Fundamentos de Redes de Computadores

Etapa 5 - TCP, UDP e Soluções de Problemas

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Trilha de Aprendizagem da Etapa 5

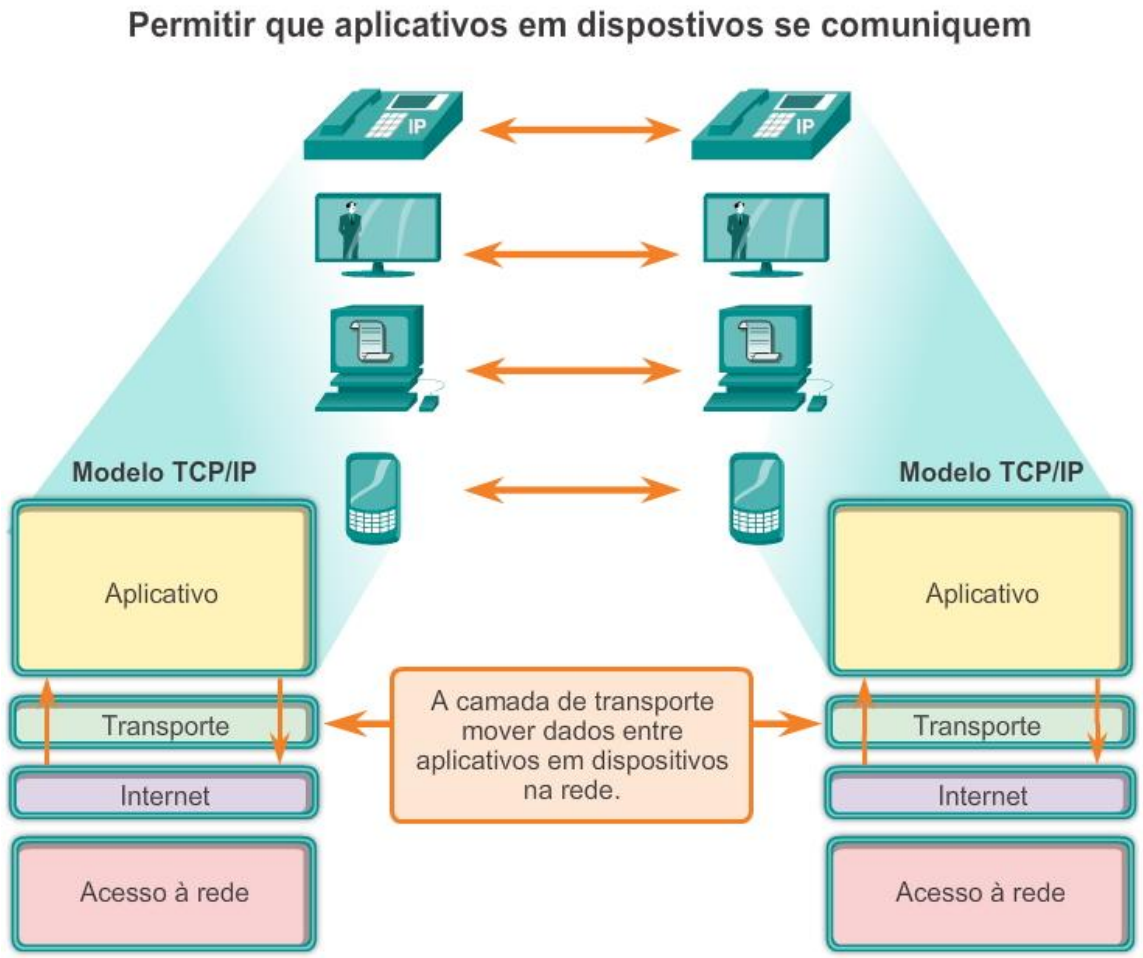
Realize os módulos 16 e 17 do curso “Networking Basics”, na plataforma Skills for All da Cisco para obter uma abordagem prática que complementa os conceitos teóricos desta lição.

