Network Commands

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Objectives

- defines what you need to know in order to use basic and advanced TCP/IP commands in the Command Prompt window.

- develop important skills you will need as a network administrator

Network commands

- TCP/IP commands, in particular, if used properly, can increase your speed and accuracy when analyzing network issues and when troubleshooting
- Commands: ipconfig, ping, tracert ,netstat ,nslookup ,Route ,ftp , telnet

Ipconfig command

- The ***ipconfig*** command displays information pertaining to your network adapter, namely TCP/IP configurations
- Execute **ipconfig**

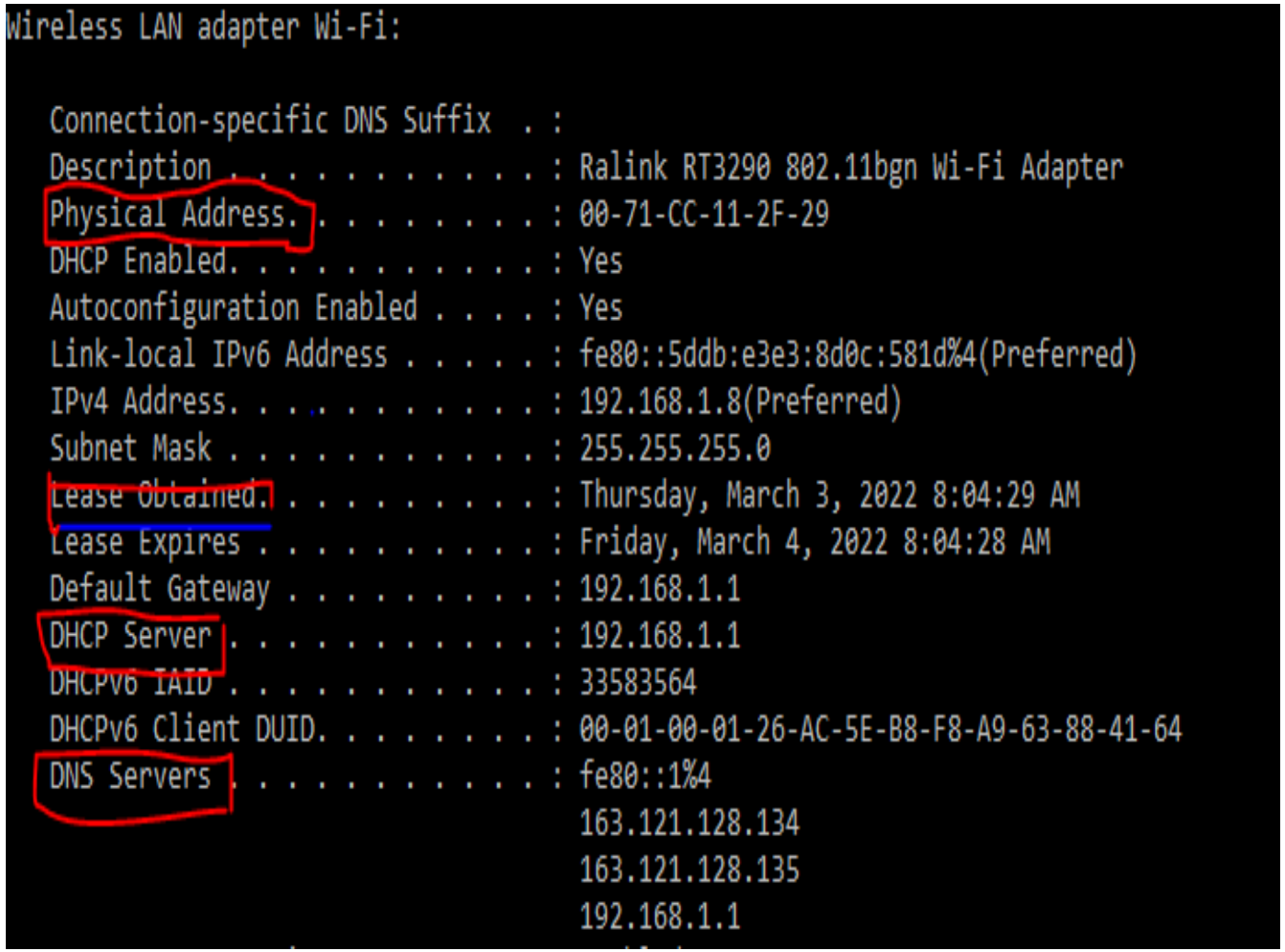
  a. you can find out the IP address, subnet mask, and default gateway

```
Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::5ddb:e3e3:8d0c:581d%4
   IPv4 Address. . . . . . . . . . . : 192.168.1.8
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : 192.168.1.1

C:\Users\kanaam>
```

Ipconfig command

- Execute **ipconfig /all**

The results should have much more information, including the MAC address



- Execute **ipconfig /?**

This displays the help file for ipconfig

Ipconfig command

- On a computer that obtains its IP information automatically, execute the **ipconfig /release** command.
  the ipconfig /release command releases any IP configurations it received from a DHCP server.

- Execute **ipconfig /renew** to retrieve an IP address and other IP configurations. This should reconfigure the computer with the same IP address it used before. If the IP address has only been released for a short time

Ping Command

- The ***ping*** command is used to test connectivity to other hosts; it tells you by way of command-line results whether a remote host is “alive” on the network.

