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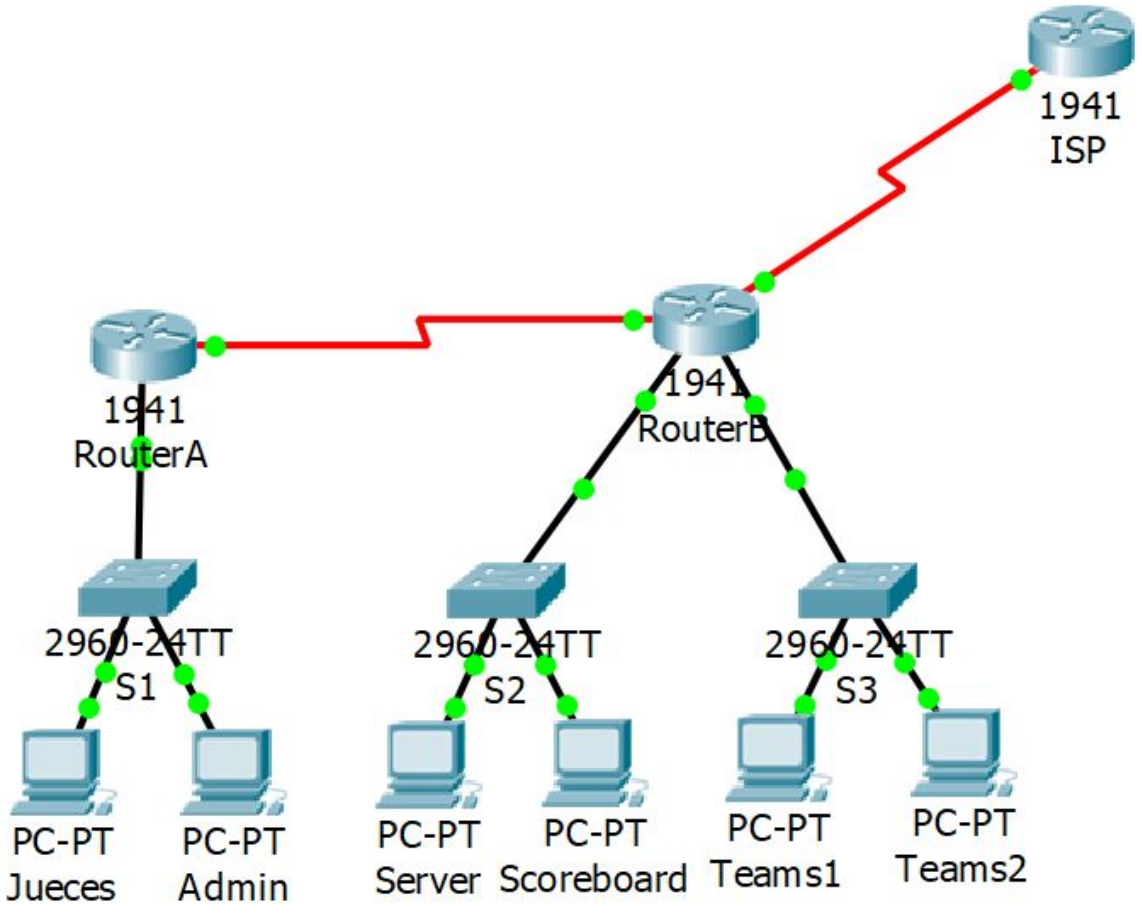
Proyecto Final

Topología de la red

El siguiente esquema es la base del proyecto final. Todo la información es referente a esta topología de red.



VLSM

A continuación, se adjunta la tabla de VLSM utilizada:

	ID Subred	**Máscara**	**VLAN**
Teams	192.168.130.0	255.255.255.128	VLAN 10
Jueces	192.168.130.128	255.255.255.240	VLAN 20
Management	192.168.130.144	255.255.255.248	VLAN 99
Admin	192.168.130.152	255.255.255.248	VLAN 30
Score	192.168.130.160	255.255.255.252	VLAN 40
Server	192.168.130.164	255.255.255.252	VLAN 50
RA - RB	192.168.130.168	255.255.255.252	
RB - ISP	192.168.130.172	255.255.255.252	

Direcciones IP asignadas

Cabe mencionar que las direcciones IP asignadas a cada host es mediante DHCP.

A continuación, se adjunta la tabla de direcciones IP asignadas a cada interfaz del router B.

