**Manual técnico**

1. **Resumen de direcciones IP y VLAN donde se justifique la elección de las máscaras de subred empleadas para las distintas subredes de las sedes y el backbone.**

**SUBNETING VLSM**

**CUNDECH**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **RED** | **No. De Host** | **ID de Red** | **Máscara de  Subred** | **Primer Host  Disponible** | **Último Host  Disponible** | **Dirección de  broadcast** |
| Biblioteca | 100 | 192.168.3.0  /25 | 255.255.255.128 | 192.168.3.1 | 192.168.3.126 | 192.168.3.127 |
| Estudiantes | 50 | 192.168.3.128  /26 | 255.255.255.192 | 192.168.3.129 | 192.168.3.190 | 192.168.3.191 |
| Docentes | 20 | 192.168.3.192  /27 | 255.255.255.224 | 192.168.3.193 | 192.168.3.222 | 192.168.3.223 |
| Seguridad | 5 | 192.168.3.224  /29 | 255.255.255.248 | 192.168.3.225 | 192.168.3.230 | 192.168.3.231 |

**CUNOROC**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **RED** | **No. De Host** | **ID de Red** | **Máscara de  Subred** | **Primer Host  Disponible** | **Último Host  Disponible** | **Dirección de  broadcast** |
| Biblioteca | 75 | 192.148.3.0  /25 | 255.255.255.128 | 192.148.3.1 | 192.148.3.126 | 192.148.3.127 |
| Estudiantes | 45 | 192.148.3.128  /26 | 255.255.255.192 | 192.148.3.129 | 192.148.3.190 | 192.148.3.191 |
| Docentes | 25 | 192.148.3.192  /27 | 255.255.255.224 | 192.148.3.193 | 192.148.3.222 | 192.148.3.223 |
| Seguridad | 10 | 192.148.3.224  /28 | 255.255.255.240 | 192.148.3.225 | 192.148.3.238 | 192.148.3.239 |

**CUNOC**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **RED** | **No. De Host** | **ID de Red** | **Máscara de  Subred** | **Primer Host  Disponible** | **Último Host  Disponible** | **Dirección de  broadcast** |
| Estudiantes | 60 | 172.16.3.0  /26 | 255.255.255.192 | 172.16.3.1 | 172.16.3.62 | 172.16.3.63 |
| Biblioteca | 50 | 172.16.3.64  /26 | 255.255.255.192 | 172.16.3.65 | 172.16.3.126 | 172.16.3.127 |
| Docentes | 35 | 172.16.3.128  /26 | 255.255.255.192 | 172.16.3.129 | 172.16.3.190 | 172.16.3.191 |
| Seguridad | 5 | 172.16.3.192  /29 | 255.255.255.248 | 172.16.3.193 | 172.16.3.198 | 172.16.3.199 |

**CENTRAL**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **RED** | **No. De Host** | **ID de Red** | **Máscara de  Subred** | **Primer Host  Disponible** | **Último Host  Disponible** | **Dirección de  broadcast** |
| Servidor0 | 60 | 192.120.3.0 | 255.255.255.192 | 192.120.3.1 | 192.120.3.62 | 192.120.3.63 |
| Servidor1 | 35 | 192.121.3.0 | 255.255.255.192 | 192.121.3.1 | 192.121.3.62 | 192.121.3.63 |
| Servidor2 | 5 | 192.122.3.0 | 255.255.255.248 | 192.122.3.1 | 192.122.3.6 | 192.122.3.7 |

**CUM**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **RED** | **No. De Host** | **ID de Red** | **Máscara de  Subred** | **Primer Host  Disponible** | **Último Host  Disponible** | **Dirección de  broadcast** |
| Biblioteca | 75 | 192.158.3.0  /25 | 255.255.255.128 | 192.158.3.1 | 192.158.3.126 | 192.158.3.127 |
| Estudiantes | 45 | 192.158.3.128  /26 | 255.255.255.192 | 192.158.3.129 | 192.158.3.190 | 192.158.3.191 |
| Docentes | 25 | 192.158.3.192  /27 | 255.255.255.224 | 192.158.3.193 | 192.158.3.222 | 192.158.3.223 |
| Seguridad | 10 | 192.158.3.224  /28 | 255.255.255.240 | 192.158.3.225 | 192.158.3.238 | 192.158.3.239 |

