



Redes de Computadores

Grado en Ingeniería Informática en Tecnologías
de la Información

Práctica 4: División de la red

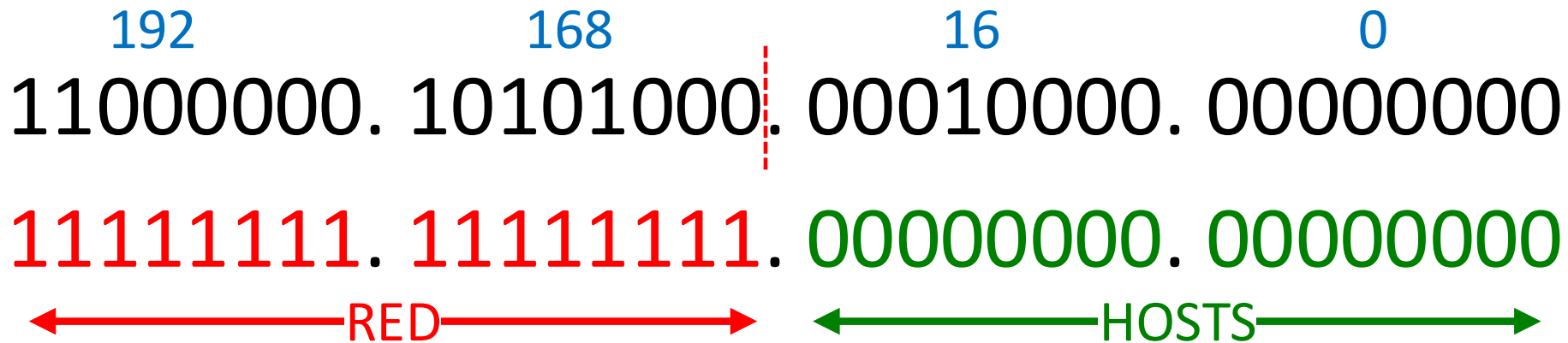
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División de redes

Ingeniería
Telemática

Partimos de la red 192.168.16.0/16



Nos piden:

- Una subred con espacio para 300 hosts*
- Una subred con espacio para 120 hosts*
- Una subred con espacio para 30 hosts*

*incluido el Gateway. Es un host de capa 3 más...



Empezamos la división por la subred más grande

/31	→ 255.255.255.254	→ 11111111.11111111.11111111.11111110	→ $2^1 =$	2 Hosts
/30	→ 255.255.255.252	→ 11111111.11111111.11111111.11111100	→ $2^2 =$	4 Hosts
/29	→ 255.255.255.248	→ 11111111.11111111.11111111.11111000	→ $2^3 =$	8 Hosts
/28	→ 255.255.255.240	→ 11111111.11111111.11111111.11110000	→ $2^4 =$	16 Hosts
/27	→ 255.255.255.224	→ 11111111.11111111.11111111.11100000	→ $2^5 =$	32 Hosts
/26	→ 255.255.255.192	→ 11111111.11111111.11111111.11000000	→ $2^6 =$	64 Hosts
/25	→ 255.255.255.128	→ 11111111.11111111.11111111.10000000	→ $2^7 =$	128 Hosts
/24	→ 255.255.255.0	→ 11111111.11111111.11111111.00000000	→ $2^8 =$	256 Hosts
/23	→ 255.255.254.0	→ 11111111.11111111.11111110.00000000	→ $2^9 =$	512 Hosts
/22	→ 255.255.252.0	→ 11111111.11111111.11111100.00000000	→ $2^{10} =$	1024 Hosts
/21	→ 255.255.248.0	→ 11111111.11111111.11111000.00000000	→ $2^{11} =$	2048 Hosts
/20	→ 255.255.240.0	→ 11111111.11111111.11110000.00000000	→ $2^{12} =$	4096 Hosts
/19	→ 255.255.224.0	→ 11111111.11111111.11100000.00000000	→ $2^{13} =$	8192 Hosts
/18	→ 255.255.192.0	→ 11111111.11111111.11000000.00000000	→ $2^{14} =$	16384 Hosts
/17	→ 255.255.128.0	→ 11111111.11111111.10000000.00000000	→ $2^{15} =$	32768 Hosts



