Universidad Nacional Autónoma de Honduras

**Facultad de Ingeniería**

**Departamento de Ingeniería en Sistemas**

**IS-611 Redes II**

**Informe Proyecto Redes II**

**Catedrático**

**Ing. José Mario López**

**Alumnos**

**Lariza Maholy Sandoval -------------------- 20171003815**

**Dania Mariela Morales ----------------------- 20151930087**

**Carlos Nicolás Aguilar ----------------------- 20141000111**

**Kemuel Magdiel López ----------------------- 20141004944**

**Italia Ortencia Pinto -------------------------- 20141011891**

Descripción

Se desea dar conectividad a una topología de red similar al campus de Ciudad Unicersitaria en base a la figura 1, se ha desarrollado la topologia de red que contiene todos los edificios del campus de CU

Cada edificio tiene asignado un espacio de direcciones que conecta a 850 usuarios, por edificio. Dichas direcciones estan distribuidas en 4 VLAN’s, la cuales son: Vlan 10, Vlan 20, Vlan 30, Vlan 99. En el caso de los edificios Alma Mater y CISE tienen creadas otras Vlan las cuales son: Vlan 40, Vlan 50, Vlan 60 , Vlan 70.

La topología cuenta con el servicio de DHCP para cada una de las redes del campus, tambien cuenta con reduncia en capa 2 y 3. Se utiliza el protocolo de redundancia de enlace de puerta HSRP, Balanceo de carga GLBP.

Las redes WAN comienzar a partir de la red 10.0.0.0 con prefijo /30. El espacio de direccionamiento para todas las subredes es la 172.16.0.0 con prefijo /16.

El enrutamiento dinamico se realizo usando el protocolo OSPF en todas las redes, se implemento la seguridad en los puertos de switch.

Topología de Red

Esquema de Direccionamiento

Figura 1

Anexos

HSRP

Permite el despliegue de routers redundantes tolerantes a fallos en una red. Este protocolo evita la existencia de puntos de fallo únicos en la red mediante técnicas de redundancia y comprobación del estado de los routers. Permite que varios routers o switches multicapa aparezcan como una única puerta de salida (gateway).

**Configuración en el Router B1-MASTER**

1. B1-MASTER(config-subif)#standby 10 ip 172.16.79.1
2. B1-MASTER(config-subif)#standby 10 priority 110
3. B1-MASTER(config-subif)#standby 10 preempt

**Configuración en el Router B1-RESPALDO**

1. B1-RESPALDO(config-subif)#standby 10 ip 172.16.79.1
2. B1-RESPALDO (config-subif)#standby 10 priority 110

**Syslog**

Es un estándar de facto para el envío de mensajes de registro en una red informática IP.

Por syslog se conoce tanto al protocolo de red como a la aplicación o biblioteca que envía

los mensajes de registro.

**SNMP**

Facilita el intercambio de información de administración entre dispositivos de red. Las versiones de SNMP más utilizadas son SNMP versión 1 (SNMPv1) y SNMP versión 2 (SNMPv2).

* SNMP v1 Seguridad basada en la comunidad
* SNMP v2c Seguridad basada en la comunidad
* SNMP v2u Seguridad basada en el usuario
* SNMP v2 Seguridad basada en el grupo
* SNMP v3 Seguridad basada en el usuario.

