

Network

Ahmed Ehab Ahmed

Lab1

```
Windows PowerShell
PS D:\> ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

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

Wireless LAN adapter Local Area Connection* 1:

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

Wireless LAN adapter Local Area Connection* 10:

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

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::ff04:cad1:ab66:19c1%12
    IPv4 Address. . . . . : 192.168.1.104
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1
PS D:\> ipconfig -all

Windows IP Configuration

    Host Name . . . . . : Ahmed-Ehab
    Primary Dns Suffix . . . . . :
    Node Type . . . . . : Hybrid
    IP Routing Enabled. . . . . : No
```

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Windows PowerShell
PS D:\> ipconfig /all

Windows IP Configuration

    Host Name . . . . . : Ahmed-Ehab
    Primary Dns Suffix . . . . . :
    Node Type . . . . . : Hybrid
    IP Routing Enabled. . . . . : No
    WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
    Description . . . . . : Realtek PCIe GbE Family Controller
    Physical Address. . . . . : 88-22-7A-DF-51-E4
    DHCP Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
    Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter
    Physical Address. . . . . : 38-FC-98-E6-EF-20
    DHCP Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Local Area Connection* 10:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
    Description . . . . . : Microsoft Wi-Fi Direct Virtual Adapter #2
    Physical Address. . . . . : 3A-FC-98-E6-EF-1F
    DHCP Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    Description . . . . . : Intel(R) Wi-Fi 6 AX201 160MHz
    Physical Address. . . . . : 38-FC-98-E6-EF-1F
    DHCP Enabled. . . . . : Yes
    Autoconfiguration Enabled . . . . : Yes
    Link-local IPv6 Address . . . . . : fe80::ff04:cad1:ab66:19c1%12(Preferred)
    IPv4 Address. . . . . : 192.168.1.104(Preferred)
    Subnet Mask . . . . . : 255.255.255.0
    Lease Obtained. . . . . : Thursday, 27 November 2025 10:31:42 am
    Lease Expires . . . . . : Friday, 28 November 2025 12:31:44 pm
    Default Gateway . . . . . : 192.168.1.1
    DHCP Server . . . . . : 192.168.1.1
    DHCPv6 IAID . . . . . : 154729624
    DHCPv6 Client DUID. . . . . : 00-01-00-01-2D-C4-D5-1A-B8-22-7A-DF-51-E4
    DNS Servers . . . . . : 192.168.1.1
    NetBIOS over Tcpip. . . . . : Enabled
PS D:\> |
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Windows PowerShell
PS D:\> ipconfig /release

Windows IP Configuration

No operation can be performed on Ethernet while it has its media disconnected.
No operation can be performed on Local Area Connection* 1 while it has its media disconnected.
No operation can be performed on Local Area Connection* 10 while it has its media disconnected.

Ethernet adapter Ethernet:

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

Wireless LAN adapter Local Area Connection* 1:

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

Wireless LAN adapter Local Area Connection* 10:

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

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::ff04:cad1:ab66:19c1%12
    Default Gateway . . . . . :

PS D:\>
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Windows PowerShell
Link-local IPv6 Address . . . . . : fe80::ff04:cad1:ab66:19c1%12
Default Gateway . . . . . :
PS D:\> ipconfig /renew

Windows IP Configuration

No operation can be performed on Ethernet while it has its media disconnected.
No operation can be performed on Local Area Connection* 1 while it has its media disconnected.
No operation can be performed on Local Area Connection* 10 while it has its media disconnected.

