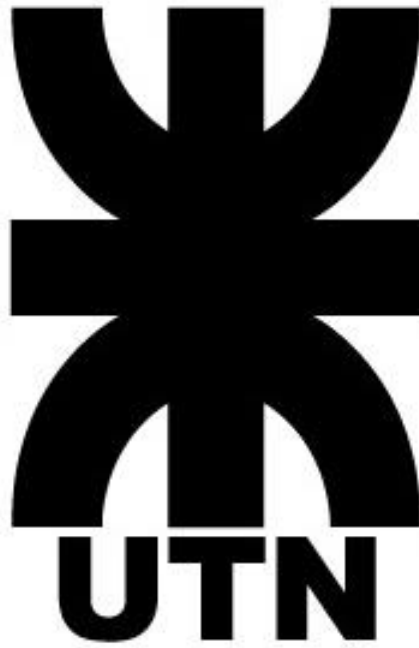


Universidad Tecnológica Nacional



Facultad Regional Delta Redes de información 2024

Trabajo Práctico N°8 | VLAN

Alumno: Gonzalez, Tomas

Profesor: Carrizo, Carlos

Redes de información – Trabajo Practico N°8 VLAN		
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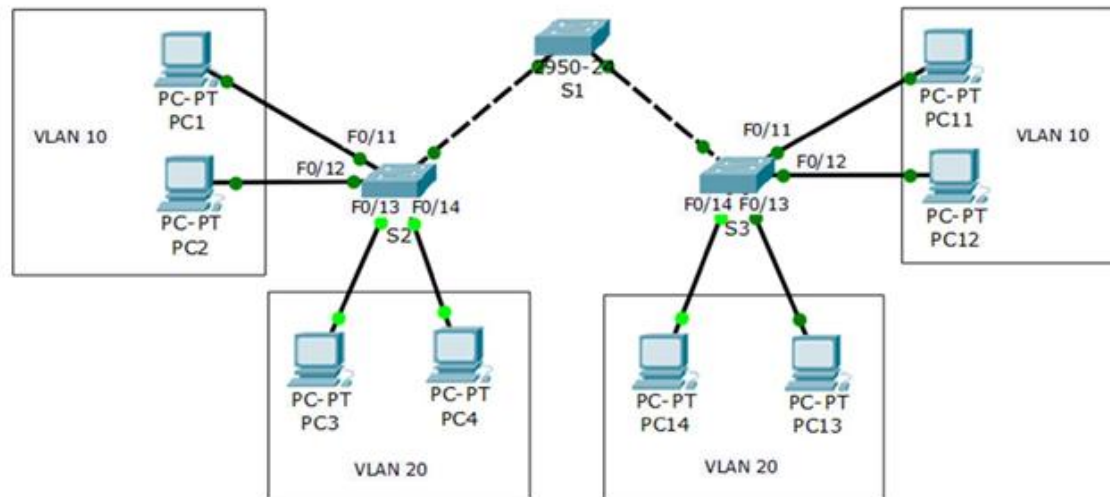
Contenido

Consignas 3

Resolución 5

Consignas

1) Dado el siguiente diagrama de red:



Presente los dispositivos en packet tracer y asígneles IP de una red clase B a cada PC.

- Documente el éxito de PING entre dos PC de la misma red.
- Documente las VLAN actuales de uno de los Switch.

Configuración de VLAN

- Paso 1: Cree las VLANs en S1.

El comando `vlan id` crea una VLAN en el Switch. Utilice el comando: `name nombre de la VLAN`, para asignar un nombre a una VLAN.

En S1, cree cuatro VLAN usando los id de las VLAN y los nombres que se muestran a continuación:

```
S1(config)#vlan 10
```

```
S1(config-vlan)#name Docente
```

```
S1(config-vlan)#vlan 20
```

```
S1(config-vlan)#name Alumno
```

```
S1(config-vlan)#vlan 99
```

```
S1(config-vlan)#name Nativa
```

Paso 2: Verifique la configuración de la VLAN.