**BACKBONE**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No. De Host** | **ID de Red** | **Máscara de  Subred** | **Primer Host  Disponible** | **Último Host  Disponible** | **Dirección de  broadcast** |
| 2 | 10.0.0.0  /30 | 255.255.255.252 | 10.0.0.1 | 10.0.0.2 | 10.0.0.3 |
| 2 | 10.0.0.4  /30 | 255.255.255.252 | 10.0.0.5 | 10.0.0.6 | 10.0.0.7 |
| 2 | 10.0.0.8  /30 | 255.255.255.252 | 10.0.0.9 | 10.0.0.10 | 10.0.0.11 |
| 2 | 10.0.0.12  /30 | 255.255.255.252 | 10.0.0.13 | 10.0.0.14 | 10.0.0.15 |
| 2 | 10.0.0.16  /30 | 255.255.255.252 | 10.0.0.17 | 10.0.0.18 | 10.0.0.19 |
| 2 | 10.0.0.20  /30 | 255.255.255.252 | 10.0.0.21 | 10.0.0.22 | 10.0.0.23 |
| 2 | 10.0.0.24  /30 | 255.255.255.252 | 10.0.0.25 | 10.0.0.26 | 10.0.0.27 |
| 2 | 10.0.0.28  /30 | 255.255.255.252 | 10.0.0.29 | 10.0.0.30 | 10.0.0.31 |
| 2 | 10.0.0.32  /30 | 255.255.255.252 | 10.0.0.33 | 10.0.0.34 | 10.0.0.35 |
| 2 | 10.0.0.36  /30 | 255.255.255.252 | 10.0.0.37 | 10.0.0.38 | 10.0.0.39 |

**IP Utilizadas**

**CUNDECH**

|  |  |
| --- | --- |
| **Equipo** | **IP** |
| Seguridad2 | 192.168.3.226 |
| Biblioteca3 | 192.168.3.2 |
| Biblioteca4 | 192.168.3.3 |
| Estudiantes6 | 192.168.3.130 |
| Estudiantes7 | 192.168.3.131 |
| Docentes6 | 192.168.3.194 |
| Docentes7 | 192.168.3.195 |

**CUNOROC**

|  |  |
| --- | --- |
| **Equipo** | **IP** |
| Seguridad3 | 192.148.3.226 |
| Biblioteca1 | 192.148.3.2 |
| Estudiantes3 | 192.148.3.130 |
| Docentes3 | 192.148.3.194 |

**CUNOC**

|  |  |
| --- | --- |
| **Equipo** | **IP** |
| Docentes1 | 172.16.3.132 |
| Docentes2 | 172.16.3.133 |
| Seguridad4 | 172.16.3.196 |
| Estudiantes1 | 172.16.3.4 |
| Estudiantes2 | 172.16.3.5 |

**CENTRAL**

|  |  |
| --- | --- |
| **Equipo** | **IP** |
| Servidor0 | 192.120.3.2 |
| Servidor1 | 192.121.3.2 |
| Servidor2 | 192.122.3.2 |

**CUM**

|  |  |
| --- | --- |
| **Equipo** | **IP** |
| Estudiantes5 | 192.158.3.132 |
| Docentes5 | 192.158.3.196 |
| Seguridad1 | 192.158.3.228 |
| Biblioteca2 | 192.158.3.4 |