Ethernet adapter Ethernet:

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

Wireless LAN adapter Local Area Connection* 1:

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

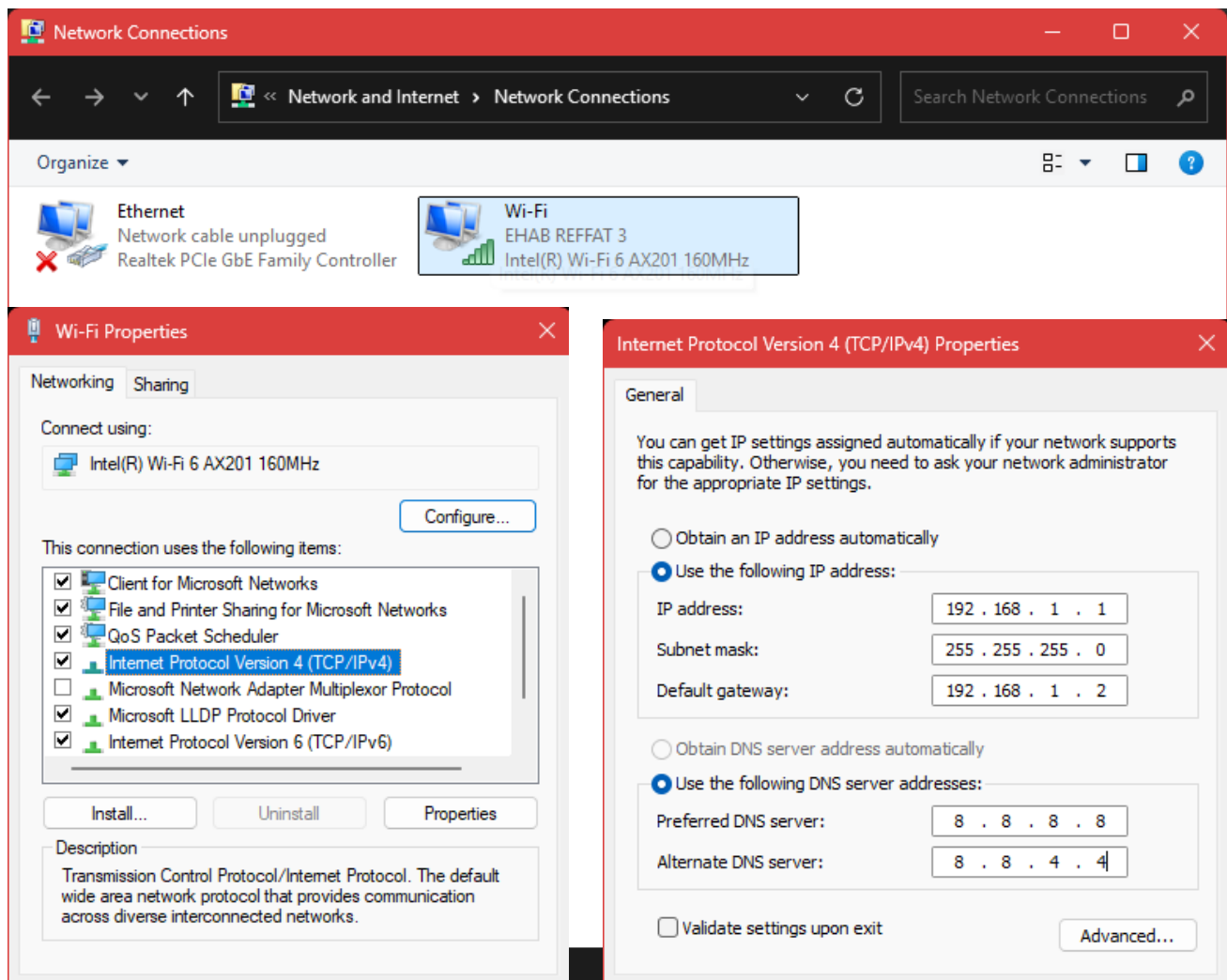
Wireless LAN adapter Local Area Connection* 10:

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

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::ff04:cad1:ab66:19c1%12
    IPv4 Address. . . . . : 192.168.1.104
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1

