



# Introducción a la sección: **Direcciones IP**

# Direcciones IP

- Componentes de direcciones IPv4
- Introducción a Subnetting
- Classfull y Classless
- Direcciones IP públicas y privadas
- Componentes de direcciones IPv6

```
Command Prompt
Ethernet adapter Ethernet 2:

Connection-specific DNS Suffix . . . :
Link-local IPv6 Address . . . . . : fe80::8ca:6eac:7725:f0c%10
IPv4 Address. . . . . : 192.168.10.128
Subnet Mask . . . . . : 255.255.255.0
Default Gateway . . . . . : 192.168.10.1
```



# Componentes de IPv4

# Componentes de IPv4

- Se establece en la Capa 3 del OSI
- Subdividido en 4 octetos
- 32 bits en total
- Existen IPv4 públicas y privadas
- Representación de binarios a dígitos

An IPv4 address (dotted-decimal notation)

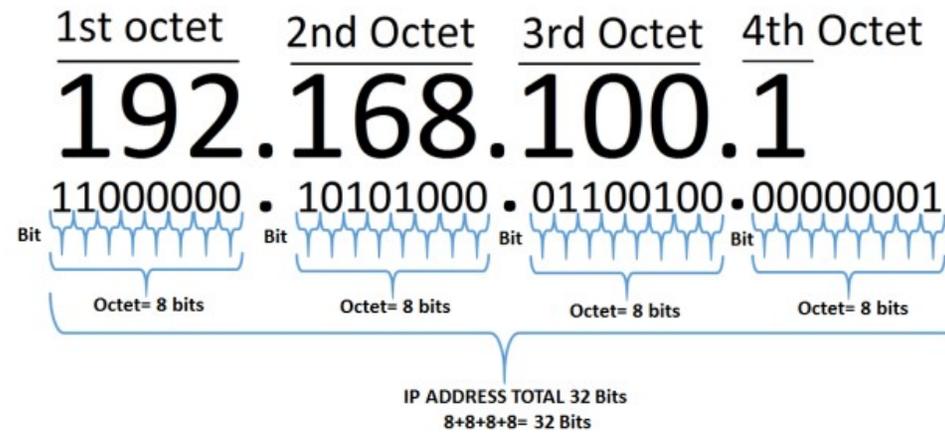
**172 . 16 . 254 . 1**

↓ ↓ ↓ ↓  
10101100 .00010000 .11111110 .00000001

One byte=Eight bits

Thirty-two bits (4 x 8), or 4 bytes

# Componentes de IPv4





# Introducción a Subnetting

# Introducción a Subnetting

- Subdivisión de redes en grupos
- Se divide en 2 partes
- Subredes se identifican con una máscara
- Existen subdivisiones Classfull & Classless
- Utilizado tanto en LAN como WAN

An IPv4 address (dotted-decimal notation)