Utiliza el puerto 161 mediante UDP

CONFIGURACION SNMP y SYSlog

Router# configure terminal

Router(config)# snmp-server community public RO

Router(config)# snmp-server community private RW

Router(config)# loggin on

Router(config)# logging trap debugging

Registro de Direccionamiento IPV4 LAN

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **#Subred** | **Dirección de red** | **Dirección de broadcast** | **Gateway** | **Mascara de subred** | **Espacio utilizado** | **Espacio libre** |
| 1 | 172.16.0.0 | 172.16.1.255 | 172.16.0.1 | 255.255.254.0 | 4 ips | 506 ips |
| 2 | 172.16.2.0 | 172.16.3.255 | 172.16.2.1 | 255.255.254.0 | 5 ips | 506 ips |
| 3 | 172.16.4.0 | 172.16.4.255 | 172.16.4.1 | 255.255.255.0 | 6 ips | 250 ips |
| 4 | 172.16.5.0 | 172.16.5.255 | 172.16.5.1 | 255.255.255.0 | 4 ips | 250 ips |
| 5 | 172.16.6.0 | 172.16.6.255 | 172.16.6.1 | 255.255.255.0 | 4 ips | 250 ips |
| 6 | 172.16.7.0 | 172.16.1.255 | 172.16.7.1 | 255.255.255.0 | 5 ips | 250 ips |
| 7 | 172.16.8.0 | 172.16.8.255 | 172.16.8.1 | 255.255.255.0 | 5 ips | 250 ips |
| 8 | 172.16.9.0 | 172.16.9.127 | 172.16.9.1 | 255.255.255.128 | 6 ips | 120 ips |
| 9 | 172.16.10.0 | 172.16.10.255 | 172.16.10.1 | 255.255.255.0 | 6 ips | 250 ips |
| 10 | 172.16.11.0 | 172.16.11.255 | 172.16.11.1 | 255.255.255.0 | 6 ips | 250 ips |
| 11 | 172.16.12.0 | 172.16.12.255 | 172.16.12.1 | 255.255.255.0 | 6 ips | 250 ips |
| 12 | 172.16.13.0 | 172.16.13.127 | 172.16.13.1 | 255.255.255.128 | 7 ips | 120 ips |
| 13 | 172.16.14.0 | 172.16.14.255 | 172.16.14.1 | 255.255.255.0 | 6 ips | 250 ips |
| 14 | 172.16.15.0 | 172.16.15.255 | 172.16.15.1 | 255.255.255.0 | 4 ips | 250 ips |
| 15 | 172.16.16.0 | 172.16.16.255 | 172.16.16.1 | 255.255.255.0 | 4 ips | 250 ips |
| 16 | 172.16.17.0 | 172.16.17.127 | 172.16.17.1 | 255.255.255.128 | 5 ips | 120 ips |
| 17 | 172.16.18.0 | 172.16.18.255 | 172.16.18.1 | 255.255.255.0 | 4 ips | 250 ips |
| 18 | 172.16.19.0 | 172.16.19.255 | 172.16.19.1 | 255.255.255.0 | 6 ips | 250 ips |
| 19 | 172.16.20.0 | 172.16.20.255 | 172.16.20.1 | 255.255.255.0 | 4 ips | 250 ips |
| 20 | 172.16.21.0 | 172.16.21.127 | 172.16.21.1 | 255.255.255.128 | 6 ips | 120 ips |
| 21 | 172.16.22.0 | 172.16.22.255 | 172.16.22.1 | 255.255.255.0 | 6 ips | 250 ips |
| 22 | 172.16.23.0 | 172.16.23.255 | 172.16.23.1 | 255.255.255.0 | 6 ips | 250 ips |
| 23 | 172.16.24.0 | 172.16.24.255 | 172.16.24.1 | 255.255.255.0 | 6 ips | 250 ips |
