Objetivo

Observar a troca de pacotes em uma rede local e entender como o protocolo ARP (Address Resolution Protocol) resolve endereços IP para endereços MAC. Também será analisado o impacto de um IP duplicado na rede.

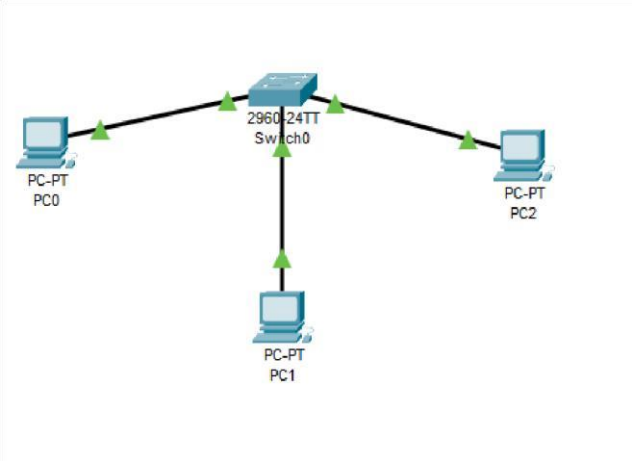
Topologia da Rede

Dispositivos:

- 3 PCs (PC0, PC1, PC2)
- 1 Switch

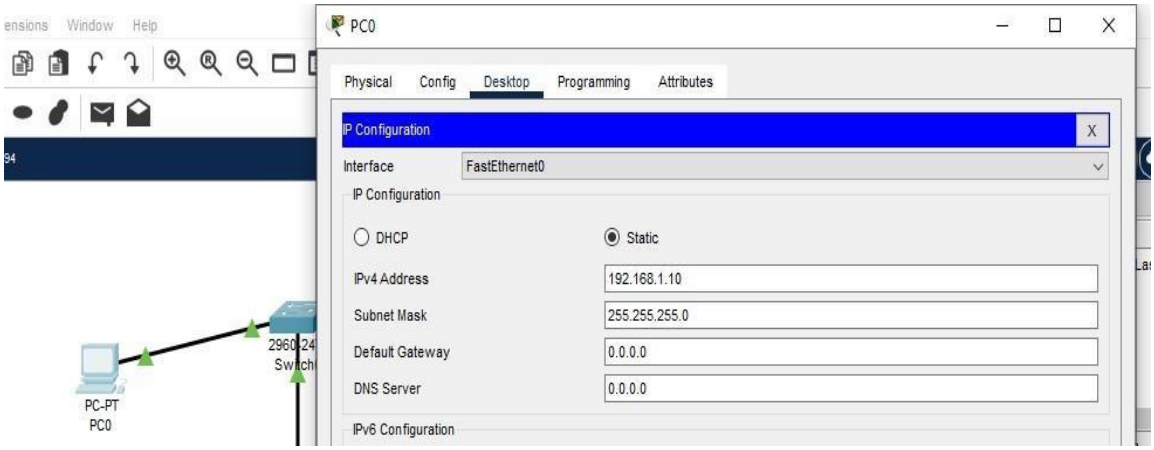
Conexões:

- Cada PC conectado diretamente ao switch com cabos do tipo cobre direto.