Clique aqui para acessar o recurso

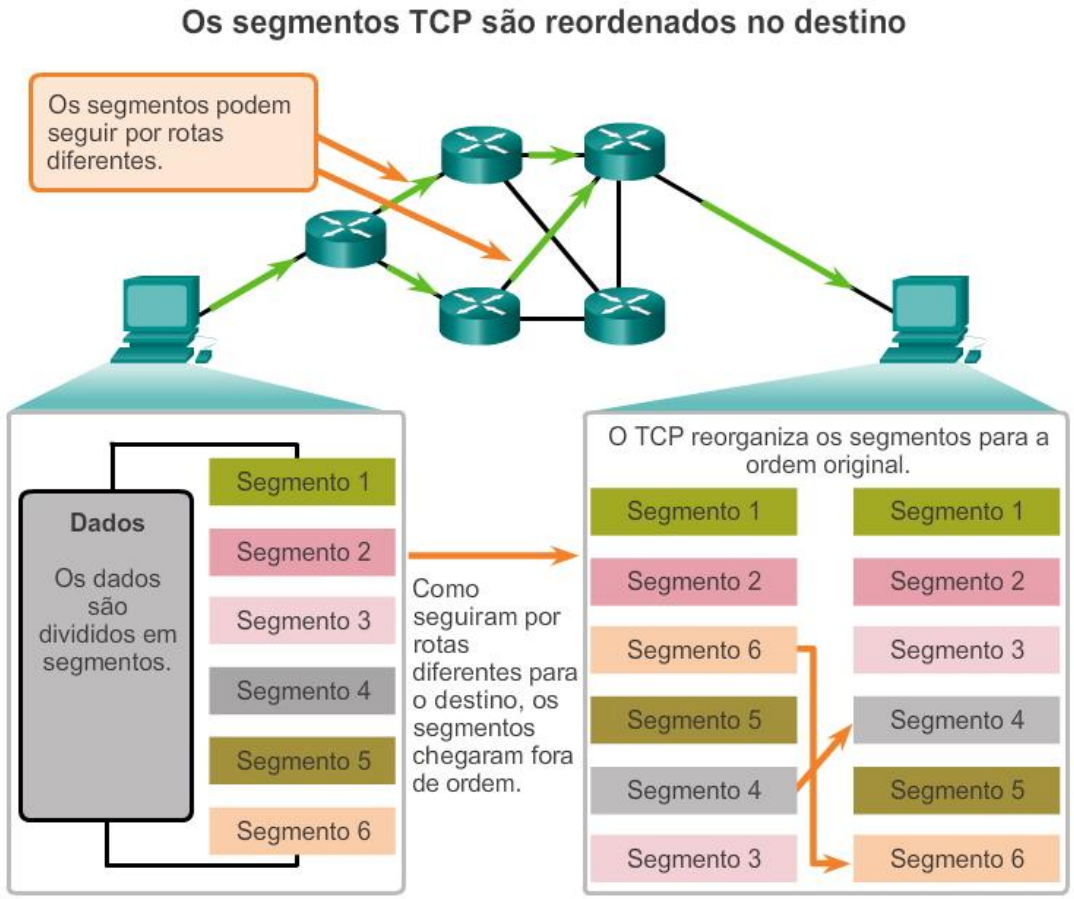
Leia os capítulos 16 e 17 do livro “Cisco Certified Support Technician (CCST) Networking Official Cert Guide”, de Russ White, para obter uma visão detalhada das tecnologias de suporte técnico em redes Cisco, enriquecendo seus conhecimentos práticos.

