**Redes de Computadores - Trabalho 4**
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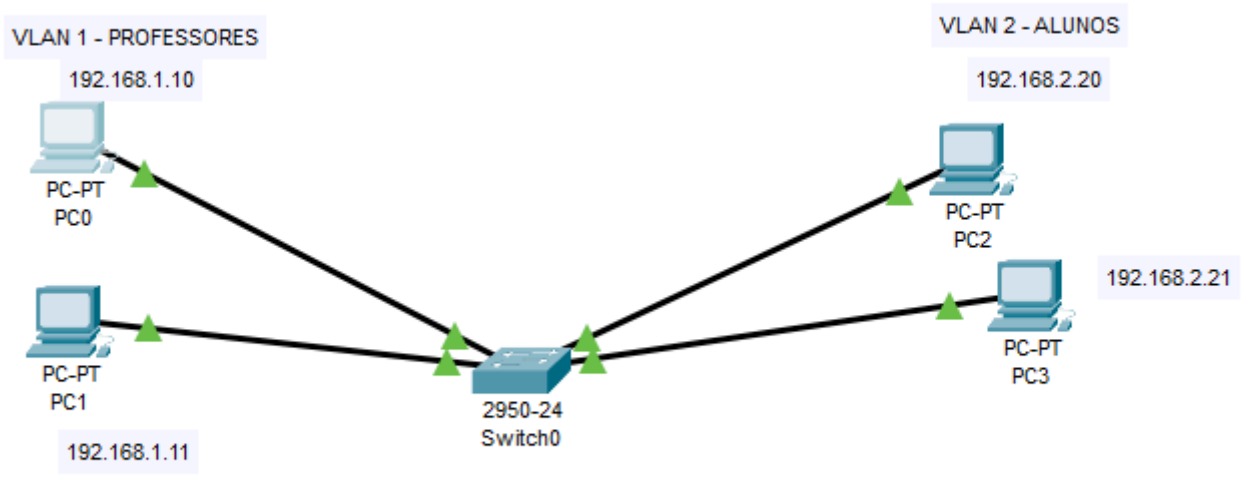
**Sistemas de Informação**

**Parte 1**




**Comandos**

! Entra no modo de configuração privilegiado
Switch> enable
! Entra no modo de configuração global
Switch# configure terminal
! Cria a VLAN 1 (Professores)
Switch(config)# vlan 1
Switch(config-vlan)# name PROFESSORES
! Cria a VLAN 2 (Alunos)
Switch(config)# vlan 2
Switch(config-vlan)# name ALUNOS
Switch(config-vlan)# exit
! Seleciona o intervalo de portas para a VLAN 1
Switch(config)# interface range FastEthernet0/1-2
! Define as portas para o modo de acesso
Switch(config-if-range)# switchport mode access
! Atribui as portas à VLAN 1
Switch(config-if-range)# switchport access vlan 1
Switch(config-if-range)# exit

! Seleciona o intervalo de portas para a VLAN 2

Switch(config)# interface range FastEthernet0/3-4

! Define as portas para o modo de acesso

Switch(config-if-range)# switchport mode access

! Atribui as portas à VLAN 2

Switch(config-if-range)# switchport access vlan 2

Switch(config-if-range)# exit

! Sai do modo de configuração para o modo privilegiado

Switch(config)# end

! Mostra um resumo das VLANs e as portas associadas

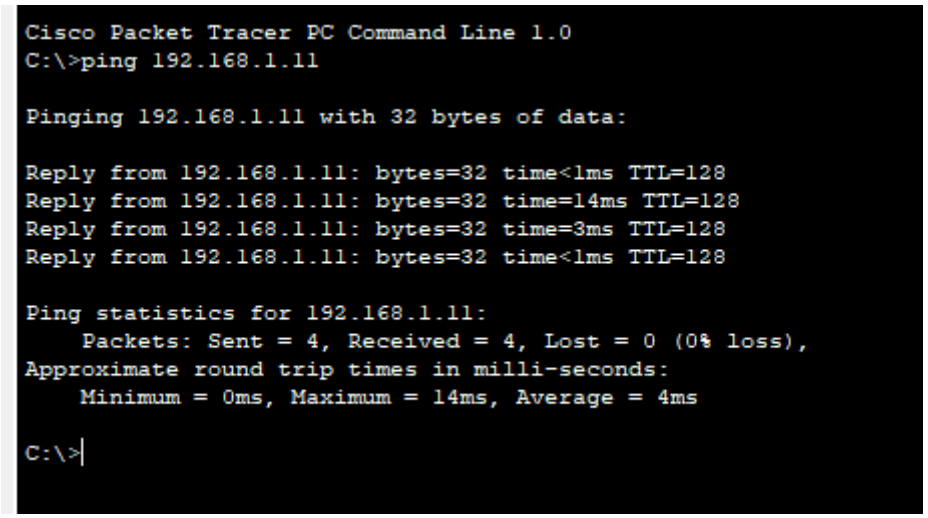
Switch# show vlan brief

**Testes:**

I. Teste utilizando o ping para verificar a comunicação entre máquinas: A. VLAN1 com VLAN1 (funciona)

Origem:PC0(192.168.1.10)