Interfaces Router B	**IP address**
s0/1/1	192.168.130.169
s0/1/0	192.168.130.174
g0/0.40	192.168.130.161
g0/0.50	192.168.130.165
g0/0.99	192.168.130.145
g0/1.10	192.168.130.1
g0/1.99	192.168.130.147

La tabla de direcciones IP asignadas a cada interfaz del router A es la siguiente:

Interfaces Router A	**IP address**
s0/1/0	192.168.130.170
g0/0.20	192.168.130.129
g0/0.30	192.168.130.153
g0/0.99	192.168.130.145

Finalmente, la tabla de direcciones IP asignadas a cada interfaz del router ISP corresponde a la siguiente:

Interfaz ISP	**IP address**
s0/1/0	192.168.130.174

Código utilizado

En esta sección se adjunta el código utilizado para configurar todos los switches y routers de la topología.

Comenzando por la configuración básica, aplicada en todos los routers y switches:

```
en
conf t
hostname RouterA
no ip domain-lookup
service password-encryption
enable secret class
banner motd # Unauthorized Access is Prohibited!!! #
line con 0
password cisco
login
logging synchronous
exit
line vty 0 15
password cisco
login
end
copy run start
```

*Cabe mencionar que cambia el hostname.

Posteriormente, en los tres switches se realizó la configuración de VLANS de la siguiente forma:

```
en
conf t
vlan 10
name Teams
exit
int vlan 10
exit
vlan 20
name Jueces
exit
int vlan 20
exit
vlan 30
name Admin
exit
int vlan 30
exit
vlan 40
name Score
exit
int vlan 40
exit
vlan 50
name Server
exit
int vlan 50
exit
vlan 99
name Management
exit
int vlan 99
ip address 192.168.130.145 255.255.255.248
end
```

Posteriormente, se realizó la configuración del Switch 1 (S1) con el siguiente código; configura dos interfaces en modo de acceso a la correspondiente vlan, configura la interfaz con el RouterA en modo Trunk les asigna seguridad, además de apagar administrativamente las no utilizadas:

```
en
conf t
int fa0/1
switchport mode access
switchport access vlan 20
switchport port-security
switchport port-security maximum 2
switchport port-security mac-address sticky
```

```
switchport port-security violation protect
no shut
exit
int fa0/2
switchport mode access
switchport access vlan 30
switchport port-security
switchport port-security maximum 2
switchport port-security mac-address sticky
switchport port-security violation protect
no shut
exit
int fa0/3
switchport mode access
switchport access vlan 99
switchport mode trunk
switchport trunk native vlan 99
switchport trunk allowed vlan 10,20,30,40,50,99
switchport port-security
switchport port-security maximum 2
switchport port-security mac-address sticky
switchport port-security violation protect
no shut
exit
int range f0/4-24
switchport mode access
switchport access vlan 99
switchport port-security
switchport port-security maximum 2
switchport port-security mac-address sticky
switchport port-security violation protect
shut
end
```

De igual forma, se procedió con el Switch 2 (S2):

```
en
conf t
int fa0/1
switchport mode access
switchport access vlan 50
switchport port-security
switchport port-security maximum 2
switchport port-security mac-address sticky
switchport port-security violation protect
no shut
exit
int fa0/2
switchport mode access
switchport access vlan 40
switchport port-security
```

```
switchport port-security maximum 2
switchport port-security mac-address sticky
switchport port-security violation protect
no shut
exit
int fa0/3
switchport mode access
switchport access vlan 99
switchport mode trunk
switchport trunk native vlan 99
switchport trunk allowed vlan 10,20,30,40,50,99
switchport port-security
switchport port-security maximum 2
switchport port-security mac-address sticky
switchport port-security violation protect
no shut
exit
int range f0/4-24
switchport mode access
switchport access vlan 99
switchport port-security
switchport port-security maximum 2
switchport port-security mac-address sticky
switchport port-security violation protect
shut
end
```

Continuando con el Switch 3 (S3), se realizó el mismo procedimiento de configuración de puertos:

```
en
conf t
int range fa0/1-2
switchport mode access
switchport access vlan 10
switchport port-security
switchport port-security maximum 2
switchport port-security mac-address sticky
switchport port-security violation protect
no shut
exit
int fa0/3
switchport mode access
switchport access vlan 99
switchport mode trunk
switchport trunk native vlan 99
switchport trunk allowed vlan 10,20,30,40,50,99
switchport port-security
switchport port-security maximum 2
switchport port-security mac-address sticky
switchport port-security violation protect
```

```
no shut
exit
int range f0/4-24
switchport mode access
switchport port-security
switchport port-security maximum 2
switchport port-security mac-address sticky
switchport port-security violation protect
shut
end
```