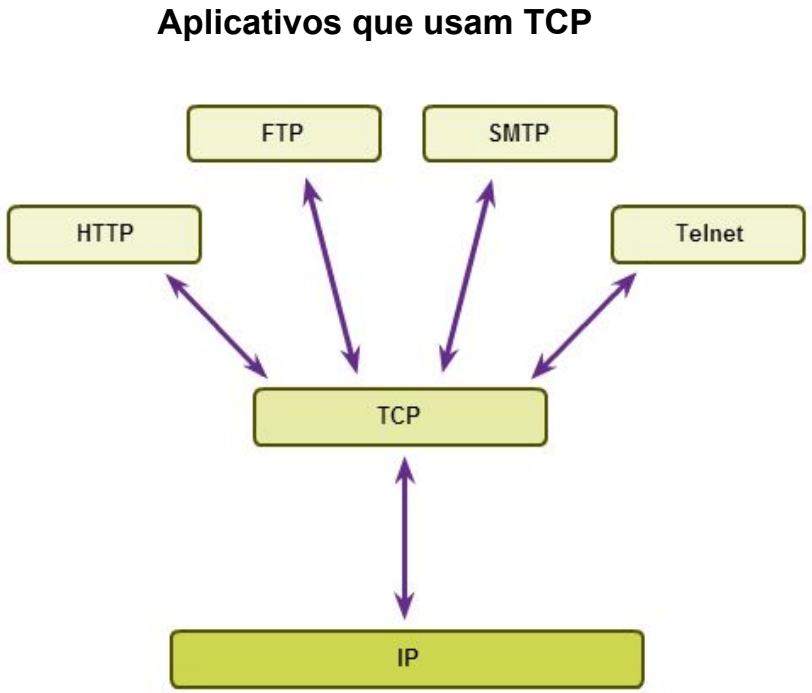
Clique aqui para acessar o recurso

Propósito da Camada de Transporte

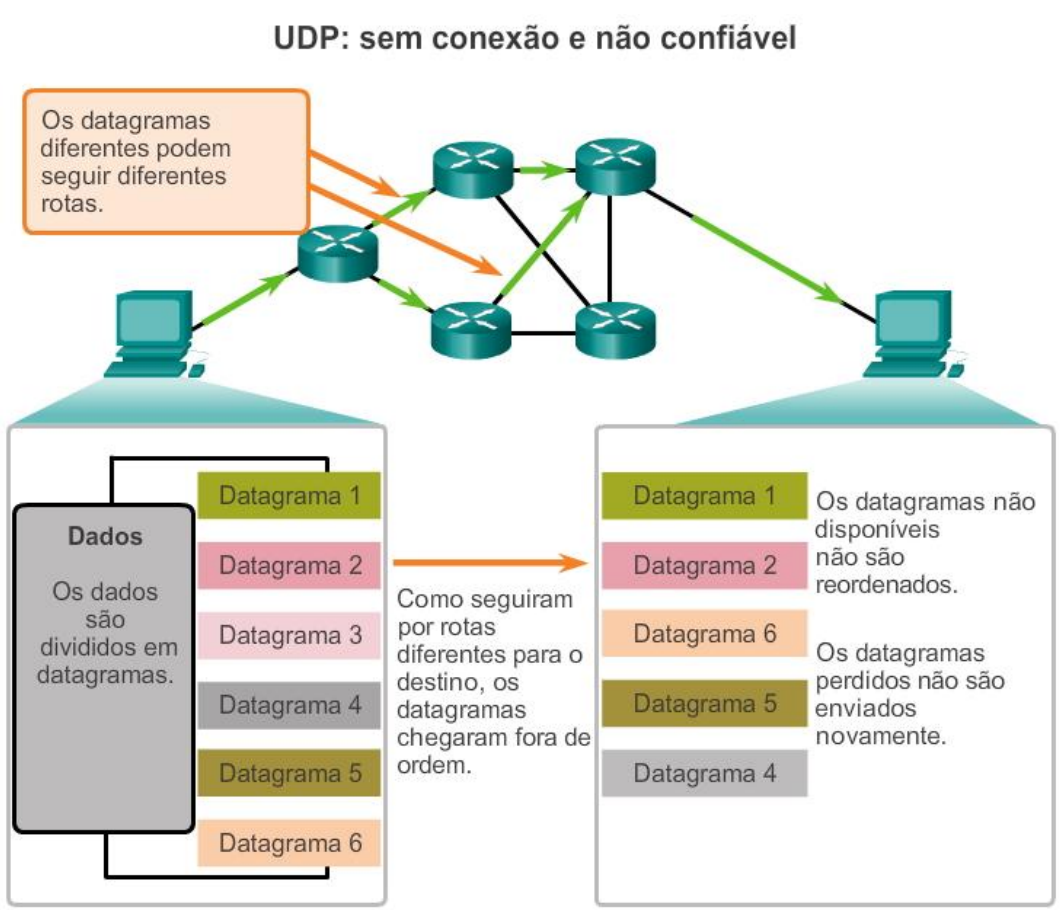