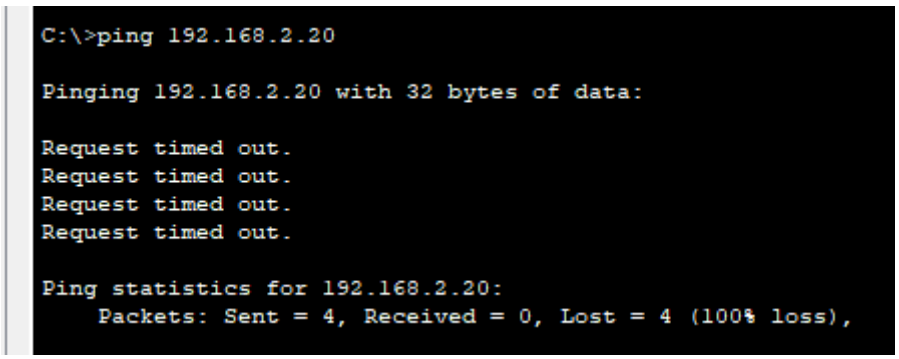
Destino: PC1(192.168.1.11)




B. VLAN1 com VLAN2. (Não Funciona)

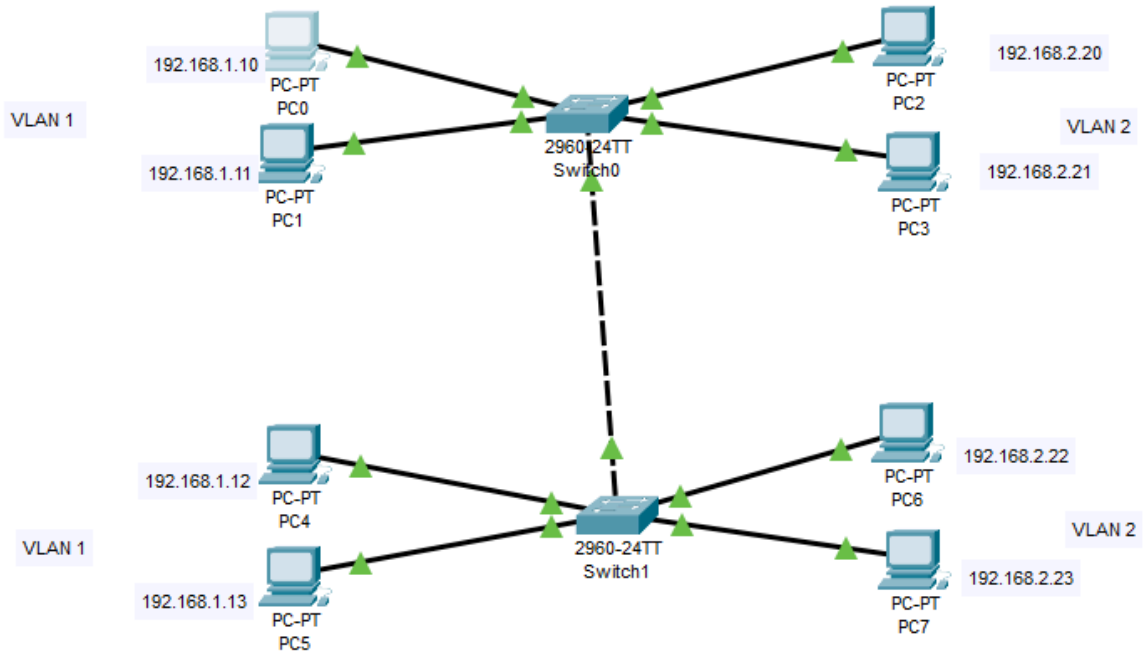
Origem: PC0(192.168.1.10)

Destino: PC2(192.168.2.20)



