

TENEMOS:

- RED: 192.168.1.0
- TIPO DE RED: CLASE C
- MASCARA POR DEFECTO: 255.255.255.0 – 11111111.11111111.11111111.00000000
- PREFIJO: /24

NECESITAMOS:

- 8 SUBREDES
- CADA LAN UNA SUBRED DISTINTA
- DEFINIR CADA SUBRED
- ELEGIR Y DOCUMENTAR LA SUBRED Y DIRECCIONES

Como inicialmente tenemos una red de **clase c**, su máscara por defecto deja un espacio de **8 bits** para hosts. Esto representado sería una potencia de **$2^8 = 256 - 2$ (red y broadcast) = 254 host** posibles. Pero como necesitamos 8 subredes, vamos a coger **3 bits** de la máscara para poder dividirla y tener suficiente espacio en cada subred para las ips necesarias y una posible ampliación de dispositivos en el futuro.

11111111.11111111.11111111.11100000 = 255.255.255.224

/24 + 3 bits = /27 sería el nuevo prefijo de la máscara de subred.

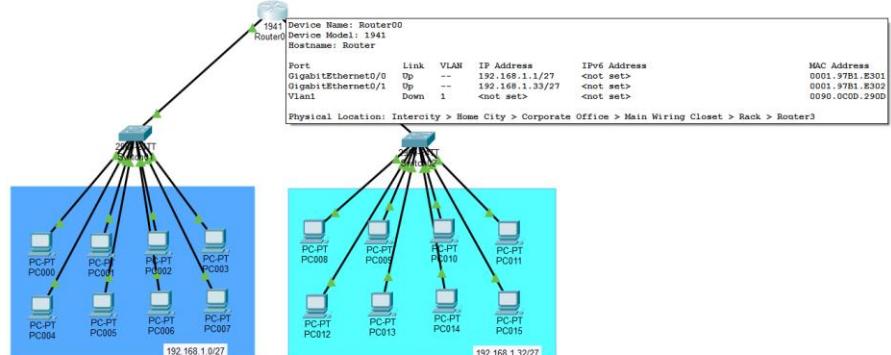
Quedarían **5 bits** para hosts (**$2^5 = 32 - 2$ (red y broadcast) = 30**) que serían **30 dispositivos** para cada subred, espacio mas que suficiente para lo que necesitamos.

REPRESENTACIÓN EN TABLA:

NÚMERO	RED	MÁSCARA	PREFIJO	IP INICIO	IP FIN	BROADCAST
1	192.168.1.0	255.255.255.224	/27	192.168.1.1	192.168.1.30	192.168.1.31
2	192.168.1.32	255.255.255.224	/27	192.168.1.33	192.168.1.62	192.168.1.63
3	192.168.1.64	255.255.255.224	/27	192.168.1.65	192.168.1.94	192.168.1.95
4	192.168.1.96	255.255.255.224	/27	192.168.1.97	192.168.1.126	192.168.1.127
5	192.168.1.128	255.255.255.224	/27	192.168.1.129	192.168.1.158	192.168.1.159
6	192.168.1.160	255.255.255.224	/27	192.168.1.161	192.168.1.190	192.168.1.191
7	192.168.1.192	255.255.255.224	/27	192.168.1.193	192.168.1.222	192.168.1.223
8	192.168.1.224	255.255.255.224	/27	192.168.1.225	192.168.1.254	192.168.1.255

CISCO PACKET TRACER:

SUBRED 1	192.168.1.0
ROUTER (GIGABIT 0)	192.168.1.1
PC000	192.168.1.2
PC001	192.168.1.3
PC002	192.168.1.4
PC003	192.168.1.5
PC004	192.168.1.6
PC005	192.168.1.7
PC006	192.168.1.8
PC007	192.168.1.9
LIBRES	192.168.1.10 - 192.168.1.30
BROADCAST	192.168.1.31
SUBRED 2	192.168.1.32
ROUTER (GIGABIT 1)	192.168.1.33
PC008	192.168.1.34
PC009	192.168.1.35
PC010	192.168.1.36
PC011	192.168.1.37
PC012	192.168.1.38
PC013	192.168.1.39
PC014	192.168.1.40
PC015	192.168.1.41
LIBRES	192.168.1.42 - 192.168.1.62
BROADCAST	192.168.1.63