Continuando, en la configuración del RouterA se configuran las interfaces y subinterfaces correspondientes, se indica el tipo de encapsulación, se realiza la configuración de RIP y se establece el ip helper address necesario para DHCP; con el siguiente código:

```
en
conf t
router rip
version 2
network 192.168.130.0
no auto-summary
exit
int s0/1/0
ip address 192.168.130.170 255.255.255.252
no shut
exit
int g0/0.20
encapsulation dot1Q 20
ip address 192.168.130.129 255.255.255.240
ip helper-address 192.168.130.169
no shut
exit
int g0/0.30
encapsulation dot1Q 30
ip address 192.168.130.153 255.255.255.248
ip helper-address 192.168.130.169
no shut
exit
int g0/0.99
encapsulation dot1Q 99
ip address 192.168.130.148 255.255.255.248
no shut
exit
int g0/0
no shut
exit
```

Para la configuración del RouterB se utilizó el siguiente código. El cual, configura RIPv2, establece NAT, listas de control de acceso (ACL) para restringir a la VLAN Teams el acceso al ISP, así como la configuración de las interfaces y subinterfaces, DHCP (declarando las pool) y la IP route.

```
en
conf t
ip route 0.0.0.0 0.0.0.0 192.168.130.173
router rip
version 2
network 192.168.130.0
exit
ip nat pool DEADPOOL 148.201.128.65 148.201.128.127 netmask
255.255.255.192
ip nat inside source list 1 pool DEADPOOL
ip nat inside source static 192.168.130.169 148.201.128.64
access-list 100 deny ip 192.168.130.0 0.0.0.127 host
192.168.130.173
access-list 100 permit ip any any
int s0/1/0
ip address 192.168.130.174 255.255.255.252
no shut
exit
int s0/1/1
ip address 192.168.130.169 255.255.255.252
clock rate 128000
no shut
exit
int g0/0.40
encapsulation dot1Q 40
ip address 192.168.130.161 255.255.255.252
no shut
exit
int g0/0.50
encapsulation dot1Q 50
ip address 192.168.130.165 255.255.255.252
no shut
exit
int g0/0.99
encapsulation dot1Q 99
ip address 192.168.130.148 255.255.255.248
no shut
exit
int g0/0
ip nat inside
no shut
exit
int g0/1.10
encapsulation dot1Q 10
ip address 192.168.130.1 255.255.255.128
no shut
```

```
exit
int g0/1.99
encapsulation dot1Q 99
ip address 192.168.130.178 255.255.255.248
no shut
exit
int g0/1
ip access-group 100 in
ip access-group 100 out
no shut
exit
ip dhcp excluded-address 192.168.130.1
ip dhcp excluded-address 192.168.130.129
ip dhcp excluded-address 192.168.130.153
ip dhcp excluded-address 192.168.130.161
ip dhcp excluded-address 192.168.130.165
ip dhcp excluded-address 192.168.130.173
ip dhcp excluded-address 192.168.130.170
ip dhcp excluded-address 192.168.130.169
ip dhcp excluded-address 192.168.130.148
ip dhcp excluded-address 192.168.130.178
ip dhcp excluded-address 192.168.130.174
ip dhcp pool Teams
network 192.168.130.0 255.255.255.128
default-router 192.168.130.1
dns-server 192.168.130.173
exit
ip dhcp pool Jueces
network 192.168.130.128 255.255.255.240
default-router 192.168.130.129
dns-server 192.168.130.173
exit
ip dhcp pool Admin
network 192.168.130.152 255.255.255.248
default-router 192.168.130.153
dns-server 192.168.130.173
exit
ip dhcp pool Score
network 192.168.130.160 255.255.255.252
default-router 192.168.130.161
dns-server 192.168.130.173
exit
ip dhcp pool Server
network 192.168.130.164 255.255.255.252
default-router 192.168.130.165
dns-server 192.168.130.173
end
```

Finalmente, para la configuración del Router ISP basta con declarar la interfaz utilizada y el IP route:

```
en
conf t
int s0/1/0
ip address 192.168.130.173 255.255.255.252
clock rate 128000
no shut
exit
ip route 192.168.130.0 255.255.255.0 192.168.130.174
ip route 148.201.128.64 255.255.255.192 192.168.130.174
end
```