**2. Capturas de la implementación de las topologías.**

**3. Detalle de todos los comandos utilizados.**

**- Configuración CUNDECH**

PROTOCOLO VTP

SW7

enable

conf t

vtp version 2

vtp domain Grupo3

vtp password usac2025

vtp mode server

exit

vlan 18

name Estudiantes

vlan 28

name Docentes

vlan 38

name Seguridad

vlan 48

name Biblioteca

SW6

enable

conf t

vtp version 2

vtp mode client

vtp domain Grupo3

vtp password usac2025

exit

SW8

enable

conf t

Vtp version 2

vtp mode client

vtp domain Grupo3

vtp password usac2025

exit

MODO TRUNK

SW7

enable

conf t

int range fa0/1-3

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

SW6

enable

conf t

int fa0/2

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

SW8

enable

conf t

int fa0/2

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

MODO ACCESS

SW8

enable

config t

int fa0/3

switchport mode access

switchport access vlan 38

exit

int fa0/4

switchport mode access

switchport access vlan 48

exit

int fa0/5

switchport mode access

switchport access vlan 48

exit

SW7

enable

config t

int range fa0/4-5

switchport mode access

switchport access vlan 18

exit

SW8

enable

config t

int range fa0/3-4

switchport mode access

switchport access vlan 28

exit

CONFIGURACIÓN MS8

enable

conf t

vtp version 2

vtp mode client

vtp domain Grupo3

vtp password usac2025

interface vlan18

ip address 192.168.3.129 255.255.255.192

no shut

exit

interface vlan28

ip address 192.168.3.193 255.255.255.224

no shut

exit

interface vlan38

ip address 192.168.3.225 255.255.255.248

no shut

exit

interface vlan48

ip address 192.168.3.1 255.255.255.128

no shut

exit

int range fa0/1-3

switchport trunk encapsulation dot1q

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

SW6

enable

conf t

int fa0/1

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

SW8

enable

conf t

int fa0/1

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

**- Configuración CUNOROC**

PROTOCOLO VTP

SW3

enable

conf t

vtp version 2

vtp mode server

vtp domain Grupo3

vtp password usac2025

exit

vlan 18

name Estudiantes

vlan 28

name Docentes

vlan 38

name Seguridad

vlan 48

name Biblioteca

SW4

enable

conf t

vtp version 2

vtp mode client

vtp domain Grupo3

vtp password usac2025

exit

SW2

enable

conf t

vtp version 2

vtp mode client

vtp domain Grupo3

vtp password usac2025

exit

MODO TRUNK SW3

enable

conf t

int range fa0/1

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

exit

int range fa0/3

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

exit

MODE ACCESS SW3

int fa0/2

switchport mode access

switchport access vlan 18

exit

MODE TRUNK SW4

enable

conf t

int fa0/1

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

exit

MODE ACCESS SW4

int fa0/2

switchport mode access

switchport access vlan 38

exit

int fa0/3

switchport mode access

switchport access vlan 48

exit

MODE TRUNK SW2

enable

conf t

int fa0/2

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

exit

MODE ACCESS SW2

int fa0/3

switchport mode access

switchport access vlan 28

exit

CONFIGURACIÓN R0

SW2

enable

conf t

int fa0/2

switchport mode trunkl

switchport trunk allowed vlan 18,28,38,48

RO

enable

conf t

interface gi0/0.18

encapsulation dot1q 18

ip address 192.148.3.129 255.255.255.192

no shut

exit

interface gi0/0.28

encapsulation dot1q 28

ip address 192.148.3.193 255.255.255.224

no shut

exit

interface gi0/0.38

encapsulation dot1q 38

ip address 192.148.3.225 255.255.255.240

no shut

exit

interface gi0/0.48

encapsulation dot1q 48

ip address 192.148.3.1 255.255.255.128

no shut

exit

interface gi0/0

no shutdown

**- Configuración CUNOC**

PROTOCOLO VTP y MODE TRUNK MS0

enable

conf t

vtp versión 2

vtp mode server

vtp domain Grupo3