COMANDOS SUBRED 1

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```
Router00
Physical Config CLI Attributes
IOS Command Line Interface
Cisco IOS Software, C1900 Software (C1900-UNIVERSALK9-M), Version 15.1(4)M4, RELEASE SOFTWARE (fc2)
Technical Support: http://www.cisco.com/techsupport
Copyright (c) 1986-2012 by Cisco Systems, Inc.
Compiled Thurs 5-Jan-13 15:41 by pt_team
Image text-base: 0x2100F918 data-base: 0x24729040

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A summary of U.S. laws governing Cisco cryptographic products may be found at:
http://www.cisco.com/wlc/export/crypto/tool/stugr.html

If you require further assistance please contact us by sending email to
export@cisco.com.

Cisco CISCO1941/K9 (revision 1.0) with 491520K/32768K bytes of memory.
Processor board ID FX112400S
2 Gigabit Ethernet interfaces
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)

Press RETURN to get started!

Router>
Router# Router>config terminal
Enter configuration commands, one per line. End With CNTL/Z.
Router(config)#interface GigabitEthernet0/0
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#no shutdown
Router(config-if)#

%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up

Copy Paste
```

COMANDO SUBRED 2

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The screenshot shows the Router00 CLI interface with the following details:

- Router00** is the device name.
- Physical Config CLI Attributes** are the tabs at the top.
- IOS Command Line Interface** is the title of the main window.
- Press RETURN to get started.** is the initial message.
- Router>enable** starts the configuration mode.
- Router#** enters configuration terminal mode.
- Router(config-terminal)** displays the current configuration mode.
- Enter configuration commands, one per line. End with CNTL/Z.** is the prompt for entering commands.
- Router(config)#interface GigabitEthernet0/0** configures the first interface.
- Router(config-if)#** enters interface configuration mode for GigaEth 0/0.
- Router(config-if)#exit** exits interface configuration mode.
- Router(config)#interface GigabitEthernet0/0** re-selects the interface.
- Router(config-if)#exit** exits interface configuration mode.
- Router(config)#interface GigabitEthernet0/1** configures the second interface.
- Router(config-if)#ip address 192.168.1.33 255.255.255.224** sets its IP address.
- Router(config-if)#exit** exits interface configuration mode.
- Router(config)#interface GigabitEthernet0/0** re-selects the interface.
- Router(config-if)#exit** exits interface configuration mode.
- Router(config-if)#exit** exits interface configuration mode.
- Router(config-if)#no shutdown** enables the interface.
- Router(config-if)#exit** exits interface configuration mode.
- %LINK-3-UPDOWNN: Interface GigabitEthernet0/1, changed state to down** is a log message indicating the link status change.
- Router(config-if)#exit** exits interface configuration mode.
- Router(config)#interface GigabitEthernet0/1** re-selects the interface.
- Router(config-if)#exit** exits interface configuration mode.

At the bottom right are **Copy** and **Paste** buttons.

CONFIGURACION IP DE 1 ORDENADOR DE CADA SUBRED

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PC000

Physical Config Desktop Programming Attributes

P Configuration X

Interface FastEthernet0

IP Configuration

DHCP Static

IPv4 Address 192.168.1.2

Subnet Mask 255.255.255.224

Default Gateway 192.168.1.1

DNS Server 0.0.0.0

IPv6 Configuration

Automatic Static

IPv6 Address FE80:200:FFFF:FEB0:3060 /

Link Local Address FE80:200:FFFF:FEB0:3060

Default Gateway

DNS Server

802.1X

Use 802.1X Security

Authentication MD5

Username

Password

Top

:CICIO PRACTICO ENTREGABLE NAVIDAD.ppt

PC008

Physical Config Desktop Programming Attributes

IP Configuration

Interface: FastEthernet0 X

IP Configuration

DHCP Static

IPv4 Address: 192.168.1.34

Subnet Mask: 255.255.255.224

Default Gateway: 192.168.1.33

DNS Server: 0.0.0.0

IPv6 Configuration:

Automatic Static

IPv6 Address: FE80::205:5EFF:FEA6:7144 / |

Link Local Address: FE80:205:5EFF:FEA6:7144

Default Gateway:

DNS Server:

802.1X

Use 802.1X Security

Authentication: MD5

Username:

Password:

COMPROBACIONES DE CONECTIVIDAD / PING SUBREDES DISTINTAS

:CICIO PRACTICO ENTREGABLE NAVIDAD.pkt

The screenshot shows two windows from Cisco Packet Tracer. Both windows have the title bar 'PC000' and 'PC008'. The left window's title bar also says 'Physical Config Desktop Programming Attributes'. The right window's title bar also says 'Physical Config Desktop Programming Attributes'. Both windows have a 'Command Prompt' tab selected. The left window displays the command 'C:\>ping 192.168.1.34' and its output, which includes several replies from 192.168.1.34 with TTL=127. The right window displays the command 'C:\>ping 192.168.1.2' and its output, which includes several replies from 192.168.1.2 with TTL=127. Both windows show ping statistics at the bottom.