| 24 | 172.16.25.0 | 172.16.25.127 | 172.16.25.1 | 255.255.255.128 | 4 ips | 120 ips |
| 25 | 172.16.26.0 | 172.16.26.255 | 172.16.26.1 | 255.255.255.0 | 4 ips | 250 ips |
| 26 | 172.16.27.0 | 172.16.27.255 | 172.16.27.1 | 255.255.255.0 | 4 ips | 250 ips |
| 27 | 172.16.28.0 | 172.16.28.255 | 172.16.28.1 | 255.255.255.0 | 6 ips | 250 ips |
| 28 | 172.16.29.0 | 172.16.29.127 | 172.16.29.1 | 255.255.255.128 | 6 ips | 120 ips |
| 29 | 172.16.30.0 | 172.16.30.255 | 172.16.30.1 | 255.255.255.0 | 6 ips | 250 ips |
| 30 | 172.16.31.0 | 172.16.31.255 | 172.16.31.1 | 255.255.255.0 | 5 ips | 250 ips |
| 31 | 172.16.32.0 | 172.16.32.255 | 172.16.32.1 | 255.255.255.0 | 5 ips | 250 ips |
| 32 | 172.16.33.0 | 172.16.33.127 | 172.16.33.1 | 255.255.255.128 | 5 ips | 120 ips |
| 33 | 172.16.34.0 | 172.16.34.255 | 172.16.34.1 | 255.255.255.0 | 4 ips | 250 ips |
| 34 | 172.16.35.0 | 172.16.35.255 | 172.16.35.1 | 255.255.255.0 | 5 ips | 250 ips |
| 35 | 172.16.36.0 | 172.16.36.255 | 172.16.36.1 | 255.255.255.0 | 6 ips | 250 ips |
| 36 | 172.16.37.0 | 172.16.37.127 | 172.16.37.1 | 255.255.255.128 | 4 ips | 120 ips |
| 37 | 172.16.38.0 | 172.16.38.255 | 172.16.38.1 | 255.255.255.0 | 4 ips | 250 ips |
| 38 | 172.16.39.0 | 172.16.39.255 | 172.16.39.1 | 255.255.255.0 | 5 ips | 250 ips |
| 39 | 172.16.40.0 | 172.16.40.255 | 172.16.40.1 | 255.255.255.0 | 5 ips | 250 ips |
| 40 | 172.16.41.0 | 172.16.41.127 | 172.16.41.1 | 255.255.255.128 | 6 ips | 120 ips |
| 41 | 172.16.42.0 | 172.16.42.255 | 172.16.42.1 | 255.255.255.0 | 6 ips | 250  ips |
| 42 | 172.16.43.0 | 172.16.43.255 | 172.16.43.1 | 255.255.255.0 | 6 ips | 250 ips |
| 43 | 172.16.44.0 | 172.16.44.127 | 172.16.44.1 | 255.255.255.128 | 6 ips | 120 ips |
| 44 | 172.16.45.0 | 172.16.45.255 | 172.16.45.1 | 255.255.255.0 | 7 ips | 250 ips |
| 45 | 172.16.46.0 | 172.16.46.255 | 172.16.46.1 | 255.255.255.0 | 6 ips | 250 ips |
| 46 | 172.16.47.0 | 172.16.47.255 | 172.16.47.1 | 255.255.255.0 | 4 ips | 250 ips |
| 47 | 172.16.48.0 | 172.16.48.127 | 172.16.48.1 | 255.255.255.128 | 4 ips | 120 ips |
| 48 | 172.16.49.0 | 172.16.49.255 | 172.16.49.1 | 255.255.255.0 | 5 ips | 250 ips |
| 49 | 172.16.50.0 | 172.16.50.255 | 172.16.50.1 | 255.255.255.0 | 4 ips | 250 ips |
| 50 | 172.16.51.0 | 172.16.51.255 | 172.16.51.1 | 255.255.255.0 | 6 ips | 250 ips |
| 51 | 172.16.52.0 | 172.16.52.127 | 172.16.52.1 | 255.255.255.128 | 4 ips | 120 ips |