**Parte 2**

**Sem Roteador:**




**COMANDOS PARA O SWITCH_SUPERIOR:**

Switch> enable
Switch# configure terminal
! Cria as VLANs 1 e 2 com seus nomes
Switch(config)# vlan 1
Switch(config-vlan)# name Professores
Switch(config-vlan)# exit
Switch(config)# vlan 2
Switch(config-vlan)# name Alunos
Switch(config-vlan)# exit
! Atribui as portas Fa0/1 e Fa0/2 para a VLAN 1
Switch(config)# interface range FastEthernet0/1-2
Switch(config-if-range)# switchport mode access
Switch(config-if-range)# switchport access vlan 1
Switch(config-if-range)# exit
! Atribui as portas Fa0/3 e Fa0/4 para a VLAN 2
Switch(config)# interface range FastEthernet0/3-4
Switch(config-if-range)# switchport mode access
Switch(config-if-range)# switchport access vlan 2
Switch(config-if-range)# exit
! Configura a porta Gi0/1 (para o Switch_Inferior) como Trunk

```
Switch(config)# interface GigabitEthernet0/1
Switch(config-if)# switchport mode trunk
Switch(config-if)# exit
! Configura a porta Gi0/2 (para o Roteador) como Trunk
Switch(config)# interface GigabitEthernet0/2
Switch(config-if)# switchport mode trunk
Switch(config-if)# exit
Switch(config)# end
```

**COMANDOS PARA O SWITCH_INFERIOR: (A configuração das VLANs e portas de acesso é idêntica)**

```
Switch> enable
Switch# configure terminal
! Cria as VLANs 1 e 2
Switch(config)# vlan 1
Switch(config-vlan)# name Professores
Switch(config-vlan)# exit
Switch(config)# vlan 2
Switch(config-vlan)# name Alunos
Switch(config-vlan)# exit
! Atribui as portas Fa0/1 e Fa0/2 para a VLAN 1
Switch(config)# interface range FastEthernet0/1-2
Switch(config-if-range)# switchport mode access
Switch(config-if-range)# switchport access vlan 1
Switch(config-if-range)# exit
! Atribui as portas Fa0/3 e Fa0/4 para a VLAN 2
Switch(config)# interface range FastEthernet0/3-4
Switch(config-if-range)# switchport mode access
Switch(config-if-range)# switchport access vlan 2
Switch(config-if-range)# exit
! Configura a porta Gi0/1 (para o Switch_Superior) como Trunk
Switch(config)# interface GigabitEthernet0/1
Switch(config-if)# switchport mode trunk
Switch(config-if)# exit
Switch(config)# end
```

**Testes:**

Faça os switches se comunicarem através de uma porta Trunk (Sem roteador.) I. Teste utilizando o ping para verificar a comunicação entre máquinas

A. VLAN1 com VLAN1 (No mesmo switch)(Comunica)
   Origem: PC0(192.168.1.10)
   Destino: PC1(192.168.1.11)

```
C:\>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

B. VLAN1 com VLAN2 (No mesmo switch)(Não Comunica) Origem: PC0 (192.168.1.10)
Destino: PC2 (192.168.2.20)

```
C:\>ping 192.168.2.20

Pinging 192.168.2.20 with 32 bytes of data:

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

Ping statistics for 192.168.2.20:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

C. VLAN1 com VLAN1 (Em switches diferentes)(Comunica) Origem: PC0 (192.168.1.10)
Destino: PC4 (192.168.1.12)

```
C:\>ping 192.168.1.12

Pinging 192.168.1.12 with 32 bytes of data:

Reply from 192.168.1.12: bytes=32 time<1ms TTL=128
Reply from 192.168.1.12: bytes=32 time<1ms TTL=128
Reply from 192.168.1.12: bytes=32 time=1ms TTL=128
Reply from 192.168.1.12: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

D. VLAN1 com VLAN2 (Em switches diferentes)(Não Comunica) Origem: PC0 (192.168.1.10)
Destino: PC6 (192.168.2.22)

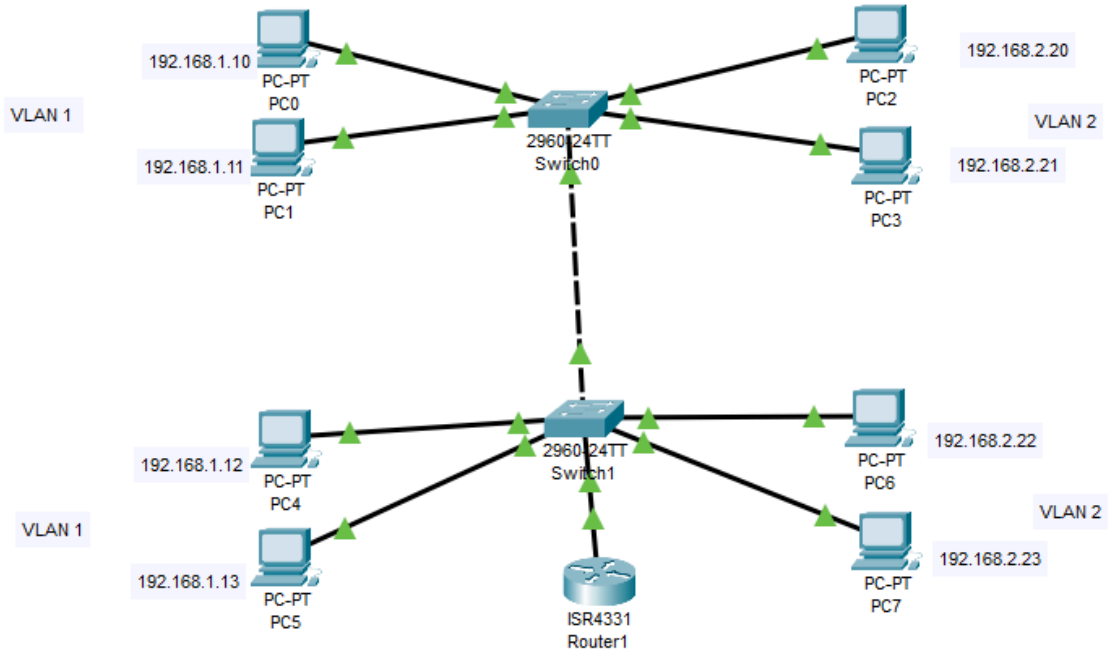
```
C:\>ping 192.168.2.22