PS D:\>
```



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Windows IP Configuration

Ethernet adapter Ethernet:

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

Wireless LAN adapter Local Area Connection* 1:

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

Wireless LAN adapter Local Area Connection* 10:

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

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    Link-Local IPv6 Address . . . . . : fe80::ff04:cad1:ab66:19c1%12
    IPv4 Address. . . . . : 192.168.1.104
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1
PS D:\> ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time=3ms TTL=64
Reply from 192.168.1.1: bytes=32 time=3ms TTL=64
Reply from 192.168.1.1: bytes=32 time=4ms TTL=64
Reply from 192.168.1.1: bytes=32 time=2ms TTL=64

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 4ms, Average = 3ms
PS D:\> |
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Windows PowerShell

Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 10:

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

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    Link-Local IPv6 Address . . . . . : fe80::ff04:cad1:ab66:19c1%12
    IPv4 Address. . . . . : 192.168.1.104
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.1.1
PS D:\> ping 192.168.1.1

Pinging 192.168.1.1 with 32 bytes of data:
Reply from 192.168.1.1: bytes=32 time=3ms TTL=64
Reply from 192.168.1.1: bytes=32 time=3ms TTL=64
Reply from 192.168.1.1: bytes=32 time=4ms TTL=64
Reply from 192.168.1.1: bytes=32 time=2ms TTL=64

Ping statistics for 192.168.1.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 4ms, Average = 3ms
PS D:\> getmac

Physical Address    Transport Name
=====
38-FC-98-E6-EF-1F   \Device\NPF{7EB74B5D-ADD9-4A73-AB27-2A7B8B5A4B88}
B0-22-7A-DF-51-E4   Media disconnected
PS D:\> getmac /v

Connection Name Network Adapter Physical Address    Transport Name