| 52 | 172.16.53.0 | 172.16.53.255 | 172.16.53.1 | 255.255.255.0 | 6 ips | 250 ips |
| 53 | 172.16.54.0 | 172.16.54.255 | 172.16.54.1 | 255.255.255.0 | 6 ips | 250 ips |
| 54 | 172.16.55.0 | 172.16.55.255 | 172.16.55.1 | 255.255.255.0 | 6 ips | 250 ips |
| 55 | 172.16.56.0 | 172.16.56.127 | 172.16.56.1 | 255.255.255.128 | 6 ips | 120 ips |
| 56 | 172.16.57.0 | 172.16.57.255 | 172.16.57.1 | 255.255.255.0 | 4 ips | 250 ips |
| 57 | 172.16.58.0 | 172.16.58.255 | 172.16.58.1 | 255.255.255.0 | 4 ips | 250 ips |
| 58 | 172.16.59.0 | 172.16.59.255 | 172.16.59.1 | 255.255.255.0 | 4 ips | 250 ips |
| 59 | 172.16.60.0 | 172.16.60.127 | 172.16.60.1 | 255.255.255.128 | 6 ips | 120 ips |
| 60 | 172.16.61.0 | 172.16.61.255 | 172.16.61.1 | 255.255.255.0 | 6 ips | 250 ips |
| 61 | 172.16.62.0 | 172.16.62.255 | 172.16.62.1 | 255.255.255.0 | 6 ips | 250 ips |
| 62 | 172.16.63.0 | 172.16.63.255 | 172.16.63.1 | 255.255.255.0 | 5 ips | 250 ips |
| 63 | 172.16.64.0 | 172.16.64.127 | 172.16.64.1 | 255.255.255.128 | 5 ips | 120 ips |
| 64 | 172.16.65.0 | 172.16.65.255 | 172.16.65.1 | 255.255.255.0 | 4 ips | 250 ips |
| 65 | 172.16.66.0 | 172.16.66.255 | 172.16.66.1 | 255.255.255.0 | 5 ips | 250 ips |
| 66 | 172.16.67.0 | 172.16.67.255 | 172.16.67.1 | 255.255.255.0 | 6 ips | 250 ips |
| 67 | 172.16.68.0 | 172.16.68.127 | 172.16.68.1 | 255.255.255.128 | 4 ips | 120 ips |
| 68 | 172.16.69.0 | 172.16.69.255 | 172.16.69.1 | 255.255.255.0 | 4 ips | 250 ips |
| 69 | 172.16.70.0 | 172.16.70.255 | 172.16.70.1 | 255.255.255.0 | 5 ips | 250 ips |
| 70 | 172.16.71.0 | 172.16.71.255 | 172.16.71.1 | 255.255.255.0 | 5 ips | 250 ips |
| 71 | 172.16.72.0 | 172.16.72.127 | 172.16.72.1 | 255.255.255.128 | 6 ips | 120 ips |
| 72 | 172.16.73.0 | 172.16.73.255 | 172.16.73.1 | 255.255.255.0 | 6 ips | 250 ips |
| 73 | 172.16.74.0 | 172.16.74.255 | 172.16.74.1 | 255.255.255.0 | 6 ips | 250 ips |
| 74 | 172.16.75.0 | 172.16.75.255 | 172.16.75.1 | 255.255.255.0 | 6 ips | 250 ips |
| 75 | 172.16.76.0 | 172.16.76.127 | 172.16.76.1 | 255.255.255.128 | 7 ips | 120 ips |
| 76 | 172.16.77.0 | 172.16.77.255 | 172.16.77.1 | 255.255.255.0 | 6 ips | 250 ips |
| 77 | 172.16.78.0 | 172.16.78.255 | 172.16.78.1 | 255.255.255.0 | 4 ips | 250 ips |
| 78 | 172.16.79.0 | 172.16.79.255 | 172.16.79.1 | 255.255.255.0 | 4 ips | 250 ips |
| 79 | 172.16.80.0 | 172.16.80.127 | 172.16.80.1 | 255.255.255.128 | 5 ips | 120 ips |