```
C:\>ping 192.168.1.34 with 32 bytes of data:
Reply from 192.168.1.34: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.1.34:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 192.168.1.37 with 32 bytes of data:
Request timed out.
Reply from 192.168.1.37: bytes=32 time<1ms TTL=127
Reply from 192.168.1.37: bytes=32 time<1ms TTL=127
Reply from 192.168.1.37: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.1.37:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 3ms
C:\>
```

```
C:\>ping 192.168.1.2 with 32 bytes of data:
Request timed out.
Reply from 192.168.1.2: bytes=32 time<1ms TTL=127
Reply from 192.168.1.2: bytes=32 time<1ms TTL=127
Reply from 192.168.1.2: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.1.2:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 192.168.1.3 with 32 bytes of data:
Request timed out.
Reply from 192.168.1.3: bytes=32 time<1ms TTL=127
Reply from 192.168.1.3: bytes=32 time<1ms TTL=127
Reply from 192.168.1.3: bytes=32 time<1ms TTL=127
Ping statistics for 192.168.1.3:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
```

COMPROBACIONES DE CONECTIVIDAD / PING MISMA SUBRED, ENTRE MISMA SUBRED Y GATEWAY

:CICIO PRACTICO ENTREGABLE NAVIDAD.pkt

The screenshot shows two windows from Cisco Packet Tracer. Both windows have the title bar 'PC002' and 'PC010'. The left window's title bar also says 'Physical Config Desktop Programming Attributes'. The right window's title bar also says 'Physical Config Desktop Programming Attributes'. Both windows have a 'Command Prompt' tab selected. The left window displays the command 'C:\>ping 192.168.1.1' and its output, which includes several replies from 192.168.1.1 with TTL=255. The right window displays the command 'C:\>ping 192.168.1.32' and its output, which includes several replies from 192.168.1.32 with TTL=128. Both windows show ping statistics at the bottom.

```
C:\>ping 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time<1ms TTL=255
Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>ping 192.168.1.5 with 32 bytes of data:
Reply from 192.168.1.5: bytes=32 time<1ms TTL=128
Ping statistics for 192.168.1.5:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
```

```
C:\>ping 192.168.1.32 with 32 bytes of data:
Reply from 192.168.1.32: bytes=32 time<3ms TTL=128
Ping statistics for 192.168.1.32:
    Packets: Sent = 4, Received = 31, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 48ms, Average = 1ms
C:\>ping 192.168.1.40 with 32 bytes of data:
Reply from 192.168.1.40: bytes=32 time<1ms TTL=128
Ping statistics for 192.168.1.40:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\>
```

