

INSTITUTO TECNOLÓGICO DE CANCÚN

LEON QUEB MIGUEL ANGEL

ISMAEL JIMENEZ SANCHEZ

FUND. TELECOMUNICACIONES

HORARIO

17:00 – 18:00



## Cálculo de redes

### - Ejercicio

Realizar las siguientes conversiones

|   |                                |
|---|--------------------------------|
| 1 | Convertir la IP a binario      |
| 2 | Convertir la mascara a binario |
| 3 | IP & MASK = Network ID         |
| 4 | WCARD = !MASK                  |
| 5 | ID   WCARD = BROADCAST         |
| 6 | 1a IP= ID + 1bit               |
| 7 | Last IP = BCAST - 1bit         |

- IP: 10.0.0.0/8

|                |          |          |          |          |                |
|----------------|----------|----------|----------|----------|----------------|
| IP a Binario   | 00001010 | 00000000 | 00000000 | 00000000 | 10.0.0.0       |
| Mask a Binario | 11111111 | 00000000 | 00000000 | 00000000 | 255.0.0.0      |
| ID             | 00001010 | 00000000 | 00000000 | 00000000 | 10.0.0.0/8     |
| WCARD          | 00000000 | 11111111 | 11111111 | 11111111 | 0.255.255.255  |
| Broadcast      | 00001010 | 11111111 | 11111111 | 11111111 | 10.255.255.255 |
| 1era IP        | 00001010 | 00000000 | 00000000 | 00000001 | 10.0.0.1       |
| Last IP        | 00001010 | 11111111 | 11111111 | 11111111 | 10.255.255.254 |

IPs totales:  $16,777,216 = (2^{32-8})$

IPs disponibles:  $16,777,214 = (2^{32-8})-2$

- IP: 172.16.0.0/12

|                |          |          |          |          |               |
|----------------|----------|----------|----------|----------|---------------|
| IP a Binario   | 10101100 | 00010000 | 00000000 | 00000000 | 172.16.0.0    |
| Mask a Binario | 11111111 | 11110000 | 00000000 | 00000000 | 255.240.0.0   |
| ID             | 10101100 | 00010000 | 00000000 | 00000000 | 172.16.0.0/12 |
| WCARD          | 00000000 | 00001111 | 11111111 | 11111111 | 0.15.255.255  |

|           |          |          |          |          |                |
|-----------|----------|----------|----------|----------|----------------|
| Broadcast | 10101100 | 00011111 | 11111111 | 11111111 | 172.31.255.255 |
| 1era IP   | 10101100 | 00010000 | 00000000 | 00000001 | 172.16.0.1     |
| Last IP   | 10101100 | 00011111 | 11111111 | 11111110 | 172.31.255.254 |

IPs totales:  $1,048,576 = (2^{32-12})$

IPs disponibles:  $1,048,574 = (2^{32-12})-2$

- IP: 192.168.0.0/16

|                |          |          |          |          |                 |
|----------------|----------|----------|----------|----------|-----------------|
| IP a Binario   | 11000000 | 10101000 | 00000000 | 00000000 | 192.168.0.0     |
| Mask a Binario | 11111111 | 11111111 | 00000000 | 00000000 | 255.255.0.0     |
| ID             | 11000000 | 10101000 | 00000000 | 00000000 | 192.168.0.0/16  |
| WCARD          | 00000000 | 00000000 | 11111111 | 11111111 | 0.0.255.255     |
| Broadcast      | 11000000 | 10101000 | 11111111 | 11111111 | 192.168.255.255 |
| 1era IP        | 11000000 | 10101000 | 00000000 | 00000001 | 192.168.0.1     |
| Last IP        | 11000000 | 10101000 | 11111111 | 11111110 | 192.168.255.254 |

IPs totales:  $65,536 = (2^{32} - 16)$

IPs disponibles:  $65,534 = (2^{32} - 16) - 2$