vtp password usac2025

vlan 18

name Estudiantes

exit

vlan 28

name Docentes

exit

vlan 38

name Seguridad

exit

vlan 48

name Biblioteca

exit

int range fa0/3-5

switchport trunk encapsulation dot1q

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

CONFIGURACION CLIENTES

SW0

PROTOCOLO VTP

enable

conf t

vtp version 2

vtp mode client

vtp domain Grupo3

vtp password usac2025

exit

MODE TRUNK

int fa0/1

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

exit

MODE ACCESS

int range fa0/2-3

switchport mode access

switchport access vlan 28

exit

SW9

PROTOCOLO VTP

enable

conf t

vtp version 2

vtp mode client

vtp domain Grupo3

vtp password usac2025

MODE TRUNK

int fa0/1

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

exit

MODE ACCESS

int fa0/2

switchport mode access

switchport access vlan 38

exit

SW1

PROTOCOLO VTP

enable

conf t

vtp version 2

vtp mode client

vtp domain Grupo3

vtp password usac2025

MODE TRUNK

int fa0/1

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

exit

MODE ACCESS

int range fa0/2-3

switchport mode access

switchport access vlan 18

exit

REDUDANCIA

PROTOCOLO VTP MS1

enable

conf t

vtp versión 2

vtp mode client

vtp domain Grupo3

vtp password usac2025

PROTOCOLO VTP MS2

enable

conf t

vtp versión 2

vtp mode client

vtp domain Grupo3

vtp password usac2025

PROTOCOLO HRSP

MS1

int vlan 18

ip address 172.16.3.2 255.255.255.192

standby 1 ip 172.16.3.1

standby 1 priority 150

standby 1 preempt

no shut

exit

int vlan 28

ip address 172.16.3.130 255.255.255.192

standby 2 ip 172.16.3.129

standby 2 priority 150

standby 2 preempt

no shut

exit

int vlan 38

ip address 172.16.3.194 255.255.255.248

standby 3 ip 172.16.3.193

standby 3 priority 150

standby 3 preempt

no shut

exit

int vlan 48

ip address 172.16.3.66 255.255.255.192

standby 4 ip 172.16.3.65

standby 4 priority 150

standby 4 preempt

no shut

exit

exit

MS2

int vlan 18

ip address 172.16.3.3 255.255.255.192

standby 1 ip 172.16.3.1

no shut

exit

int vlan 28

ip address 172.16.3.131 255.255.255.192

standby 2 ip 172.16.3.129

no shut

exit

int vlan 38

ip address 172.16.3.195 255.255.255.248

standby 3 ip 172.16.3.193

no shut

exit

int vlan 48

ip address 172.16.3.67 255.255.255.192

standby 4 ip 172.16.3.65

no shut

exit

exit

MODE TRUNK

MS0

enable

conf t

int range fa0/1-2

switchport trunk encapsulation dot1q

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

exit

MS1

enable

conf t

int fa0/2

switchport trunk encapsulation dot1q

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

exit

MS2

enable

conf t

int fa0/2

switchport trunk encapsulation dot1q

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

exit

ENRUTAMIENTO MS1 Y MS2

enable

conf t

ip routing

exit

**- Configuración CENTRAL**

PROTOCOLO VTP

Switch0

enable

conf t

vtp version 2

vtp domain Grupo3

vtp password usac2025

vtp mode server

vlan 58

name Server 0

vlan 68

name Server 1

vlan 78

name Server 2

int fa 0/3

switchport mode Access

switchport acces vlan 68

exit

int fa 0/2

switchport mode Access

switchport acces vlan 58

exit

int fa 0/4

switchport mode Access

switchport acces vlan 78

exit

int fa0/1

switchport mode trunk

switchport trunk allowed vlan 58,68,78

ROUTER ON A STICK

R7

interface gi0/1.58

encapsulation dot1q 58

ip address 192.120.3.1 255.255.255.192

no shut

exit

interface gi0/1.68

encapsulation dot1q 68

ip address 192.121.3.1 255.255.255.192

no shut

exit

interface gi0/1.78

encapsulation dot1q 78

ip address 192.122.3.1 255.255.255.248

no shut

exit

**- Configuración CUM**

Configuración SW5

PROTOCOLO VTP

enable

conf t

vtp version 2

vtp mode server

vtp domain Grupo3

vtp password usac2025

exit

vlan 18

name Estudiantes

vlan 28

name Docentes

vlan 38

name Seguridad