División de redes

Red

192 168 16 0
11000000. 10101000. 00010000. 00000000
11111111. 11111111. 11111111 0. 00000000
← RED → ← HOSTS →

Broadcast

192 168 17 255
11000000. 10101000. 00010001. 11111111
11111111. 11111111. 11111111 0. 00000000

Primera

192 168 16 1
11000000. 10101000. 00010000. 00000001
11111111. 11111111. 11111111 0. 00000000

Última

192 168 17 254
11000000. 10101000. 00010001. 11111110
11111111. 11111111. 11111111 0. 00000000



División de redes

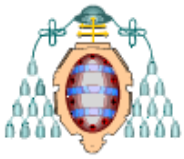
Ingeniería
Telemática

Acabamos la red anterior en esta dirección...

192	168	17	255
11000000.	10101000.	0001000	1. 11111111
11111111.	11111111.	1111111	0. 00000000

... seguimos dividiendo a partir de la siguiente:

192	168	18	0
11000000.	10101000.	000100	10. 00000000

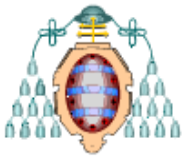


División de redes

Ingeniería
Telemática

Siguiente subred más grande → 120 equipos

/31 → 255.255.255.254	→ 11111111.11111111.11111111.11111110	→ $2^1 =$	2 Hosts
/30 → 255.255.255.252	→ 11111111.11111111.11111111.11111100	→ $2^2 =$	4 Hosts
/29 → 255.255.255.248	→ 11111111.11111111.11111111.11111000	→ $2^3 =$	8 Hosts
/28 → 255.255.255.240	→ 11111111.11111111.11111111.11110000	→ $2^4 =$	16 Hosts
/27 → 255.255.255.224	→ 11111111.11111111.11111111.11100000	→ $2^5 =$	32 Hosts
/26 → 255.255.255.192	→ 11111111.11111111.11111111.11000000	→ $2^6 =$	64 Hosts
/25 → 255.255.255.128	→ 11111111.11111111.11111111.10000000	→ $2^7 =$	128 Hosts
/24 → 255.255.255.0	→ 11111111.11111111.11111111.00000000	→ $2^8 =$	256 Hosts
/23 → 255.255.254.0	→ 11111111.11111111.11111110.00000000	→ $2^9 =$	512 Hosts
/22 → 255.255.252.0	→ 11111111.11111111.11111100.00000000	→ $2^{10} =$	1024 Hosts
/21 → 255.255.248.0	→ 11111111.11111111.11111000.00000000	→ $2^{11} =$	2048 Hosts
/20 → 255.255.240.0	→ 11111111.11111111.11110000.00000000	→ $2^{12} =$	4096 Hosts
/19 → 255.255.224.0	→ 11111111.11111111.11100000.00000000	→ $2^{13} =$	8192 Hosts
/18 → 255.255.192.0	→ 11111111.11111111.11000000.00000000	→ $2^{14} =$	16384 Hosts
/17 → 255.255.128.0	→ 11111111.11111111.10000000.00000000	→ $2^{15} =$	32768 Hosts



División de redes

Red

192 168 18 0
11000000. 10101000. 00010010. 00000000
11111111. 11111111. 11111111. 10000000
← RED → ← HOSTS →

Broadcast

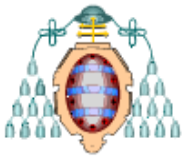
192 168 18 127
11000000. 10101000. 00010010. 01111111
11111111. 11111111. 11111111. 10000000

Primera

192 168 18 1
11000000. 10101000. 00010010. 00000001
11111111. 11111111. 11111111. 10000000

Última

192 168 18 126
11000000. 10101000. 00010010. 01111110
11111111. 11111111. 11111111. 10000000



División de redes

Ingeniería
Telemática

Acabamos la red anterior en esta dirección...