Después de crear las VLAN, regrese a modo privilegiado y ejecute el comando `show vlan brief` para verificar la creación de las nuevas VLAN

Ej: `S1#show vlan brief`

- Paso 3: Repita los pasos anteriores para S2 y S3

a) Documente el resultado de las VLAN creadas en uno de los Switch.

Asignación de puertos de acceso a las VLAN.

· Asigne los puertos de acceso a cada VLAN que le corresponda en el Switch S2 y S3. El comando `switchport mode access` configura la interfaz como un puerto de acceso. El comando `switchport access vlan id` asigna una VLAN al puerto.

Ejemplo de asignación del Puerto 6 a la vlan 10 en el switch S2:

S2(config)#interface fastEthernet 0/6

S2(config-if)#switchport mode access

S2(config-if)#switchport access vlan 10

Configuración de puertos troncales.

· Configure en los switches los puertos troncales y use VLAN 99 como la VLAN nativa.

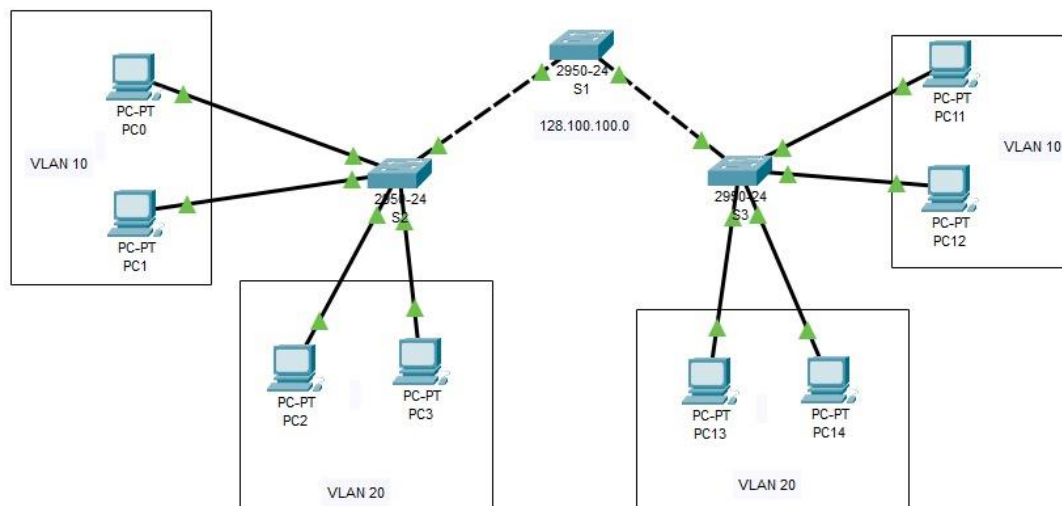
b) Documente el resultado del comando `show vlan brief` de cada switch.

c) Documente el resultado de PING entre equipos pertenecientes a la misma VLAN y dos equipos pertenecientes a distintas VLAN.

d) Adjunte el archivo de packet tracer funcional.

Resolución

Formo la siguiente topología en PacketTracer:



Primero documento la comunicación entre las computadoras de las mismas redes, por ejemplo

Desde PC0, con PC2(que luego pertenecerá a VLAN 20) y con PC12(que luego pertenecerá a VLAN10):

PC0

```
Physical  Config  Desktop  Programming  Attributes

Command Prompt

C:\>ping 128.100.100.4

Pinging 128.100.100.4 with 32 bytes of data:

Reply from 128.100.100.4: bytes=32 time<lms TTL=128
Reply from 128.100.100.4: bytes=32 time<lms TTL=128
Reply from 128.100.100.4: bytes=32 time<lms TTL=128
Reply from 128.100.100.4: bytes=32 time<lms TTL=128

Ping statistics for 128.100.100.4:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 128.100.100.8

Pinging 128.100.100.8 with 32 bytes of data:

Reply from 128.100.100.8: bytes=32 time=10ms TTL=128
Reply from 128.100.100.8: bytes=32 time<lms TTL=128
Reply from 128.100.100.8: bytes=32 time<lms TTL=128
Reply from 128.100.100.8: bytes=32 time<lms TTL=128

Ping statistics for 128.100.100.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 10ms, Average = 2ms
```