Pinging 192.168.2.22 with 32 bytes of data:

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

Ping statistics for 192.168.2.22:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

**Com Roteador:**




A configuração do roteador **permanece exatamente a mesma**, pois ele só precisa de uma sub-interface por VLAN para atuar como gateway para todos os dispositivos daquela VLAN, não importa em qual switch eles estejam.

Router> enable

Router# configure terminal

Router(config)# interface GigabitEthernet0/0

Router(config-if)# no shutdown

Router(config-if)# exit

! Sub-interface para a VLAN 1 (Professores)

Router(config)# interface GigabitEthernet0/0.1

```
Router(config-subif)# encapsulation dot1Q 1
Router(config-subif)# ip address 192.168.1.1 255.255.255.0
Router(config-subif)# exit
! Sub-interface para a VLAN 2 (Alunos)
Router(config)# interface GigabitEthernet0/0.2
Router(config-subif)# encapsulation dot1Q 2
Router(config-subif)# ip address 192.168.2.1 255.255.255.0
Router(config-subif)# exit
Router(config)# end
```

**Testes:**

I. Teste utilizando o ping para verificar a comunicação entre máquinas

A. VLAN1 com VLAN1 (No mesmo switch)(Comunica)

Origem: PC0 (192.168.1.10)

Destino: PC1 (192.168.1.11)

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.11

Pinging 192.168.1.11 with 32 bytes of data:

Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128
Reply from 192.168.1.11: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.11:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

B. VLAN1 com VLAN2 (No mesmo switch)(Comunica)

Origem: PC0 (192.168.1.10)

Destino: PC2 (192.168.2.20)

```
C:\>ping 192.168.2.20

Pinging 192.168.2.20 with 32 bytes of data:

Request timed out.
Reply from 192.168.2.20: bytes=32 time<1ms TTL=127
Reply from 192.168.2.20: bytes=32 time<1ms TTL=127
Reply from 192.168.2.20: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.2.20:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

C. VLAN1 com VLAN1 (Em switches diferentes)(Comunica) Origem: PC0 192.168.1.10) Destino: PC4 (192.168.1.12)

```
C:\>ping 192.168.1.12

Pinging 192.168.1.12 with 32 bytes of data:

Reply from 192.168.1.12: bytes=32 time<1ms TTL=128
Reply from 192.168.1.12: bytes=32 time<1ms TTL=128
Reply from 192.168.1.12: bytes=32 time<1ms TTL=128
Reply from 192.168.1.12: bytes=32 time<1ms TTL=128

Ping statistics for 192.168.1.12:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

D.VLAN1 com VLAN2 (Em switches diferentes)(Comunica) Origem: PC0 (192.168.1.10) Destino: PC6 (192.168.2.22)

```
C:\>ping 192.168.2.22

Pinging 192.168.2.22 with 32 bytes of data:

Request timed out.
Reply from 192.168.2.22: bytes=32 time<1ms TTL=127
Reply from 192.168.2.22: bytes=32 time<1ms TTL=127
Reply from 192.168.2.22: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.2.22:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```