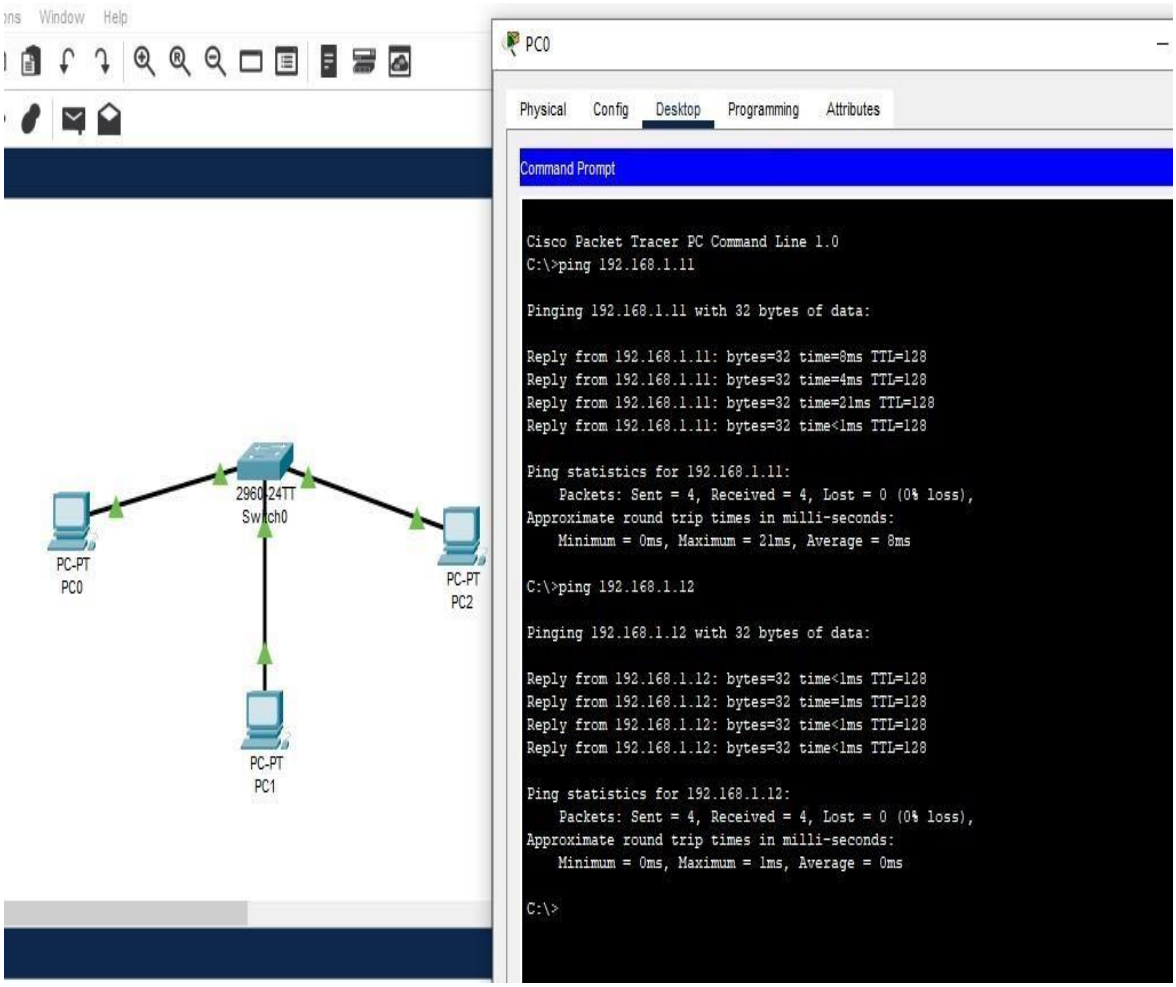


Configuração de IP

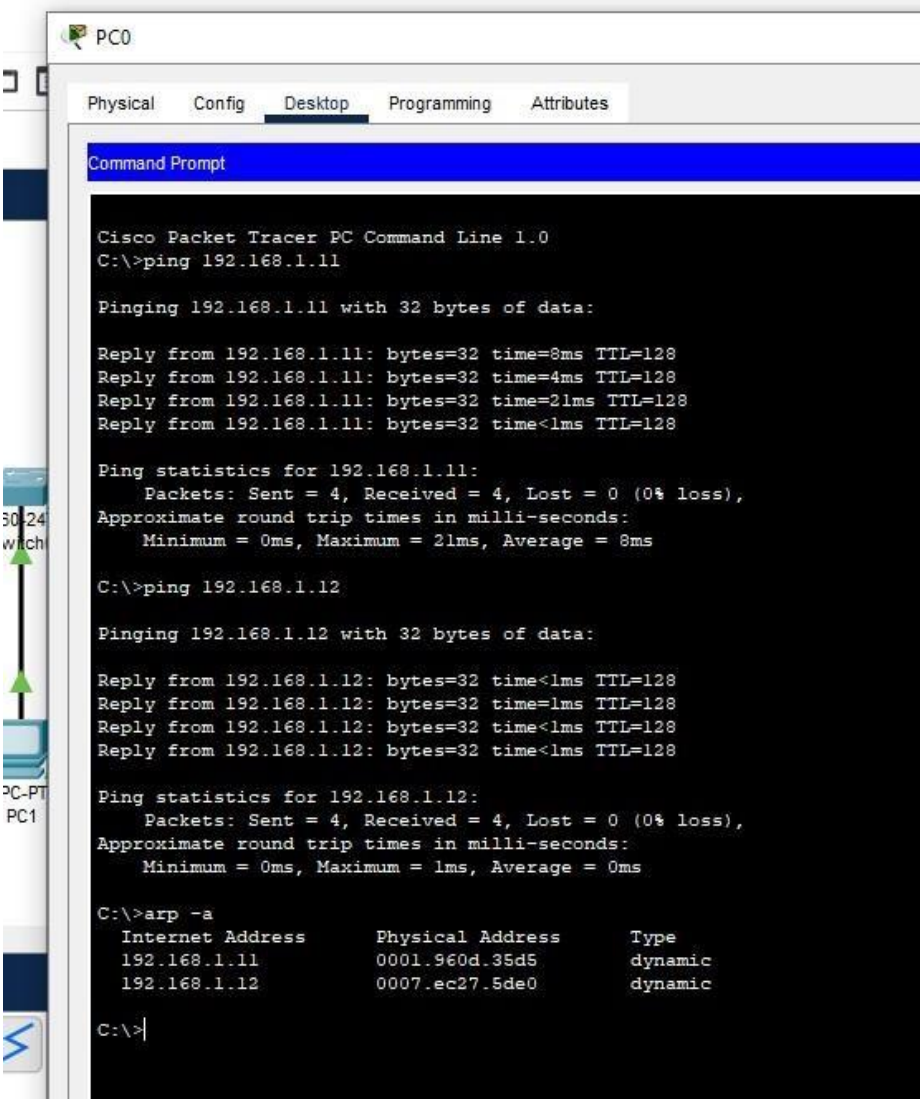
Dispositivo	Endereço IP	Máscara de Sub-rede
PC0	192.168.1.10	255.255.255.0
PC1	192.168.1.11	255.255.255.0
PC2	192.168.1.12	255.255.255.0