| 80 | 172.16.81.0 | 172.16.81.255 | 172.16.81.1 | 255.255.255.0 | 4 ips | 250 ips |
| 81 | 172.16.82.0 | 172.16.82.255 | 172.16.82.1 | 255.255.255.0 | 6 ips | 250 ips |
| 82 | 172.16.83.0 | 172.16.83.255 | 172.16.83.1 | 255.255.255.0 | 4 ips | 250 ips |
| 83 | 172.16.84.0 | 172.16.84.127 | 172.16.84.1 | 255.255.255.128 | 6 ips | 120 ips |
| 84 | 172.16.85.0 | 172.16.85.255 | 172.16.85.1 | 255.255.255.0 | 6 ips | 250 ips |
| 85 | 172.16.86.0 | 172.16.86.255 | 172.16.86.1 | 255.255.255.0 | 6 ips | 250 ips |
| 86 | 172.16.87.0 | 172.16.87.255 | 172.16.87.1 | 255.255.255.0 | 6 ips | 250 ips |
| 87 | 172.16.88.0 | 172.16.88.127 | 172.16.88.1 | 255.255.255.128 | 4 ips | 120 ips |
| 88 | 172.16.89.0 | 172.16.89.255 | 172.16.89.1 | 255.255.255.0 | 4 ips | 250 ips |
| 89 | 172.16.90.0 | 172.16.90.255 | 172.16.90.1 | 255.255.255.0 | 4 ips | 250 ips |
| 90 | 172.16.91.0 | 172.16.91.255 | 172.16.91.1 | 255.255.255.0 | 6 ips | 250 ips |
| 91 | 172.16.92.0 | 172.16.92.127 | 172.16.92.1 | 255.255.255.128 | 6 ips | 120 ips |
| 92 | 172.16.93.0 | 172.16.93.255 | 172.16.93.1 | 255.255.255.0 | 6 ips | 250 ips |
| 93 | 172.16.94.0 | 172.16.94.255 | 172.16.94.1 | 255.255.255.0 | 5 ips | 250 ips |
| 94 | 172.16.95.0 | 172.16.95.255 | 172.16.95.1 | 255.255.255.0 | 5 ips | 250 ips |
| 95 | 172.16.96.0 | 172.16.96.127 | 172.16.96.1 | 255.255.255.128 | 5 ips | 120 ips |
| 96 | 172.16.97.0 | 172.16.97.255 | 172.16.97.1 | 255.255.255.0 | 4 ips | 250 ips |
| 97 | 172.16.98.0 | 172.16.98.255 | 172.16.98.1 | 255.255.255.0 | 5 ips | 250 ips |
| 98 | 172.16.99.0 | 172.16.99.255 | 172.16.99.1 | 255.255.255.0 | 6 ips | 250 ips |
| 99 | 172.16.100.0 | 172.16.100.127 | 172.16.100.1 | 255.255.255.128 | 4 ips | 120 ips |
| 100 | 172.16.101.0 | 172.16.101.255 | 172.16.101.1 | 255.255.255.0 | 4 ips | 250 ips |
| 101 | 172.16.102.0 | 172.16.102.255 | 172.16.102.1 | 255.255.255.0 | 5 ips | 250 ips |
| 102 | 172.16.103.0 | 172.16.103.255 | 172.16.103.1 | 255.255.255.0 | 5 ips | 250 ips |
| 103 | 172.16.104.0 | 172.16.104.127 | 172.16.104.1 | 255.255.255.128 | 6 ips | 120 ips |
| 104 | 172.16.105.0 | 172.16.105.255 | 172.16.105.1 | 255.255.255.0 | 4 ips | 250 ips |
| 105 | 172.16.106.0 | 172.16.106.255 | 172.16.106.1 | 255.255.255.0 | 4 ips | 250 ips |
| 106 | 172.16.107.0 | 172.16.107.255 | 172.16.107.1 | 255.255.255.0 | 5 ips | 250 ips |
| 107 | 172.16.108.0 | 172.16.108.127 | 172.16.108.1 | 255.255.255.128 | 5 ips | 120 ips |