=====
Wi-Fi           Intel(R) Wi-Fi 38-FC-98-E6-EF-1F   \Device\NPF{7EB74B5D-ADD9-4A73-AB27-2A7B8B5A4B88}
Ethernet        Realtek PCIe Gb B0-22-7A-DF-51-E4   Media disconnected
PS D:\>
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Windows PowerShell
Approximate round trip times in milli-seconds:
  Minimum = 2ms, Maximum = 4ms, Average = 3ms
PS D:\> getmac

Physical Address      Transport Name
=====
38-FC-98-E6-EF-1F     \Device\NPF{7EB74B5D-ADD9-4A73-AB27-2A7B8B5A4B88}
B0-22-7A-DF-51-E4     Media disconnected
PS D:\> getmac /v

Connection Name Network Adapter Physical Address      Transport Name
=====
Wi-Fi           Intel(R) Wi-Fi 38-FC-98-E6-EF-1F     \Device\NPF{7EB74B5D-ADD9-4A73-AB27-2A7B8B5A4B88}
Ethernet        Realtek PCIe Gb B0-22-7A-DF-51-E4     Media disconnected
PS D:\> arp -a

Interface: 192.168.1.104 --- 0xc
Internet Address      Physical Address      Type
192.168.1.1           b4-b0-24-1b-f7-a8     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
PS D:\> arp -d
The ARP entry deletion failed: The requested operation requires elevation.
PS D:\>
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Administrator: Windows PowerShell
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\WINDOWS\system32> arp -a

Interface: 192.168.1.104 --- 0xc
Internet Address      Physical Address      Type
192.168.1.1           b4-b0-24-1b-f7-a8     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
PS C:\WINDOWS\system32> arp -d
PS C:\WINDOWS\system32> arp -a

Interface: 192.168.1.104 --- 0xc
Internet Address      Physical Address      Type
192.168.1.1           b4-b0-24-1b-f7-a8     dynamic
224.0.0.22            01-00-5e-00-00-16     static
PS C:\WINDOWS\system32> |
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Windows PowerShell
PS D:\> netstat -n

Active Connections

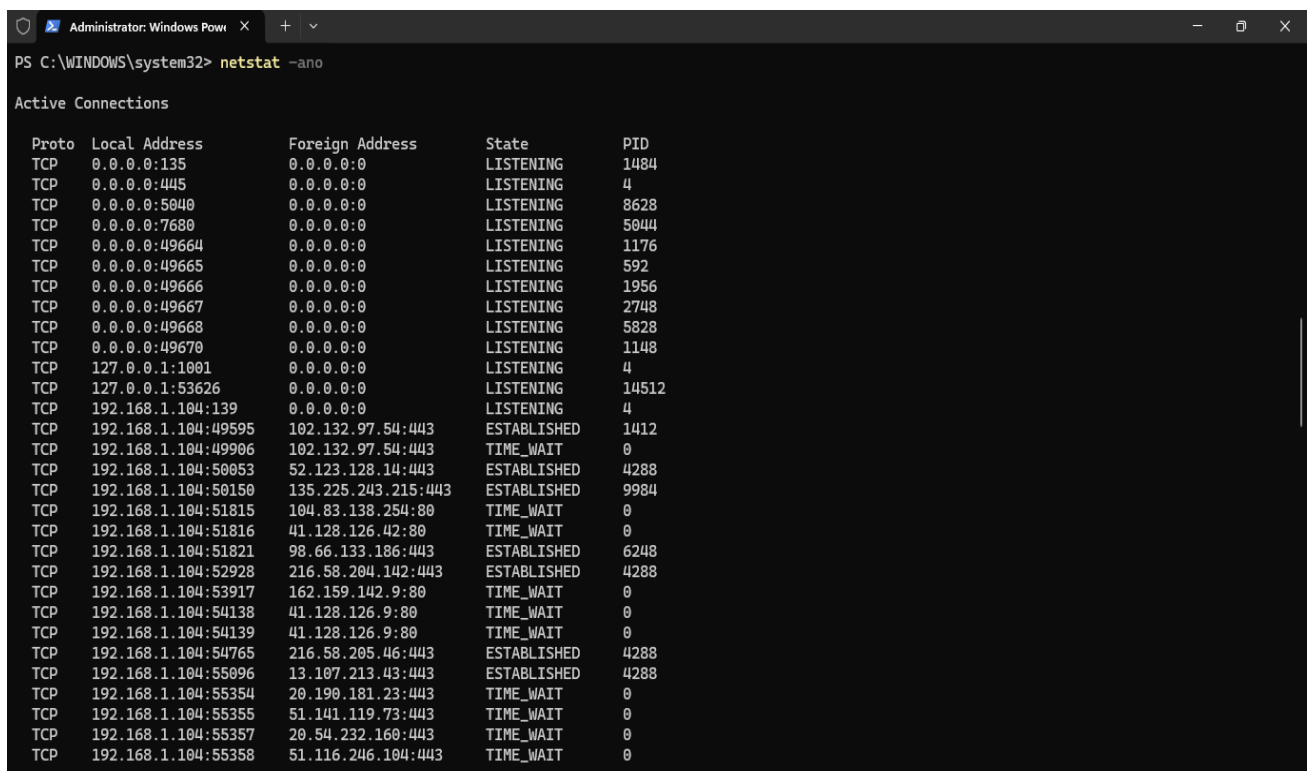
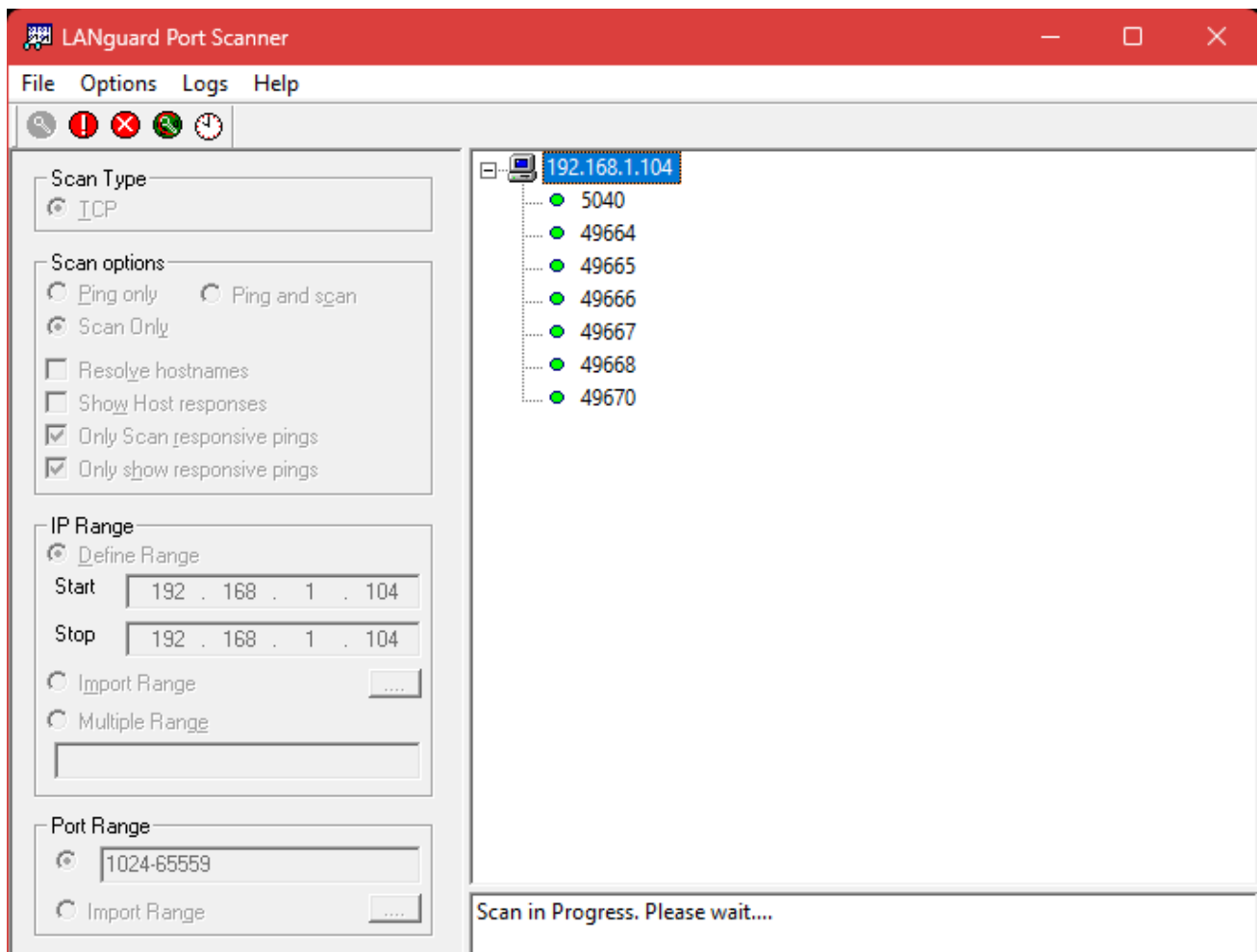
