

# TOPOLOGIA 7

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# Subneteo IPv4

## 12.0.0.0/9

### 150,000 hosts - 255.252.0.0

11111111.10000000.00000000.00000000 (255.128.0.0)

11111111.11111100.00000000.00000000

*262,144 host en total*

6 bits para subred: 64 subredes

2 bits para hosts: 4 host por subred

### 100,000 hosts - 255.254.0.0

11111111.10000000.00000000.00000000 (255.128.0.0)

11111111.11111110.00000000.00000000

*131,072 hosts en total*

7 bits para subred: 128 subredes

1 bits para host: 2 host por subred

### 30,000 hosts - 255.255.128.0

11111111.10000000.00000000.00000000 (255.128.0.0)

11111111.11111111.10000000.00000000

*32,768 hosts en total*

1 bit para subred: 2 subredes

7 bits para host: 128 host por subred

### **500 hosts - 255.255.254.0**

11111111.10000000.00000000.00000000 (255.128.0.0)

11111111.11111111.11111110.00000000

*512 hosts en total*

7 bits para subred: 128 subredes

1 bits para host: 2 hosts por subred

### **2 hosts - 255.255.255.252**

11111111.10000000.00000000.00000000 (255.128.0.0)

11111111.11111111.11111110.11111100

*4 hosts en total*

6 bits para subred: 64 subredes

2 bits para host: 4 hosts por subred

## **Tabla de Rangos**

### **150,000 hosts - 255.252.0.0**

12.0.0.0

12.3.255.255

### **500 hosts - 255.255.254.0**

12.6.128.0

12.6.129.255

### **100,000 hosts - 255.254.0.0**

12.4.0.0

12.5.255.255

### **2 hosts - 255.255.255.252**

12.6.130.0

12.6.130.3

### **30,000 hosts - 255.255.128.0**

12.6.0.0

12.6.127.255

**2 hosts - 255.255.255.252**

12.6.130.4

12.6.130.7

**2 hosts - 255.255.255.252**

12.6.130.4

12.6.130.7

**2 hosts - 255.255.255.252**

12.6.130.12

12.6.130.15

## Calculo Link-Local

### FE80::?

#### LAN A

**Dirección MAC R3:** 00-02-4a-90-8e-74

**Binario Primer Exteto:** 0000 0000

**Invertir el 7 bit:** 0000 0010

**EUI-64:** 0202:4AFF:FE90:8E74

FE80:A::0202:4AFF:FE90:8E74 (LINK LOCAL A)

#### LAN B

**Dirección MAC R3:** 00-90-21-a1-e0-63

**Binario Primer Exteto:** 0000 0000

**Invertir el 7 bit:** 0000 0010

**EUI-64:** 0290:21FF:FEA1:E063

FE80:B::0290:21FF:FEA1:E063 (LINK LOCAL B)

## LAN C

Dirección MAC R3: 00-e0-8f-9c-9d-a7

Binario Primer Exteto: 0000 0000

Invertir el 7 bit: 0000 0010

EUI-64: 02E0:8FFF:FE9C:9DA7

FE80:C::02E0:8FFF:FE9C:9DA7 (LINK LOCAL C)

## LAN D

Dirección MAC R3: 00-00-0c-64-30-01

Binario Primer Exteto: 0000 0000

Invertir el 7 bit: 0000 0010

EUI-64: 0200:0CFF:FE64:3001

FE80:D::0200:0CFF:FE64:3001 (LINK LOCAL D)