Registro de Direccionamiento IPV4 WAN

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # subred | Router extremo 1 | Dirección IP | Router extremo 2 | Dirección IP |
| 1 | R1 | 10.0.0.1 | R2 | 10.0.0.2 |
| 2 | R1 | 10.0.0.5 | R5 | 10.0.0.6 |
| 3 | R1 | 10.0.0.9 | R4 | 10.0.0.10 |
| 4 | R2 | 10.0.0.13 | R5 | 10.0.0.14 |
| 5 | R5 | 10.0.0.17 | R4 | 10.0.0.18 |
| 6 | R2 | 10.0.0.21 | R3 | 10.0.0.22 |
| 7 | R5 | 10.0.0.25 | R3 | 10.0.0.26 |
| 8 | R4 | 10.0.0.29 | R3 | 10.0.0.30 |

Registro de Equipo Utilizado

|  |  |  |  |
| --- | --- | --- | --- |
| **Cantidad** | **Tipo de equipo** | **Modelo** | **# y tipo de interfaces** |
|  | Router | 2811 | 2 FastEthernet 4 serial |
|  | Switch | 2960 | 24 FastEthernet y 2 GigabitEthernet |
|  | PC | PC-PT | 1 FastEthernet |
|  | Servidor | Server-PT | 1 FastEthernet |

Registro de Contraseñas

|  |  |  |  |
| --- | --- | --- | --- |
| Hostname | Enable | Linea de Consola | Linea Vty |
| Palacio | cisco | cisco | red2 |
| Master-Palacio | cisco | cisco | red2 |
| I1 | cisco | cisco | red2 |
| Master-I1 | cisco | cisco | red2 |
| H1 | cisco | cisco | red2 |
| Master-H1 | cisco | cisco | red2 |
| G1 | cisco | cisco | red2 |
| Master-G1 | cisco | cisco | red2 |
| CISE | cisco | cisco | red2 |
| Master-CISE | cisco | cisco | red2 |
| Respaldo-CISE | cisco | cisco | red2 |
| F1 | cisco | cisco | red2 |
| Master-F1 | cisco | cisco | red2 |
| Registro | cisco | cisco | red2 |
| Master-Registro | cisco | cisco | red2 |
| VRA-VOAE | cisco | cisco | red2 |
| Master-VOAE | cisco | cisco | red2 |
| Respaldo-VOAE | cisco | cisco | red2 |
| Editorial | cisco | cisco | red2 |
| Master-Editorial | cisco | cisco | red2 |
| Respaldo-Editorial | cisco | cisco | red2 |
| Alma Mater | cisco | cisco | red2 |
| Master-Alma Mater | cisco | cisco | red2 |
| IUDPAS | cisco | cisco | red2 |
| Master-IUDPAS | cisco | cisco | red2 |
| Observatorio | cisco | cisco | red2 |
| Master-Observatorio | cisco | cisco | red2 |
| Respaldo-Observatorio | cisco | cisco | red2 |
| K1-K2 | cisco | cisco | red2 |
| Master-K1K2 | cisco | cisco | red2 |
| Consultorio | cisco | cisco | red2 |
| Master-Consultorio | cisco | cisco | red2 |
| Respaldo-Consultorio | cisco | cisco | red2 |
| B2 | cisco | cisco | red2 |
| Master-B2 | cisco | cisco | red2 |
| C1 | cisco | cisco | red2 |
| Master-C1 | cisco | cisco | red2 |
| Respaldo-C1 | cisco | cisco | red2 |
| C2 | cisco | cisco | red2 |
| Master-C2 | cisco | cisco | red2 |
| 1847 | cisco | cisco | red2 |
| Master-1847 | cisco | cisco | red2 |
| J1 | cisco | cisco | red2 |
| Master-J1 | cisco | cisco | red2 |
| D1 | cisco | cisco | red2 |
| Master-D1 | cisco | cisco | red2 |
| Biblioteca-DEGT | cisco | cisco | red2 |
| Master-Biblioteca | cisco | cisco | red2 |
| A2 | cisco | cisco | red2 |
| Master-A2 | cisco | cisco | red2 |
| E1 | cisco | cisco | red2 |
| Master-E1 | cisco | cisco | red2 |
| A1 | cisco | cisco | red2 |
| Master-A1 | cisco | cisco | red2 |
| B1 | cisco | cisco | red2 |
| Master-B1 | cisco | cisco | red2 |

Co-evaluación

|  |  |  |
| --- | --- | --- |
| Nombre | Cuenta | Rango |
| **Lariza Maholy Sandoval** | **20171003815** | **5** |
| **Dania Mariela Morales** | **20151930087** | **5** |
| **Carlos Nicolás Aguilar** | **20141000111** | **5** |
| **Kemuel Magdiel López** | **20141004944** | **5** |
| **Italia Ortencia Pinto** | **20121000473** | **5** |