Proto Local Address           Foreign Address         State
TCP    127.0.0.1:53626          127.0.0.1:63967        ESTABLISHED
TCP    127.0.0.1:63967          127.0.0.1:53626        ESTABLISHED
TCP    192.168.1.104:49414      74.242.255.116:443     ESTABLISHED
TCP    192.168.1.104:49639      4.208.32.153:443       ESTABLISHED
TCP    192.168.1.104:49641      52.123.243.7:443       ESTABLISHED
TCP    192.168.1.104:49678      98.66.133.184:443      ESTABLISHED
TCP    192.168.1.104:49679      142.250.180.174:443    TIME_WAIT
TCP    192.168.1.104:49751      52.111.231.12:443       ESTABLISHED
TCP    192.168.1.104:50541      102.132.103.60:443     ESTABLISHED
TCP    192.168.1.104:51027      142.251.140.106:443    TIME_WAIT
TCP    192.168.1.104:51098      52.123.243.16:443      ESTABLISHED
TCP    192.168.1.104:51403      52.111.231.54:443      ESTABLISHED
TCP    192.168.1.104:51606      2.20.109.89:443        ESTABLISHED
TCP    192.168.1.104:51871      52.98.159.18:443       ESTABLISHED
TCP    192.168.1.104:51929      41.128.126.50:443      ESTABLISHED
TCP    192.168.1.104:52487      216.58.204.238:443     TIME_WAIT
TCP    192.168.1.104:52856      146.75.34.73:443       ESTABLISHED
TCP    192.168.1.104:52896      41.128.126.57:443      ESTABLISHED
TCP    192.168.1.104:53888      41.128.126.11:443      ESTABLISHED
TCP    192.168.1.104:53911      13.107.246.77:443      CLOSE_WAIT
TCP    192.168.1.104:53969      95.101.35.169:443      ESTABLISHED
TCP    192.168.1.104:54353      216.58.209.54:443      TIME_WAIT
TCP    192.168.1.104:54561      23.53.1.151:443        ESTABLISHED
TCP    192.168.1.104:55178      20.50.73.8:443         ESTABLISHED
TCP    192.168.1.104:55274      142.251.143.110:443    ESTABLISHED
TCP    192.168.1.104:55534      23.55.48.170:443       ESTABLISHED
TCP    192.168.1.104:55804      163.181.97.182:443     ESTABLISHED
TCP    192.168.1.104:56055      216.58.204.251:443     TIME_WAIT
```