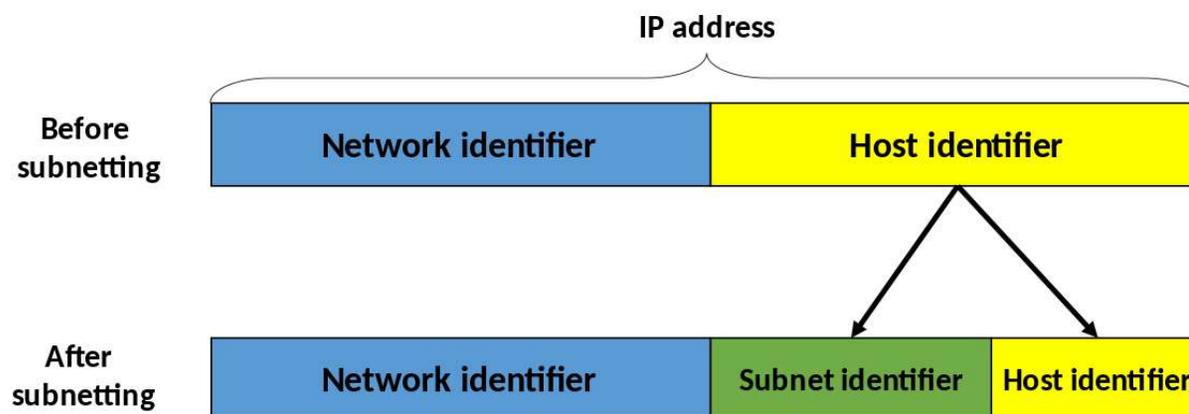
**172 . 16 . 254 . 1**

10101100 .00010000 .11111110 .00000001

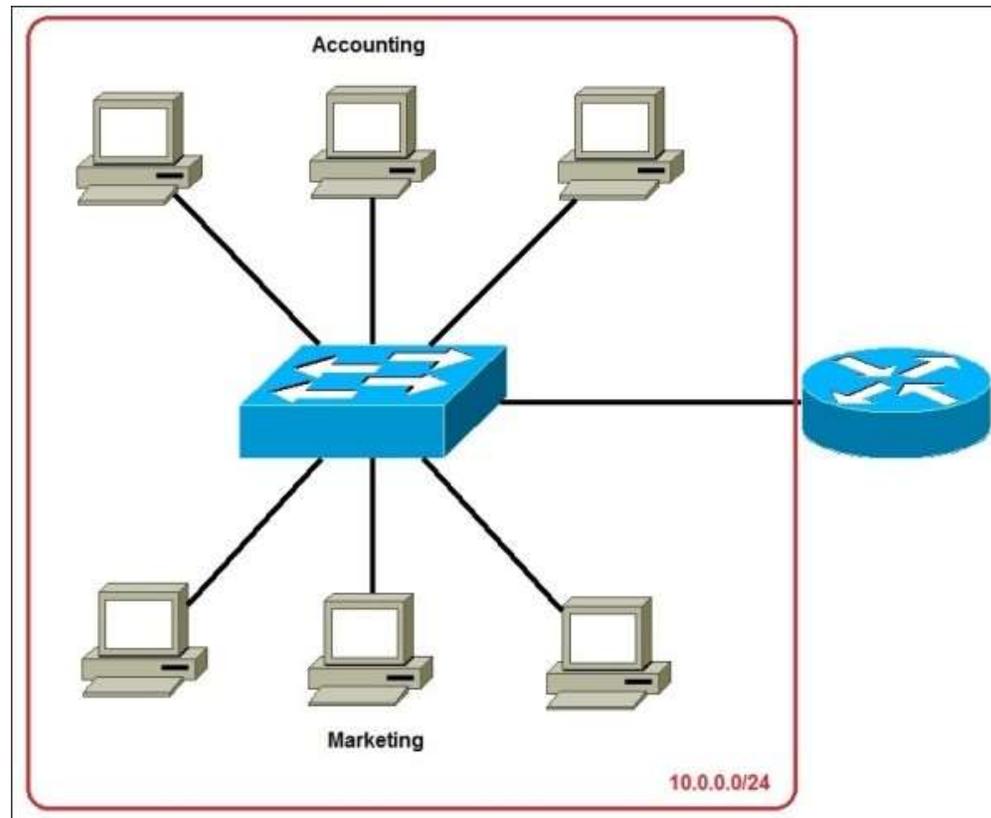
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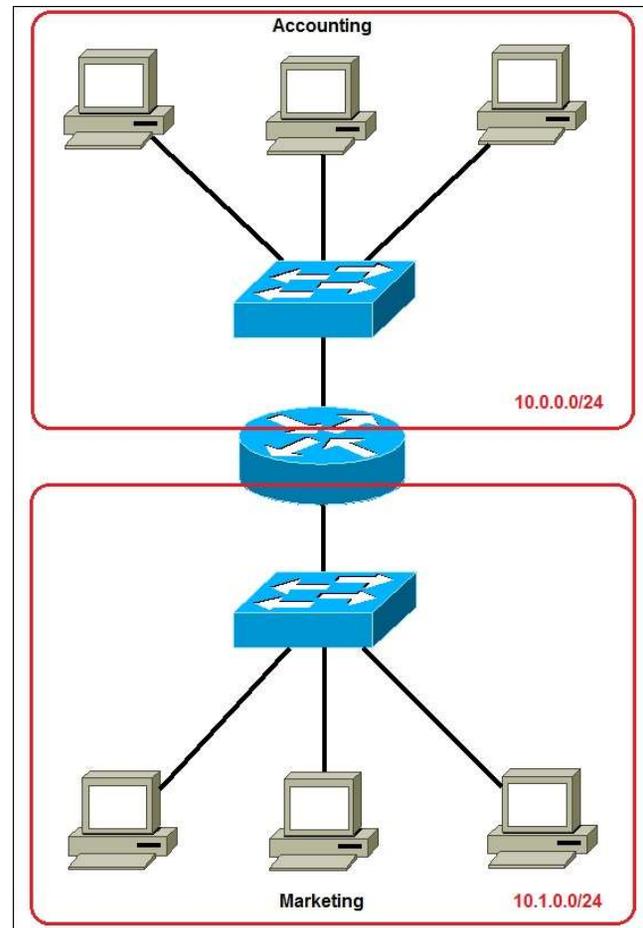
# Introducción a Subnetting



