1.63.254)

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$n = 8$  , 192.168.10.0/24

1)  $2^n = 8 \Rightarrow n = 3$

2) 11111111.11111111.11111111.11100000

192.168.10.0/27

255.255.255.224

3)  $2^{n-2} = 2^{5-2} = 32 - 2 = 30$

4) بازه آدرس های IP      Broadcast      آدرس شبکه

192.168.10.0 - 192.168.10.31 (192.168.10.1 - 192.168.10.30)

192.168.10.32 - 192.168.10.63 (192.168.10.33 - 192.168.10.62)

192.168.10.64 - 192.168.10.95 (192.168.10.65 - 192.168.10.94)

192.168.10.96 - 192.168.10.127 (192.168.10.97 - 192.168.10.126)

192.168.10.128 - 192.168.10.159 (192.168.10.129 - 192.168.10.158)

192.168.10.160 - 192.168.10.191 (192.168.10.161 - 192.168.10.190)

192.168.10.192 - 192.168.10.223 (192.168.10.193 - 192.168.10.222)

192.168.10.224 - 192.168.10.255 0028192.168.10.225 - 192.168.10.254)

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172.31.0.0/16 ,  $n = 128$

1)  $2^n = 128 \Rightarrow n = 7$

2) 11111111.11111111.11111110.00000000

172.31.0.0/23

255.255.254.0

$$3) 2^n - 2 = 2^9 - 2 = 512 - 2 = 510$$

4)      آدرس شبکه      Broadcast      بازه آدرس های IP

172.31.0.0 - 172.31.1.255 (172.31.0.1 - 172.31.1.254)

172.31.2.0 - 172.31.3.255 (172.31.2.1 - 172.31.3.254)

172.31.4.0 - 172.31.5.255 (172.31.4.1 - 172.31.5.254)

172.31.6.0 - 172.31.7.255 (172.31.6.1 - 172.31.7.254)

172.31.8.0 - 172.31.9.255 (172.31.8.1 - 172.31.9.254)

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10.10.0.0/16 , n=1000

$$1) 2^n \geq 1000 \Rightarrow n = 10$$

2) 11111111.11111111.11111111.11000000

10.10.0.0/26

255.255.255.192

$$3) 2^n - 2 = 2^6 - 2 = 64 - 2 = 62$$

4)      آدرس شبکه      Broadcast      بازه آدرس های IP

10.10.0.0 - 10.10.0.63 (10.10.0.1 - 10.10.0.62)

10.10.0.64 - 10.10.0.127 (10.10.0.65 - 10.10.0.126)

10.10.0.128 - 10.10.0.191 (10.10.0.129 - 10.10.0.190)

10.10.0.192 - 10.10.0.255 (10.10.0.193 - 10.10.0.254)

...

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192.168.0.0/16 , n= 1024

1)  $2^n = 1024 \Rightarrow n = 10$

2) 11111111.11111111.11111111.11000000

192.168.0.0/26

255.255.255.192

3)  $2^{n-2} = 2^{6-2} = 64 - 2 = 62$

4) بازه آدرس های IP                      Broadcast                      آدرس شبکه

192.168.0.0 - 192.168.0.63 (192.168.0.1 - 192.168.0.62)

192.168.0.64 - 192.168.0.127 (192.168.0.65 - 192.168.0.126)

192.168.0.128 - 192.168.0.191 (192.168.0.129 - 192.168.0.190)

192.168.0.192 - 192.168.0.255 (192.168.0.193 - 192.168.0.254)

...