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Windows PowerShell
PS D:\> nslookup
Default Server: UnKnown
Address: 192.168.1.1

> www.google.com
Server: UnKnown
Address: 192.168.1.1

Non-authoritative answer:
Name: www.google.com
Addresses: 2a00:1450:4002:402::2004
          142.250.180.132

>
PS D:\>
```



```
Administrator: Windows Pow... X + -
UDP 0.0.0.0:5355 *: 2696
UDP 0.0.0.0:50070 *: 15628
UDP 0.0.0.0:58067 216.58.205.36:443 4288
UDP 127.0.0.1:1900 *: 6828
UDP 127.0.0.1:49664 127.0.0.1:49664 5324
UDP 127.0.0.1:65529 *: 6828
UDP 192.168.1.104:137 *: 4
UDP 192.168.1.104:138 *: 4
UDP 192.168.1.104:1900 *: 6828
UDP 192.168.1.104:2177 *: 8940
UDP 192.168.1.104:65528 *: 6828
UDP [::]:123 *: 12172
UDP [::]:5353 *: 3500
UDP [::]:5353 *: 85300
UDP [::]:5353 *: 4288
UDP [::]:5353 *: 2696
UDP [::]:5355 *: 2696
UDP [::]:50070 *: 15628
UDP [::1]:1900 *: 6828
UDP [::1]:65527 *: 6828
UDP [fe80::ff04:cad1:ab66:19c1%12]:1900 *: 6828
UDP [fe80::ff04:cad1:ab66:19c1%12]:2177 *: 8940
UDP [fe80::ff04:cad1:ab66:19c1%12]:65526 *: 6828
PS C:\WINDOWS\system32> taskkill /PID 8628 /PID 1176 /PID 592 /PID 1956 /PID 2748 /PID 5828 /PID 1148 /F
ERROR: The process with PID 592 could not be terminated.
Reason: Access is denied.
ERROR: The process with PID 1148 could not be terminated.
Reason: This is critical system process. Taskkill cannot end this process.
ERROR: The process with PID 1176 could not be terminated.
Reason: Access is denied.
SUCCESS: The process with PID 1956 has been terminated.
SUCCESS: The process with PID 2748 has been terminated.
SUCCESS: The process with PID 5828 has been terminated.
SUCCESS: The process with PID 8628 has been terminated.
PS C:\WINDOWS\system32> |
```

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Administrator: Windows Pow... X + -
SUCCESS: The process with PID 2748 has been terminated.
SUCCESS: The process with PID 5828 has been terminated.
SUCCESS: The process with PID 8628 has been terminated.
PS C:\WINDOWS\system32> netstat -ano

Active Connections

Proto Local Address Foreign Address State PID
TCP 0.0.0.0:135 0.0.0.0:0 LISTENING 1484
TCP 0.0.0.0:445 0.0.0.0:0 LISTENING 4
TCP 0.0.0.0:5040 0.0.0.0:0 LISTENING 78640
TCP 0.0.0.0:7680 0.0.0.0:0 LISTENING 5044
TCP 0.0.0.0:49664 0.0.0.0:0 LISTENING 1176
TCP 0.0.0.0:49665 0.0.0.0:0 LISTENING 592
TCP 0.0.0.0:49670 0.0.0.0:0 LISTENING 1148
TCP 0.0.0.0:63650 0.0.0.0:0 LISTENING 78092
TCP 0.0.0.0:63652 0.0.0.0:0 LISTENING 78816