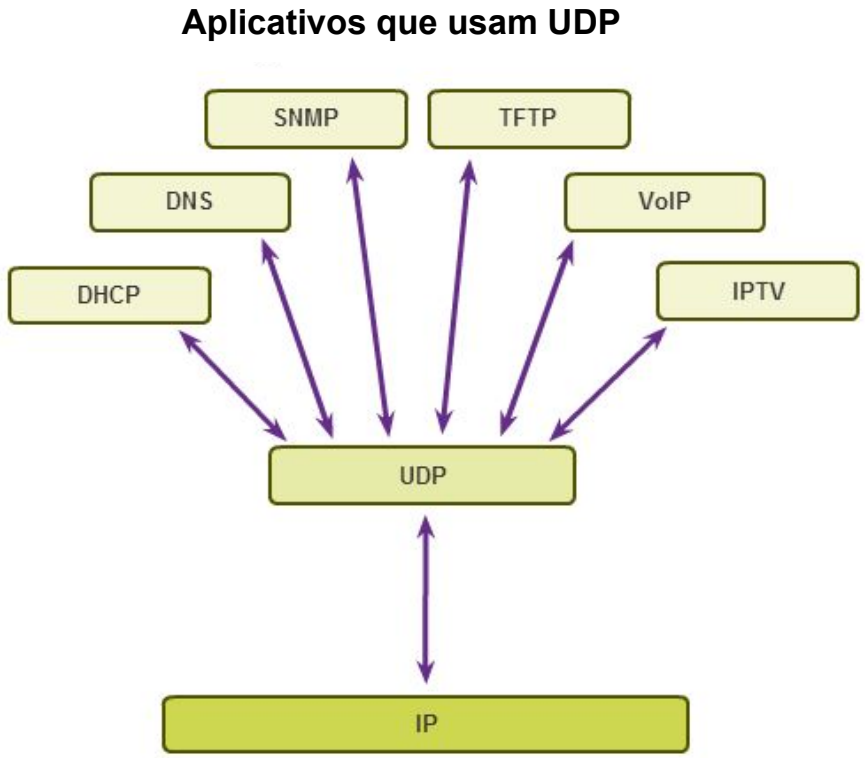
Protocolo TCP (Transmission Control Protocol)





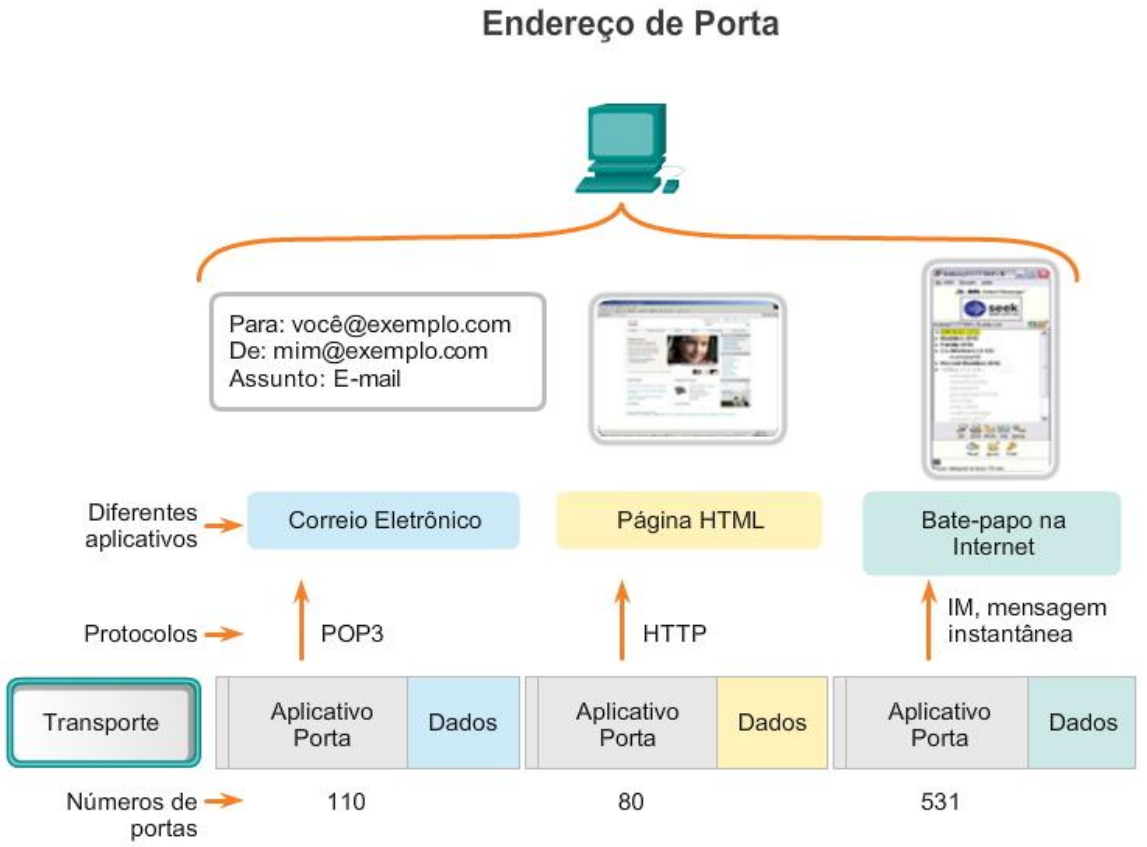
Protocolo UDP (User Datagram Protocol)