Ex: ping google.com

Execute **ping [IP address]**

For example, **ping 172.16.0.12**

```
C:\Users\kareem>ping google.com

Pinging google.com [172.217.19.142] with 32 bytes of data:
Reply from 172.217.19.142: bytes=32 time=49ms TTL=117
Reply from 172.217.19.142: bytes=32 time=48ms TTL=117
Reply from 172.217.19.142: bytes=32 time=48ms TTL=117
Reply from 172.217.19.142: bytes=32 time=48ms TTL=117

Ping statistics for 172.217.19.142:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 48ms, Maximum = 49ms, Average = 48ms

C:\Users\kareem>
```

Ping Command

- Execute **ping /?**
  This command displays the help file for the ping command. Note the various options available to you.
- Ping the local host computer and other computers on the network:
  a. Execute **ping localhost**
  b. Execute **ping loopback**
  c. Execute **ping 127.0.0.1**
- Execute **ping –n 10 [IP address]** –n option allows you to ping with as many ICMP packets as you want.

Ping Command

- Execute **ping –t [IP address]**
  This command option sends pings endlessly to a destination IP address. This can only be stopped by pressing Ctrl+C on the keyboard

- Execute **ping –l 1500 [IP address]** For example, **ping –l 1500 172.16.0.12**

  The –l option allows you to modify the packet size of the ICMP echoes that are sent

Netstat command

- The netstat command is used to display active TCP (or UDP) connections
- The netstat command by itself only shows TCP connections in this column
- Execute **netstat –a**
  This displays TCP and UDP connections.

- Execute **netstat –an**
  This displays TCP and UDP connections in numeric format

Tracert command

- The tracert command shows paths to a destination on another network. It does this by ping-ing each step along the way three times. The Time to Live (TTL) for the pings increases with each “hop” to another network.

```
C:\Users\kareem>tracert google.com

Tracing route to google.com [172.217.19.142]
over a maximum of 30 hops:

  1     1 ms     1 ms    <1 ms  192.168.1.1 [192.168.1.1]
  2     7 ms     6 ms     6 ms  10.45.10.206 [10.45.10.206]
  3     7 ms     7 ms     7 ms  10.35.46.186 [10.35.46.186]
  4     6 ms    14 ms     6 ms  10.35.14.10 [10.35.14.10]
  5     8 ms    10 ms     8 ms  10.39.12.149 [10.39.12.149]
  6    14 ms    11 ms    12 ms  10.39.15.194 [10.39.15.194]
  7    11 ms    10 ms    10 ms  10.38.112.53 [10.38.112.53]
  8    12 ms    13 ms    12 ms  10.38.226.246 [10.38.226.246]
  9    48 ms    48 ms    48 ms  72.14.209.20
 10    49 ms    49 ms    49 ms  72.14.237.1
 11    50 ms    49 ms    49 ms  66.249.94.127
 12    48 ms    50 ms    48 ms  par03s12-in-f142.1e100.net [172.217.19.142]

Trace complete.
```

Nslookup command

- ***Nslookup*** displays information about DNS names and their corresponding IP addresses.

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```
C:\Users\kareem>nslookup google.com
Server:  UnKnown
Address:  fe80::1

Non-authoritative answer:
Name:    google.com
Addresses:  2a00:1450:4006:802::200e
          172.217.18.238
```

Route command

- The route command enables you to display and make changes to the local IP routing table of the computer. The local IP routing table displays IP connections to other networks as well as testing networks

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```
C:\Users\kareem>route print
===========================================================================
Interface List
 13...f8 a9 63 88 41 64 ......Realtek PCIe FE Family Controller
 47...00 15 5d 50 98 5d ......Hyper-V Virtual Ethernet Adapter
 10...00 71 cc 11 2f 2b ......Microsoft Wi-Fi Direct Virtual Adapter #2
 14...00 71 cc 11 2f 2c ......Microsoft Wi-Fi Direct Virtual Adapter #3
 21...00 50 56 c0 00 01 ......VMware Virtual Ethernet Adapter for VMnet1
 22...00 50 56 c0 00 08 ......VMware Virtual Ethernet Adapter for VMnet8
  4...00 71 cc 11 2f 29 ......Ralink RT3290 802.11bgn Wi-Fi Adapter
  1...........................Software Loopback Interface 1
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
          0.0.0.0          0.0.0.0      192.168.1.1      192.168.1.8     50
        127.0.0.0        255.0.0.0         On-link         127.0.0.1    331
        127.0.0.1  255.255.255.255         On-link         127.0.0.1    331
  127.255.255.255  255.255.255.255         On-link         127.0.0.1    331
     172.29.224.0    255.255.240.0         On-link      172.29.224.1    271
     172.29.224.1  255.255.255.255         On-link      172.29.224.1    271
   172.29.239.255  255.255.255.255         On-link      172.29.224.1    271
     192.168.1.0    255.255.255.0         On-link       192.168.1.8    306
     192.168.1.8  255.255.255.255         On-link       192.168.1.8    306
```

ARP command

- *Execute* **arp – a** to view the IP address to MAC address table. This table should now show the IP address you just pinged. This table is known as the Address Res-olution Protocol table, or ***ARP table***. The ***Address Resolution Protocol*** is another translates IP addresses to MAC addresses

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```
C:\Users\kareem>arp -a

Interface: 192.168.1.8 --- 0x4
  Internet Address      Physical Address      Type
  192.168.1.1           24-d3-f2-b4-00-a5     dynamic
  192.168.1.255         ff-ff-ff-ff-ff-ff     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static

Interface: 192.168.174.1 --- 0x15
  Internet Address      Physical Address      Type
  192.168.174.255       ff-ff-ff-ff-ff-ff     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
```


At the
End


Any questions?