

1) $2^n \geq 4 \rightarrow n = 2$

$1 - 2 = 6$

$2^6 = 64$

$\Rightarrow 11111111.11111111.11111111.11000000$

$255.255.255.192 \rightarrow 192.141.1.0/24$

رنج IP

$192.141.1.0 - 192.141.1.63$

$192.141.1.1 - 192.141.1.62$

$192.141.1.64 - 192.141.1.127$

زف

$192.141.1.65 - 192.141.1.126$

$192.141.1.128 - 192.141.1.191$

Host

$192.141.1.129 - 192.141.1.190$

$192.141.1.192 - 192.141.1.255$

BC

$192.141.1.193 - 192.141.1.254$

2) $2^n \geq 14 \rightarrow n = 4$

$14 - 4 = 10 \rightarrow 2^{10} = 1024$

$255.255.255.0$

$172.17.0.0/16$

$172.17.0.0 - 172.17.15.255$

$172.17.0.1 - 172.17.15.254$

$172.17.16.0 - 172.17.31.255$

$172.17.16.1 - 172.17.31.254$

$172.17.32.0 - 172.17.63.255$



$172.17.32.1 - 172.17.63.254$

$172.17.64.0 - 172.17.95.255$

$172.17.64.1 - 172.17.95.254$

$172.17.96.0 - 172.17.127.255$

$172.17.96.1 - 172.17.127.254$

3) $2^n \geq 44 \rightarrow n = 6$

$44 - 6 = 38 \rightarrow 2^{38} = 281,474,976,710,656$

$10.0.0.0 - 10.3.255.255$

$10.0.0.1 - 10.3.255.254$

$10.4.0.0 - 10.7.255.255$

$10.4.0.1 - 10.7.255.254$

$10.8.0.0 - 10.11.255.255$



$10.8.0.1 - 10.11.255.254$

$10.12.0.0 - 10.15.255.255$

$10.12.0.1 - 10.15.255.254$

$10.16.0.0 - 10.19.255.255$

$10.16.0.1 - 10.19.255.254$

f) $r^n \gg 1 \rightarrow n = 3$

$1 - 3 = -2 \rightarrow r^2 = 32$

192.141.10.0 - 192.141.10.31 192.141.10.1 - 192.141.10.30
 192.141.10.32 - 192.141.10.63 192.141.10.64 - 192.141.10.95
 192.141.10.96 - 192.141.10.127 \rightarrow 192.141.10.96 - 192.141.10.127
 192.141.10.128 - 192.141.10.159 192.141.10.160 - 192.141.10.191
 192.141.10.192 - 192.141.10.223 192.141.10.224 - 192.141.10.255

g) $r^n \gg 141 \rightarrow n = 7$

$14 - 7 = 7 \rightarrow r^7 = 2187$

172.31.0.0 - 172.31.1.255 172.31.0.1 - 172.31.1.255
 172.31.2.0 - 172.31.3.255 172.31.4.0 - 172.31.5.255
 172.31.6.0 - 172.31.7.255 \rightarrow 172.31.8.0 - 172.31.9.255
 172.31.10.0 - 172.31.11.255 172.31.12.0 - 172.31.13.255
 172.31.14.0 - 172.31.15.255 172.31.16.0 - 172.31.17.255

h) $r^n \gg 1000 \rightarrow n = 10$

$14 - 10 = 4 \rightarrow r^4 = 256$

10.10.0.0 - 10.10.0.255 10.10.0.1 - 10.10.0.255
 10.10.0.256 - 10.10.0.511 10.10.0.512 - 10.10.0.767
 10.10.0.768 - 10.10.0.1023 \rightarrow 10.10.0.1024 - 10.10.0.1279
 10.10.0.1280 - 10.10.0.1535 10.10.0.1536 - 10.10.0.1791
 10.10.0.1792 - 10.10.0.2047 10.10.0.2048 - 10.10.0.2303
 10.10.0.2304 - 10.10.0.2559 10.10.0.2560 - 10.10.0.2815

$$v) 2^n > 10^4 \rightarrow n = 10$$

$$14 - 10 = 4 \rightarrow 2^4 = 16$$

$$192.141.0.0 - 192.141.0.15$$

$$192.141.0.1 - 192.141.0.15$$

$$192.141.0.16 - 192.141.0.31$$

$$192.141.0.32 - 192.141.1.15$$

$$192.141.0.128 - 192.141.0.191$$

$$192.141.0.129 - 192.141.1.190$$

$$192.141.0.192 - 192.141.0.255$$

$$192.141.0.192 - 192.141.0.255$$

$$192.141.1.0 - 192.141.1.15$$

$$192.141.1.1 - 192.141.1.15$$