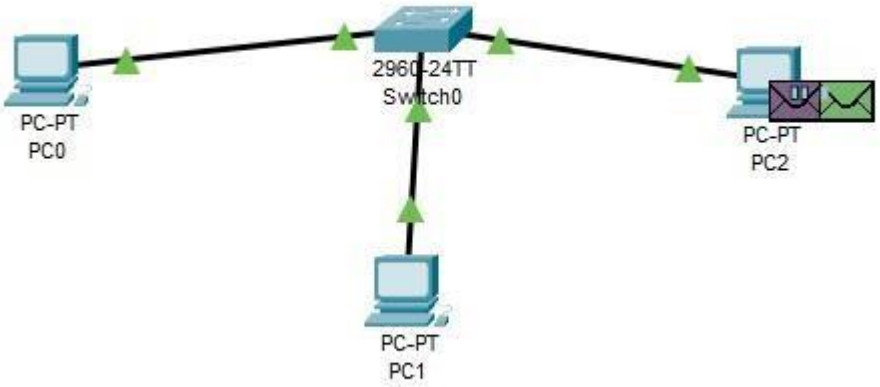
Teste de Conectividade (Ping)

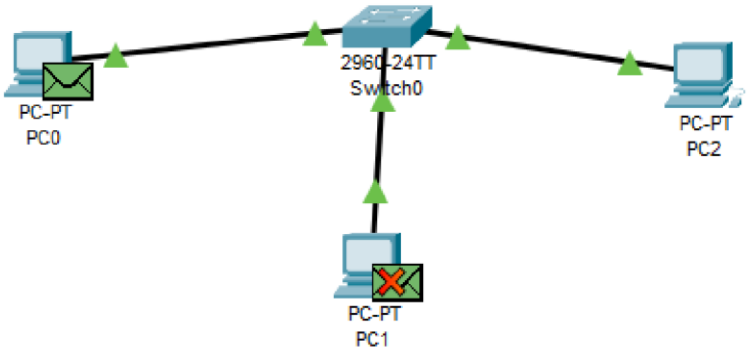


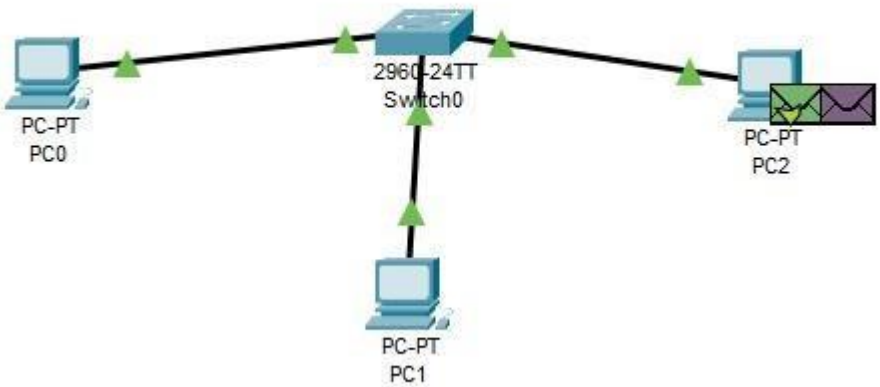
Verificação da Tabela ARP

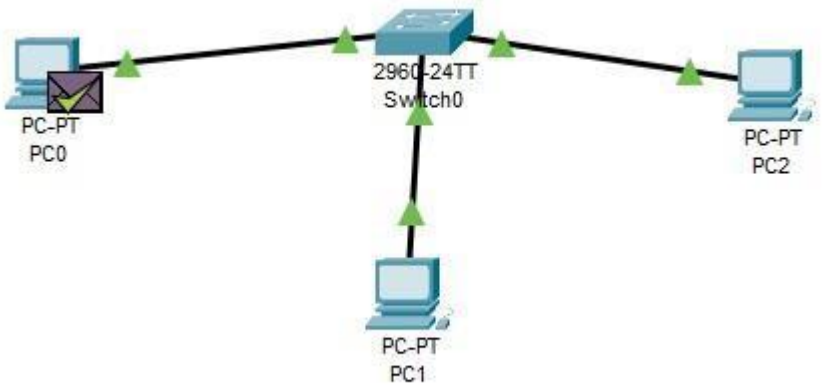

PC0
Physical
Config
Desktop
Programming
Attributes
Command Prompt
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.1.11
Pinging 192.168.1.11 with 32 bytes of data:
Reply from 192.168.1.11: bytes=32 time=8ms TTL=128
Reply from 192.168.1.11: bytes=32 time=4ms TTL=128
Reply from 192.168.1.11: bytes=32 time=21ms 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 = 21ms, Average = 8ms
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