# Introducción a Subnetting



# Introducción a Subnetting

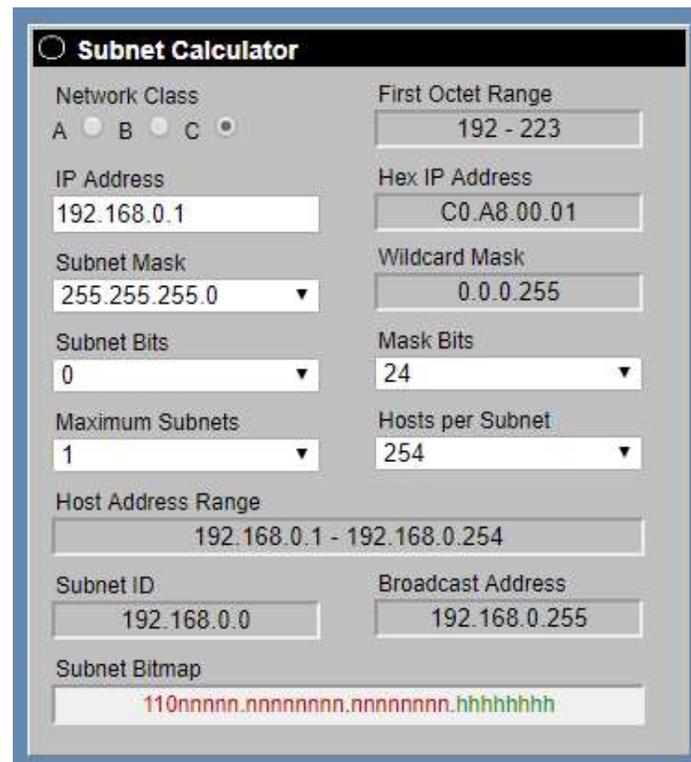




# Direcciones IP Públicas y Privadas

# Subnet Calculator

<http://www.subnet-calculator.com/>



**Subnet Calculator**

Network Class  
A  B  C

First Octet Range  
192 - 223

IP Address  
192.168.0.1

Hex IP Address  
C0.A8.00.01

Subnet Mask  
255.255.255.0

Wildcard Mask  
0.0.0.255

Subnet Bits  
0

Mask Bits  
24

Maximum Subnets  
1

Hosts per Subnet  
254

Host Address Range  
192.168.0.1 - 192.168.0.254

Subnet ID  
192.168.0.0

Broadcast Address  
192.168.0.255

Subnet Bitmap  
110nnnnn.nnnnnnnn.nnnnnnnn.hhhhhhhh



# Direcciones IP Públicas y Privadas

Address Start Range	Address End Range	What Range is Used for
0.0.0.0	0.255.255.255	Reserved
10.0.0.0	10.255.255.255	Class A Private Address Block
127.0.0.0	127.255.255.255	Loopback Address Block
128.0.0.0	128.0.255.255	Reserved
169.254.0.0	169.254.255.255	Private Address Block Reserved for APIPA
172.16.0.0	173.31.255.255	Class B Private Address Block
191.255.0.0	191.255.255.255	Reserved
192.0.0.0	192.0.0.255	Reserved
192.168.0.0	192.168.255.255	Class C Private Address Block
223.255.255.0	223.255.255.255	Reserved

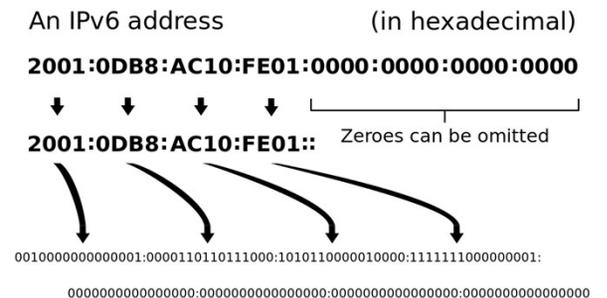




# Componentes de IPv6

# Componentes de IPv6

- Version mas reciente del Internet Protocol
- Utiliza **128** bit vs. **32** bit del IPv4
- 340 billón billón billón billón
- No hay **NAT**
- DHCPv6
- Protocolos de transición y autoconfiguración



# Componentes de IPv6

An IPv6 address (in hexadecimal)

**2001:0DB8:AC10:FE01:0000:0000:0000:0000**



**2001:0DB8:AC10:FE01::** Zeroes can be omitted