vlan 48

name Biblioteca

MODE TRUNK

int range fa0/1-2

switchport mode trunk

switchport trunk allowed vlan 18,28,38,48

exit

MODE ACCESS

int fa0/3

switchport mode access

switchport access vlan 18

exit

int fa0/4

switchport mode access

switchport access vlan 28

exit

int fa0/5

switchport mode access

switchport access vlan 38

exit

int fa0/6

switchport mode access

switchport access vlan 48

exit

int fa0/4

switchport mode access

switchport access vlan 28

exit

PROTOCOLO HRSP

R4

enable

conf t

int gi0/1.18

encapsulation dot1q 18

ip address 192.158.3.130 255.255.255.192

standby 1 ip 192.158.3.129

standby 1 priority 150

standby 1 preempt

no shut

exit

int gi0/1.28

encapsulation dot1q 28

ip address 192.158.3.194 255.255.255.224

standby 2 ip 192.158.3.193

standby 2 priority 150

standby 2 preempt

no shut

exit

int gi0/1.38

encapsulation dot1q 38

ip address 192.158.3.226 255.255.255.240

standby 3 ip 192.158.3.225

standby 3 priority 150

standby 3 preempt

no shut

exit

int gi0/1.48

encapsulation dot1q 48

ip address 192.158.3.2 255.255.255.128

standby 4 ip 192.158.3.1

standby 4 priority 150

standby 4 preempt

no shut

exit

int gi0/1

no shut

R5

enable

conf t

int gi0/1.18

encapsulation dot1q 18

ip address 192.158.3.131 255.255.255.192

standby 1 ip 192.158.3.129

no shut

exit

int gi0/1.28

encapsulation dot1q 28

ip address 192.158.3.195 255.255.255.224

standby 2 ip 192.158.3.193

no shut

exit

int gi0/1.38

encapsulation dot1q 38

ip address 192.158.3.227 255.255.255.240

standby 3 ip 192.158.3.225

no shut

exit

int gi0/1.48

encapsulation dot1q 48

ip address 192.158.3.3 255.255.255.128

standby 4 ip 192.158.3.1

no shut

exit

int gi0/1

no shut

**- Configuración BACKBONE Implementación RIP**

MS1

enable

conf t

router rip

version 2

no auto-summary

network 10.0.0.0

network 172.16.3.0

exit

MS2

enable

conf t

router rip

version 2

no auto-summary

network 10.0.0.0

network 172.16.3.0

exit

MS3

enable

conf t

ip routing

router rip

versión 2

no auto-summary

network 10.0.0.0

exit

MS1

int fa0/1

no switchport

ip address 10.0.0.1 255.255.255.252

no shut

exit

MS3

int fa0/1

no switchport

ip address 10.0.0.2 255.255.255.252

no shut

exit

MS2

int fa0/1

no switchport

ip address 10.0.0.5 255.255.255.252

no shut

exit

MS3

int fa0/2

no switchport

ip address 10.0.0.6 255.255.255.252

no shut

exit

R0

enable

conf t

router rip

version 2

no auto-summary

network 10.0.0.0

network 192.148.3.0

exit

R1

enable

conf t

router rip

version 2

no auto-summary

network 10.0.0.0

exit

R2

enable

conf t

router rip

version 2

no auto-summary

network 10.0.0.0

exit

MS3

int fa0/3

no switchport

ip address 10.0.0.9 255.255.255.252

no shut

exit

R1

int gi0/0

ip address 10.0.0.10 255.255.255.252

no shut

exit

R0

int se0/0/0

ip address 10.0.0.13 255.255.255.252

no shut

exit

R1

int se0/0/0

ip address 10.0.0.14 255.255.255.252

no shut

exit

R0

int se0/0/1

ip address 10.0.0.21 255.255.255.252

no shut

exit

R2

int se0/0/0

ip address 10.0.0.22 255.255.255.252

no shut

exit

R1

int se0/0/1

ip address 10.0.0.17 255.255.255.252

no shut

exit

R2

int se0/0/1

ip address 10.0.0.18 255.255.255.252

no shut

exit

**- Configuración RUTEO ESTÁTICO**

R7

enable

conf t

interface gi0/0

ip address 10.0.0.25 255.255.255.252

no shut

exit

MS5

enable

conf t

interface fa0/7

no switchport

ip address 10.0.0.26 255.255.255.252

no shut

exit

R7

enable

conf t

ip route 192.120.3.0 255.255.255.192 10.0.0.26

ip route 192.121.3.0 255.255.255.192 10.0.0.26

ip route 192.122.3.0 255.255.255.248 10.0.0.26

exit

MS5

enable

conf t

ip route 192.120.3.0 255.255.255.192 10.0.0.25

ip route 192.121.3.0 255.255.255.192 10.0.0.25

ip route 192.122.3.0 255.255.255.248 10.0.0.25

exit