C:\>arp -a
Internet Address
Physical Address
Type
192.168.1.11
0001.960d.35d5
dynamic
192.168.1.12
0007.ec27.5de0
dynamic
C:\>
PC-PT
PC1

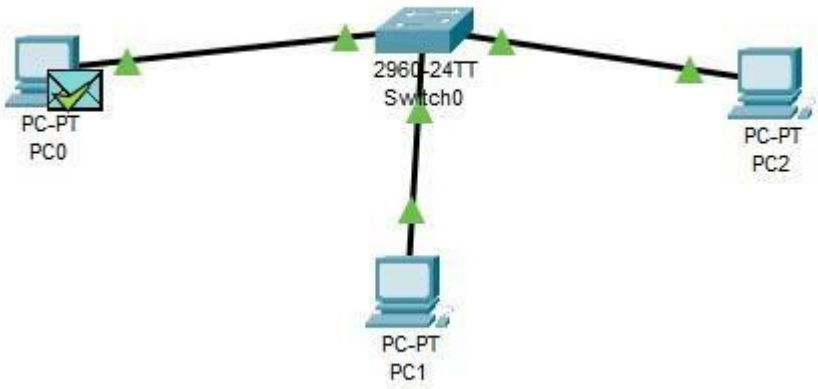
Simulation Mode – Observação do ARP

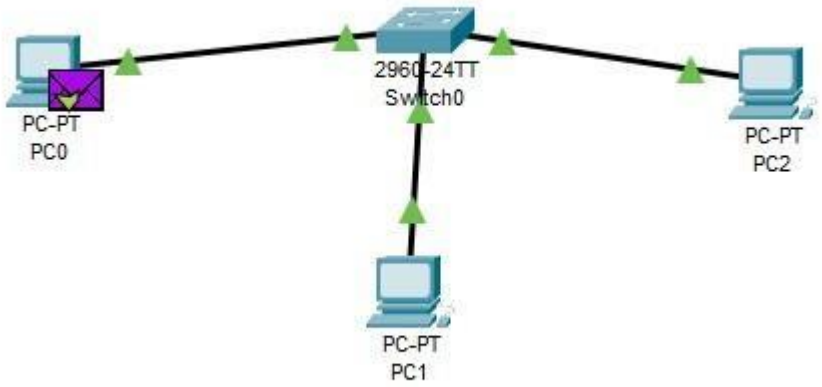












Qual o impacto de um endereço IP duplicado na comunicação?

Se dois dispositivos tiverem o mesmo IP, ocorre um conflito de IP, o que pode causar:

- Pacotes sendo enviados para o dispositivo errado.
- Respostas inconsistentes ou falha total na comunicação.
- Dificuldade de diagnóstico, pois a tabela ARP pode ficar confusa.
- Em alguns sistemas, uma mensagem de erro será exibida ("IP conflict detected").