Documento las VLANs actuales del switch S1:

S1

Physical Config **CLI** Attributes

IOS Command Line Interface

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/2, changed state to up

Switch>enable
Switch#show vlan
```

VLAN	Name	Status	Ports
1	default	active	Fa0/3, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23, Fa0/24
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0

Remote SPAN VLANs

Primary	Secondary	Type	Ports

A continuación, configuramos las VLANs en los distintos switches:

Para S1:

```
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name Docente
Switch(config-vlan)#vlan 20
Switch(config-vlan)#name Alumno
Switch(config-vlan)#vlan 99
Switch(config-vlan)#name Nativa
Switch(config-vlan)#exit
Switch(config)#exit
```

Para S2:

```
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name Docente
Switch(config-vlan)#vlan 20
Switch(config-vlan)#name Alumno
Switch(config-vlan)#vlan 99
Switch(config-vlan)#name Nativa
Switch(config-vlan)#exit
```

Para S3:

```
Switch#config
Configuring from terminal, memory, or network [terminal]?
Enter configuration commands, one per line. End with CNTL/Z.
Switch(config)#vlan 10
Switch(config-vlan)#name Docente
Switch(config-vlan)#vlan 20
Switch(config-vlan)#name Alumno
Switch(config-vlan)#vlan 99
Switch(config-vlan)#name Nativa
Switch(config-vlan)#exit
Switch(config)#
```

Observamos como quedan las VLANS ya creadas en los distintos switches:

Para S1

S1

Physical

Config

CLI

Attributes

IOS Command Line Interface

VLAN	Name	Status	Ports
1	default	active	Fa0/3, Fa0/4, Fa0/5, Fa0/6 Fa0/7, Fa0/8, Fa0/9, Fa0/10 Fa0/11, Fa0/12, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/18 Fa0/19, Fa0/20, Fa0/21, Fa0/22 Fa0/23, Fa0/24
10	Docente	active	
20	Alumno	active	
99	Nativa	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
10	enet	100010	1500	-	-	-	-	-	0	0
20	enet	100020	1500	-	-	-	-	-	0	0
99	enet	100099	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0

Remote SPAN VLANs

Primary	Secondary	Type	Ports
Switch#			



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Para S2:

S2

Physical Config CLI Attributes

IOS Command Line Interface

show vlan

VLAN	Name	Status	Ports
1	default	active	Fa0/6, Fa0/7, Fa0/8, Fa0/9 Fa0/10, Fa0/11, Fa0/12, Fa0/13 Fa0/14, Fa0/15, Fa0/16, Fa0/17 Fa0/18, Fa0/19, Fa0/20, Fa0/21 Fa0/22, Fa0/23, Fa0/24
10	Docente	active	
20	Alumno	active	
99	Nativa	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
10	enet	100010	1500	-	-	-	-	-	0	0
20	enet	100020	1500	-	-	-	-	-	0	0
99	enet	100099	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
10	enet	100010	1500	-	-	-	-	-	0	0
20	enet	100020	1500	-	-	-	-	-	0	0
99	enet	100099	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0

Remote SPAN VLANs

Primary	Secondary	Type	Ports

Switch#



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Para S3:

S3

Physical Config CLI Attributes

IOS Command Line Interface

show vlan

VLAN	Name	Status	Ports
1	default	active	Fa0/6, Fa0/7, Fa0/8, Fa0/9 Fa0/10, Fa0/11, Fa0/12, Fa0/13 Fa0/14, Fa0/15, Fa0/16, Fa0/17 Fa0/18, Fa0/19, Fa0/20, Fa0/21 Fa0/22, Fa0/23, Fa0/24
10	Docente	active	
20	Alumno	active	
99	Nativa	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0
10	enet	100010	1500	-	-	-	-	-	0	0
20	enet	100020	1500	-	-	-	-	-	0	0
99	enet	100099	1500	-	-	-	-	-	0	0
1002	fddi	101002	1500	-	-	-	-	-	0	0
1003	tr	101003	1500	-	-	-	-	-	0	0
1004	fdnet	101004	1500	-	-	-	ieee	-	0	0
1005	trnet	101005	1500	-	-	-	ibm	-	0	0

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
------	------	------	-----	--------	--------	----------	-----	----------	--------	--------

Remote SPAN VLANs

Primary Secondary Type Ports

Switch#



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Comprobamos que desde PC0 solo tenemos conexión con las PCS que están conectadas a la VLAN 10:

 PC0