# Subneteo IPv6 (Enlaces Seriales)

## 2001:1234:CAFE:E::/127

### R3-R4 (Serial0/0/0)

2001:1234:CAFE:E::/127

2001:1234:CAFE:000E:0000:0000:0000:0000/127

0000

0010

2001:1234:CAFE:000E:0000:0000:0000:0002/127

0100

2001:1234:CAFE:000E:0000:0000:0000:0004/127

0110

2001:1234:CAFE:000E:0000:0000:0000:000**6**/127

**0110**

2001:1234:CAFE:000E:0000:0000:0000:000**8**/127

**1000**

2001:1234:CAFE:000E:0000:0000:0000:000**A**/127

**1010**

2001:1234:CAFE:000E:0000:0000:0000:000**C**/127

**1100**

2001:1234:CAFE:000E:0000:0000:0000:000**E**/127

**1110**

**Primera Asignable:** 2001:1234:CAFE:E::2/127

#### **R3-R4 (Serial0/0/0)**

2001:1234:CAFE:E::2/127

2001:1234:CAFE:E::3/127

#### **R2-R4 (Serial0/1/0)**

2001:1234:CAFE:E::4/127

2001:1234:CAFE:E::5/127

#### **R1-R2 (Serial0/0/1)**

2001:1234:CAFE:E::6/127

2001:1234:CAFE:E::7/127

#### **R1-R3 (Serial0/1/1)**

2001:1234:CAFE:E::8/127

2001:1234:CAFE:E::9/127

## Tabla de Asignación de Direcciones

| Dispositivo | Interfaz   | IPv4           | IPv6                    |
|-------------|------------|----------------|-------------------------|
| R1          | Gigabit0/0 | 12.1.0.1/18    | 2001:1234:CAFE:D::1/64  |
|             | Se0/0/1    | 12.6.130.1/30  | 2001:1234:CAFE:E::6/127 |
|             | Se0/1/0    | 12.6.130.2/30  | 2001:1234:CAFE:E::8/127 |
| R2          | Gigabit0/0 | 12.6.128.1/23  | 2001:1234:CAFE:C::1/64  |
|             | Se0/0/1    | 12.6.130.6/30  | 2001:1234:CAFE:E::7/127 |
|             | Se0/1/1    | 12.6.130.9/30  | 2001:1234:CAFE:E::4/127 |
| R3          | Gigabit0/0 | 12.6.1.1/17    | 2001:1234:CAFE:A::1/64  |
|             | Se0/0/0    | 12.6.130.13/30 | 2001:1234:CAFE:E::2/127 |
|             | Se0/1/0    | 12.6.130.2/30  | 2001:1234:CAFE:E::9/127 |
| R4          | Gigabit0/0 | 12.4.1.1/15    | 2001:1234:CAFE:B::1/64  |
|             | Se0/0/0    | 12.6.130.14/30 | 2001:1234:CAFE:E:3/127  |
|             | Se0/1/1    | 12.6.130.10/30 | 2001:1234:CAFE:E::5/127 |

| Dispositivo | Interfaz | IPv4          | IPV6                   | Gateway       |
|-------------|----------|---------------|------------------------|---------------|
| S1          | Vlan1    | 12.1.0.2/18   | no aplica              | 12.1.0.1/18   |
| S2          | Vlan1    | 12.6.128.2/23 | no aplica              | 12.6.128.1/23 |
| S3          | Vlan1    | 12.6.1.2/17   | no aplica              | 12.6.1.1/17   |
| S4          | Vlan1    | 12.4.1.2/15   | no aplica              | 12.4.1.1/15   |
| PC1         | FaEth    | 12.1.0.3/18   | 2001:1234:CAFE:D::3/64 | 12.1.0.1/18   |
| PC3         | FaEth    | 12.6.1.3/17   | 2001:1234:CAFE:A::3/64 | 12.6.1.1/17   |
| PC4         | FaEth    | 12.4.1.3/15   | 2001:1234:CAFE:B::3/64 | 12.4.1.1/15   |
| TFTP        | FaEth    | 12.6.128.3/23 | 2001:1234:CAFE:C::3/64 | 12.6.128.1/23 |
| DHCP1       | FaEth    | 12.1.0.4/18   | 2001:1234:CAFE:D::4/64 | 12.1.0.1/18   |
| DHCP3       | FaEth    | 12.6.1.4/17   | 2001:1234:CAFE:A::4/64 | 12.6.1.1/17   |
| DHCP4       | FaEth    | 12.4.1.4/15   | 2001:1234:CAFE:B::4/64 | 12.4.1.1/15   |