192	168	18	127
11000000.	10101000.	00010010.	01111111
11111111.	11111111.	11111111.	10000000

... seguimos dividiendo a partir de la siguiente:

192	168	18	128
11000000.	10101000.	00010010.	10000000



Subred restante → 30 equipos

/31 → 255.255.255.254	→ 11111111.11111111.11111111.11111110	→ $2^1 =$	2 Hosts
/30 → 255.255.255.252	→ 11111111.11111111.11111111.11111100	→ $2^2 =$	4 Hosts
/29 → 255.255.255.248	→ 11111111.11111111.11111111.11111000	→ $2^3 =$	8 Hosts
/28 → 255.255.255.240	→ 11111111.11111111.11111111.11110000	→ $2^4 =$	16 Hosts
/27 → 255.255.255.224	→ 11111111.11111111.11111111.11100000	→ $2^5 =$	32 Hosts
/26 → 255.255.255.192	→ 11111111.11111111.11111111.11000000	→ $2^6 =$	64 Hosts
/25 → 255.255.255.128	→ 11111111.11111111.11111111.10000000	→ $2^7 =$	128 Hosts
/24 → 255.255.255.0	→ 11111111.11111111.11111111.00000000	→ $2^8 =$	256 Hosts
/23 → 255.255.254.0	→ 11111111.11111111.11111110.00000000	→ $2^9 =$	512 Hosts
/22 → 255.255.252.0	→ 11111111.11111111.11111100.00000000	→ $2^{10} =$	1024 Hosts
/21 → 255.255.248.0	→ 11111111.11111111.11111000.00000000	→ $2^{11} =$	2048 Hosts
/20 → 255.255.240.0	→ 11111111.11111111.11110000.00000000	→ $2^{12} =$	4096 Hosts
/19 → 255.255.224.0	→ 11111111.11111111.11100000.00000000	→ $2^{13} =$	8192 Hosts
/18 → 255.255.192.0	→ 11111111.11111111.11000000.00000000	→ $2^{14} =$	16384 Hosts
/17 → 255.255.128.0	→ 11111111.11111111.10000000.00000000	→ $2^{15} =$	32768 Hosts



División de redes

Ingeniería
Telemática

¿Y si para la última nos requiriesen espacio para 32 hosts?

/31	→ 255.255.255.254	→ 11111111.11111111.11111111.11111110	→ $2^1 =$	2 Hosts
/30	→ 255.255.255.252	→ 11111111.11111111.11111111.11111100	→ $2^2 =$	4 Hosts
/29	→ 255.255.255.248	→ 11111111.11111111.11111111.11111000	→ $2^3 =$	8 Hosts
/28	→ 255.255.255.240	→ 11111111.11111111.11111111.11110000	→ $2^4 =$	16 Hosts
/27	→ 255.255.255.224	→ 11111111.11111111.11111111.11100000	→ $2^5 =$	32 Hosts
/26	→ 255.255.255.192	→ 11111111.11111111.11111111.11000000	→ $2^6 =$	64 Hosts
/25	→ 255.255.255.128	→ 11111111.11111111.11111111.10000000	→ $2^7 =$	128 Hosts
/24	→ 255.255.255.0	→ 11111111.11111111.11111111.00000000	→ $2^8 =$	256 Hosts
/23	→ 255.255.254.0	→ 11111111.11111111.11111110.00000000	→ $2^9 =$	512 Hosts
/22	→ 255.255.252.0	→ 11111111.11111111.11111100.00000000	→ $2^{10} =$	1024 Hosts
/21	→ 255.255.248.0	→ 11111111.11111111.11111000.00000000	→ $2^{11} =$	2048 Hosts
/20	→ 255.255.240.0	→ 11111111.11111111.11110000.00000000	→ $2^{12} =$	4096 Hosts
/19	→ 255.255.224.0	→ 11111111.11111111.11100000.00000000	→ $2^{13} =$	8192 Hosts
/18	→ 255.255.192.0	→ 11111111.11111111.11000000.00000000	→ $2^{14} =$	16384 Hosts
/17	→ 255.255.128.0	→ 11111111.11111111.10000000.00000000	→ $2^{15} =$	32768 Hosts



División de redes

Red

192 168 18 128
11000000. 10101000. 00010010. 10000000
11111111. 11111111. 11111111. 11100000
← RED → ← HOSTS →

Broadcast

192 168 18 159
11000000. 10101000. 00010010. 10011111
11111111. 11111111. 11111111. 11100000

Primera

192 168 18 129
11000000. 10101000. 00010010. 10000001
11111111. 11111111. 11111111. 11100000

Última

192 168 18 158
11000000. 10101000. 00010010. 10011110
11111111. 11111111. 11111111. 11100000