```

Cisco Packet Tracer PC Command Line 1.0
C:\>ping 128.100.100.3

Pinging 128.100.100.3 with 32 bytes of data:

Reply from 128.100.100.3: bytes=32 time=15ms TTL=128
Reply from 128.100.100.3: bytes=32 time<1ms TTL=128
Reply from 128.100.100.3: bytes=32 time<1ms TTL=128
Reply from 128.100.100.3: bytes=32 time<1ms TTL=128

Ping statistics for 128.100.100.3:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 15ms, Average = 3ms

C:\>ping 128.100.100.4

Pinging 128.100.100.4 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 128.100.100.4:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\>ping 128.100.100.8

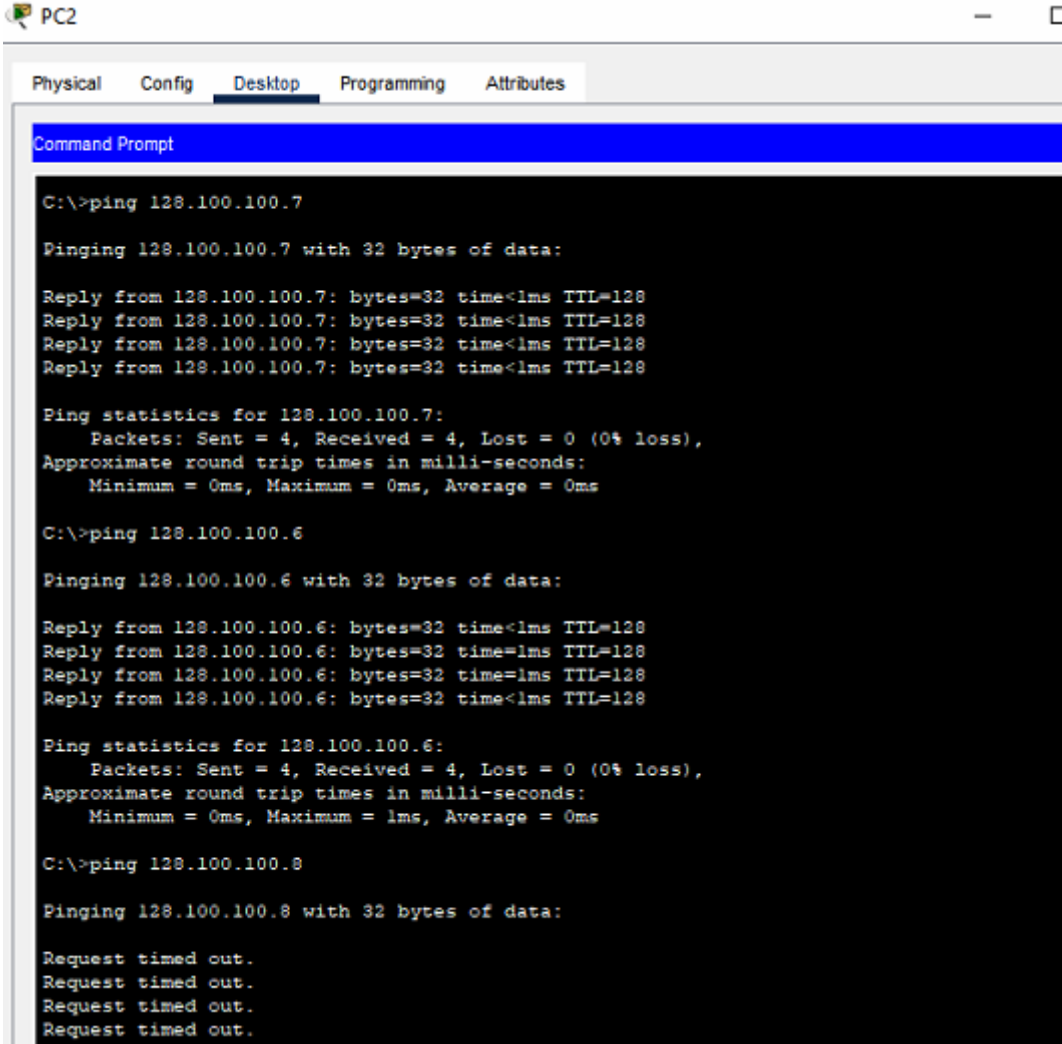
Pinging 128.100.100.8 with 32 bytes of data:

Reply from 128.100.100.8: bytes=32 time=10ms TTL=128
Reply from 128.100.100.8: bytes=32 time<1ms TTL=128
Reply from 128.100.100.8: bytes=32 time<1ms TTL=128
Reply from 128.100.100.8: bytes=32 time<1ms TTL=128

Ping statistics for 128.100.100.8:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:

```

Y desde la PC2 perteneciente a VLAN 20:



The screenshot shows a PC2 desktop environment with a Command Prompt window open. The window displays the results of three ping commands executed from the C:\ prompt. The first two pings are successful, showing 0% loss and 0ms round trip times. The third ping to 128.100.100.8 fails with 'Request timed out'.

```

C:\>ping 128.100.100.7

Pinging 128.100.100.7 with 32 bytes of data:

Reply from 128.100.100.7: bytes=32 time<1ms TTL=128
Reply from 128.100.100.7: bytes=32 time<1ms TTL=128
Reply from 128.100.100.7: bytes=32 time<1ms TTL=128
Reply from 128.100.100.7: bytes=32 time<1ms TTL=128

Ping statistics for 128.100.100.7:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>ping 128.100.100.6

Pinging 128.100.100.6 with 32 bytes of data:

Reply from 128.100.100.6: bytes=32 time<1ms TTL=128
Reply from 128.100.100.6: bytes=32 time<1ms TTL=128
Reply from 128.100.100.6: bytes=32 time<1ms TTL=128
Reply from 128.100.100.6: bytes=32 time<1ms TTL=128

Ping statistics for 128.100.100.6:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms

C:\>ping 128.100.100.8

Pinging 128.100.100.8 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.
  
```

Con lo cual se observa que solo existe comunicación entre las PCS que pertenecen a la misma VLAN.



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Mostramos las configuraciones actuales para cada uno de los switches:

Para S1


 S1

Physical Config CLI Attributes

IOS Command Line Inter

```
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
  switchport trunk native vlan 99
  switchport mode trunk
!
```

Para S2:

 S2

Physical Config CLI Attributes

IOS Command Line Inter

```
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
  switchport access vlan 10
  switchport mode access
!
interface FastEthernet0/2
  switchport access vlan 10
  switchport mode access
!
interface FastEthernet0/3
  switchport trunk native vlan 99
  switchport mode trunk
!
interface FastEthernet0/4
  switchport access vlan 20
  switchport mode access
!
interface FastEthernet0/5
  switchport access vlan 20
  switchport mode access
!
```



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Por último, para S3:

S3

```
Physical  Config  CLI  Attributes
IOS Command Line Interface
!
!
!
!
!
spanning-tree mode pvst
spanning-tree extend system-id
!
interface FastEthernet0/1
  switchport trunk native vlan 99
  switchport mode trunk
!
interface FastEthernet0/2
  switchport access vlan 20
  switchport mode access
!
interface FastEthernet0/3
  switchport access vlan 20
  switchport mode access
!
interface FastEthernet0/4
  switchport access vlan 10
  switchport mode access
!
interface FastEthernet0/5
  switchport access vlan 10
  switchport mode access
!
```