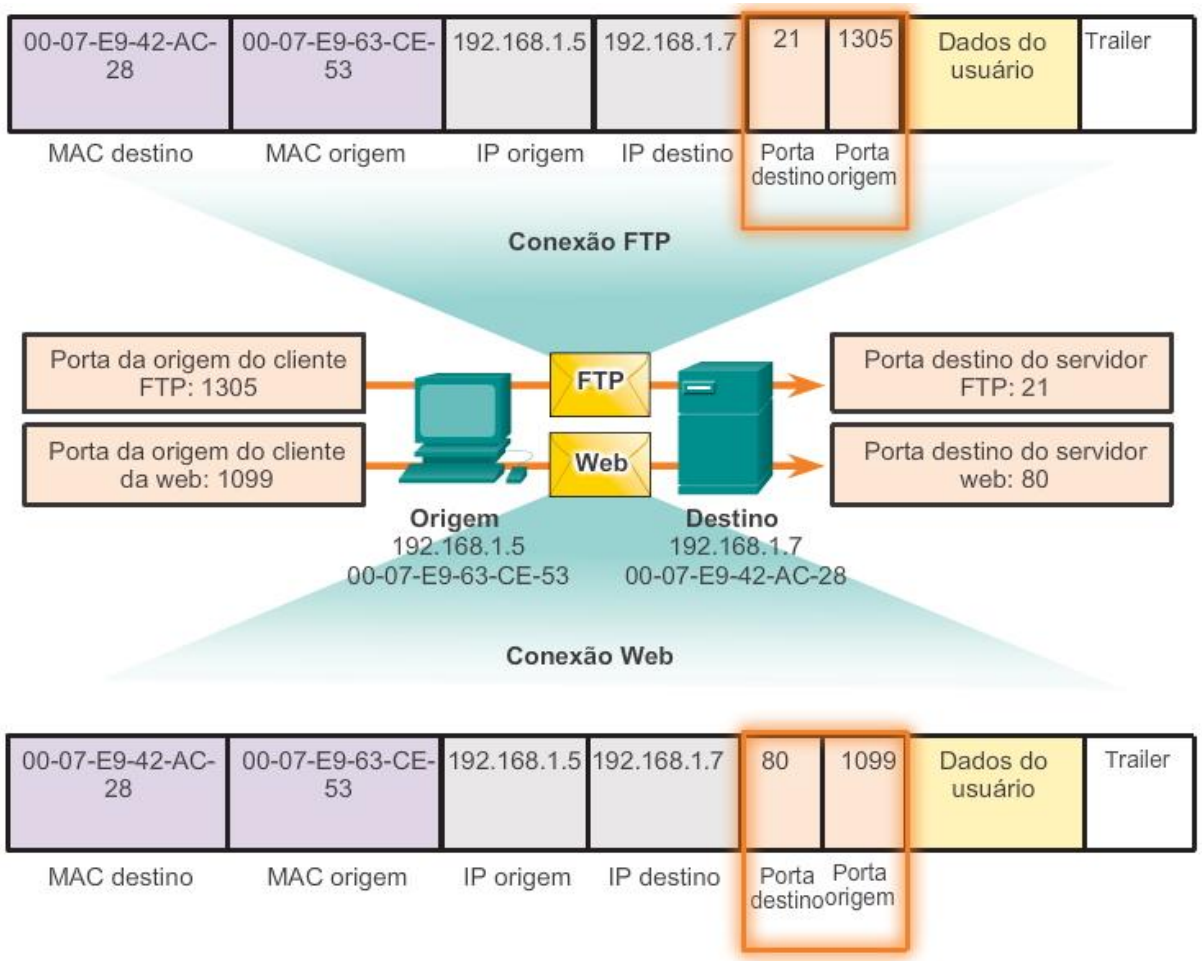
Separando várias comunicações

Os números de porta são usados pelo TCP e pelo UDP para diferenciar entre aplicativos



Os dados de diferentes aplicativos são direcionados para o aplicativo correto porque cada aplicativo tem um número de porta único.