TCP 0.0.0.0:63654 0.0.0.0:0 LISTENING 80500
TCP 127.0.0.1:1001 0.0.0.0:0 LISTENING 4
TCP 127.0.0.1:53626 0.0.0.0:0 LISTENING 14512
TCP 192.168.1.104:139 0.0.0.0:0 LISTENING 4
TCP 192.168.1.104:49595 102.132.97.54:443 ESTABLISHED 1412
TCP 192.168.1.104:49824 52.111.231.7:443 ESTABLISHED 39208
TCP 192.168.1.104:49859 52.111.231.7:443 ESTABLISHED 39208
TCP 192.168.1.104:50150 135.225.243.215:443 ESTABLISHED 9984
TCP 192.168.1.104:51821 98.66.133.186:443 ESTABLISHED 6248
TCP 192.168.1.104:52436 74.242.255.116:443 ESTABLISHED 85696
TCP 192.168.1.104:53707 52.112.122.46:443 ESTABLISHED 4288
TCP 192.168.1.104:54912 18.97.36.56:443 ESTABLISHED 4288
TCP 192.168.1.104:55750 41.128.126.56:443 ESTABLISHED 10744
TCP 192.168.1.104:57543 52.112.122.46:443 ESTABLISHED 4288
TCP 192.168.1.104:59033 4.208.35.46:443 ESTABLISHED 15628
TCP 192.168.1.104:63651 4.208.165.241:443 TIME_WAIT 0
TCP 192.168.1.104:65035 52.98.200.242:443 ESTABLISHED 10232
TCP 192.168.1.104:65036 52.98.200.242:443 ESTABLISHED 10232
```


Port 5040:

Why It's Open

Part of the Windows Diagnostics Hub, used by developers and system administrators to collect logs and diagnostic info remotely.

Common Risks

- **Information Leakage:** Can expose detailed system logs and telemetry.
- **Privilege Escalation:** Debug services can sometimes be misused for local privilege escalation.
- **Poor Access Controls:** Not always well protected in default setups.

Port 49666:

Why It's Open

Port 49666 is in the dynamic/ephemeral port range and is commonly used by Windows RPC services, malware command and control, backdoor applications, and dynamic service bindings. The "666" suffix makes it particularly suspicious as it's often chosen by malicious software for psychological impact or to evade basic filtering rules.

Common Risks

- **Malware command and control**
Port commonly used by trojans and backdoors for remote access
- **Windows RPC exploitation**
Remote Procedure Call vulnerabilities may allow system compromise
- **Data exfiltration**
Malicious software may use this port to steal sensitive information
- **Unauthorized remote access**
Attackers may establish persistent backdoor connections
- **Dynamic service binding abuse**
Legitimate services may be hijacked or impersonated
- **Network reconnaissance**
Port scanning may reveal active Windows services
- **Covert communication channels**
Attackers may use high ports to avoid detection