Endereço de porta do TCP e UDP



Grupos de Números de Portas

Intervalo do números da porta	Grupo de portas
0 a 1023	Portas conhecidas
1024 a 49151	Portas registradas
49152 a 65535	Portas dinâmicas e/ou privadas

Portas TCP registradas:
1863 MSN Messenger
2000 Cisco SCCP (VoIP)
8008 Alternate HTTP
8080 Alternate HTTP

Portas TCP conhecidas:
21 FTP
23 Telnet
25 SMTP
80 HTTP
143 IMAP
194 Internet Relay Chat (IRC)
443 Secure HTTP (HTTPS)

Portas UDP registradas:
1812 RADIUS Authentication Protocol
5004 RTP (Voice and Video Transport Protocol)
5040 SIP (VoIP)

Portas UDP conhecidas:
69 TFTP
520 RIP

Portas TCP/UDP comuns registradas:
1433 MS SQL
2948 WAP (MMS)

Portas TCP/UDP comuns conhecidas:
53 DNS
161 SNMP
531 AOL Instant Messenger, IRC

Netstat

Usado para examinar as conexões TCP que estão abertas e em execução em um host conectado à rede

```
C:\>netstat

Active Connections

Proto   Local Address   Foreign Address           State
TCP     kenpc:3126      192.168.0.2:netbios-ssn   ESTABLISHED
TCP     kenpc:3158      207.138.126.152:http      ESTABLISHED
TCP     kenpc:3159      207.138.126.169:http      ESTABLISHED
TCP     kenpc:3160      207.138.126.169:http      ESTABLISHED
TCP     kenpc:3161      sc.msn.com:http           ESTABLISHED
TCP     kenpc:3166      www.cisco.com:http        ESTABLISHED

C:\>
```

Visão geral dos comandos de solução de problemas

Alguns dos utilitários disponíveis:

- ipconfig - Exibe informações da configuração IP
- ping - Testa conexões com outros hosts IP
- netstat - Exibe as conexões de rede
- tracert - Exibe a rota percorrida até o destino
- nslookup - consulta diretamente o servidor de nomes para obter informações sobre um domínio de destino

```
C:\> ipconfig

Windows IP Configuration


Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix . : lan
   Link-local IPv6 Address . . . . . : fe80 :: a1cc: 4239: d3ab: 2675% 6
   IPv4 Address. . . . . . . . . . . : 10.10.10.130
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 10.10.10.1
```

```
C:\> ipconfig/all

Windows IP Configuration

   Host Name . . . . . . . . . . . . : your-a9270112e3
   Primary Dns Suffix . . . . . . . :
   Node Type . . . . . . . . . . . . : Hybrid
   IP Routing Enabled. . . . . . . . : Não
   WINS Proxy Enabled. . . . . . . . : Não
   DNS Suffix Search List. . . . . . : lan

Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix . :
   Description . . . . . . . . . . . : Realtek PCIe GBE Family Controller
   Physical Address. . . . . . . . . : 00-16-D4-02-5A-EC
   DHCP Enabled. . . . . . . . . . . : Yes
   Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Wi-Fi:
```

```
C:\> ipconfig/release

Windows IP Configuration

No operation can be performed on Ethernet while it has its media disconnected.

Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix . :
   Link-local IPv6 Address . . . . . : fe80 :: a1cc: 4239: d3ab: 2675% 6
   Default Gateway . . . . . . . . . :
```

```
C:\> ipconfig/renew

Windows IP Configuration

No operation can be performed on Ethernet while it has its media disconnected.

Ethernet adapter Ethernet:

   Media State . . . . . . . . . . . : Media disconnected
   Connection-specific DNS Suffix . :

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix . : lan
   Link-local IPv6 Address . . . . . : fe80 :: a1cc: 4239: d3ab: 2675% 6
   IPv4 Address. . . . . . . . . . . : 10.10.10.130
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 10.10.10.1
```

```
C:\> ping 10.10.10.1

Pinging 10.10.10.1 with 32 bytes of data:
Reply from 10.10.10.1: bytes=32 time=1ms TTL=64
Reply from 10.10.10.1: bytes=32 time=1ms TTL=64
Reply from 10.10.10.1: bytes=32 time=1ms TTL=64
Reply from 10.10.10.1: bytes=32 time=1ms TTL=64

Ping statistics for 10.10.10.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 1ms, Maximum = 1ms, Average = 1ms

C:\> ping www.cisco.com

Pinging e2867.dsca.akamaiedge.net [104.112.72.241] with 32 bytes of data:
Reply from 104.112.72.241: bytes=32 time=25ms TTL=53
Reply from 104.112.72.241: bytes=32 time=25ms TTL=53
Reply from 104.112.72.241: bytes=32 time=27ms TTL=53
Reply from 104.112.72.241: bytes=32 time=24ms TTL=53

Ping statistics for 104.112.72.241:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 24ms, Maximum = 27ms, Average = 25ms
```

```
C:\> ping

Usage: ping [-t] [-a] [-n count] [-l size] [-f] [-i TTL] [-v TOS]
            [-r count] [-s count] [[-j host-list] | [-k host-list]]
            [-w timeout] [-R] [-S srcaddr] [-c compartment] [-p]
            [-4] [-6] target_name

Options:
    -t             Ping the specified host until stopped.
                   To see statistics and continue - type Control-Break;
                   To stop - type Control-C.
    -a             Resolve addresses to hostnames.
    -n count       Number of echo requests to send.
    -l size        Send buffer size.
    -f             Set Don't Fragment flag in packet (IPv4-only).
    -i TTL         Time To Live.
    -v TOS         Type Of Service (IPv4-only. This setting has been deprecated
                   and has no effect on the type of service field in the IP
                   Header).
    -r count       Record route for count hops (IPv4-only).
    -s count       Timestamp for count hops (IPv4-only).
    -j host-list   Loose source route along host-list (IPv4-only).
    -k host-list   Strict source route along host-list (IPv4-only).
    -w timeout     Timeout in milliseconds to wait for each reply.
    -R             Use routing header to test reverse route also (IPv6-only).
                   Per RFC 5095 the use of this routing header has been
                   deprecated. Some systems may drop echo requests if
                   deprecated. Some systems may drop echo requests if
    -S srcaddr     Source address to use.
    -c compartment Routing compartment identifier.
    -p             Ping a Hyper-V Network Virtualization provider address.
```

```
C:\> netstat

Active Connections

  Proto    Local Address          Foreign Address          State
  TCP      192.168.1.124:3126     192.168.0.2:netbios-ssn  ESTABLISHED
  TCP      192.168.1.124:3158     207.138.126.152:http     ESTABLISHED
  TCP      192.168.1.124:3159     207.138.126.169:http     ESTABLISHED
  TCP      192.168.1.124:3160     207.138.126.169:http     ESTABLISHED
  TCP      192.168.1.124:3161     sc.msn.com:http          ESTABLISHED
  TCP      192.168.1.124:3166     www.cisco.com:http       ESTABLISHED
(output omitted)
C:\>
```

```
C:\Users\queir>tracert www.google.com

Rastreando a rota para www.google.com [172.217.29.36]
com no máximo 30 saltos:

  1    24 ms     1 ms     1 ms  192.168.0.1
  2    10 ms    13 ms    11 ms  100.82.128.1
  3    10 ms     9 ms     8 ms  c9110925.virtua.com.br [201.17.9.37]
  4    17 ms    11 ms    12 ms  c91122b5.virtua.com.br [201.17.34.181]
  5    11 ms    11 ms    12 ms  c9112286.virtua.com.br [201.17.34.134]
  6    14 ms    13 ms    11 ms  c91122c5.virtua.com.br [201.17.34.197]
  7    13 ms    12 ms    12 ms  c9112292.virtua.com.br [201.17.34.146]
  8    10 ms    10 ms    12 ms  c9111fca.virtua.com.br [201.17.31.202]
  9    20 ms    10 ms    11 ms  108.170.251.65
 10    11 ms    10 ms    14 ms  108.170.229.185
 11    11 ms    18 ms    12 ms  rio01s20-in-f4.1e100.net [172.217.29.36]

Rastreamento concluído.
```

Mostra o número de sequência do salto (hop)

Mostra os **RTT**s (Round Trip Times) das mensagens enviadas – o traceroute envia três mensagens por padrão para cada salto

Mostra os endereços IP dos roteadores descobertos na rota

padlet

Link: [Fundamentos de Redes de Computadores [24E3_2]]


That's all Folks!