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1. ping,

Checks if another computer on the network is connected or not.

Threw packet sending.

```
C:\Users\windows11>ping 192.168.154.1

Pinging 192.168.154.1 with 32 bytes of data:
Reply from 192.168.154.1: bytes=32 time<1ms TTL=1
Reply from 192.168.154.1: bytes=32 time<1ms TTL=1
Reply from 192.168.154.1: bytes=32 time<1ms TTL=1
Reply from 192.168.154.1: bytes=32 time<1ms TTL=1

Ping statistics for 192.168.154.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0%)
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

2. ipconfig/ifconfig,

Shows network settings and IP addresses of computer.

We get the info about internet configuration of our system

```
C:\Users\windows11>ipconfig

Windows IP Configuration

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  . :

Ethernet adapter VMware Network Adapter VMnet1:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::2c2d:8ee5:12a7:727c%15
    IPv4 Address. . . . . : 192.168.154.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Ethernet adapter VMware Network Adapter VMnet8:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::b40f:b18d:7b7a:9c6b%18
    IPv4 Address. . . . . : 192.168.204.1
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . :

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    IPv6 Address. . . . . : 2409:40c1:10b9:84f2:e532:5a13:95c9:9464
    Temporary IPv6 Address. . . . . : 2409:40c1:10b9:84f2:1c64:4b59:f3c3:9252
    Link-local IPv6 Address . . . . . : fe80::e532:5a13:95c9:9464%10
    IPv4 Address. . . . . : 192.168.203.204
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : fe80::3cc3:9bff:fe9c:a447%10
                                192.168.203.176

Ethernet adapter Bluetooth Network Connection:

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

3. netstat,

Displays network connections and statistics.

```
C:\Users\windows11>netstat

Active Connections

Proto Local Address           Foreign Address         State
TCP    127.0.0.1:49722          dharm:49723            ESTABLISHED
TCP    127.0.0.1:49723          dharm:49722            ESTABLISHED
TCP    127.0.0.1:49727          dharm:49732            ESTABLISHED
TCP    127.0.0.1:49732          dharm:49727            ESTABLISHED
TCP    127.0.0.1:52142          dharm:52143            ESTABLISHED
TCP    127.0.0.1:52143          dharm:52142            ESTABLISHED
TCP    192.168.203.204:53601    40.64.66.113:https      TIME_WAIT
TCP    192.168.203.204:53602    13.74.137.53:https      TIME_WAIT
TCP    192.168.203.204:53604    20.198.119.84:https      ESTABLISHED
TCP    192.168.203.204:53622    a184-84-232-235:http    TIME_WAIT
TCP    192.168.203.204:53634    a184-84-232-235:http    TIME_WAIT
TCP    192.168.203.204:53688    43.175.155.12:http      TIME_WAIT
TCP    192.168.203.204:55305    192.168.203.176:domain  TIME_WAIT
TCP    192.168.203.204:62465    192.168.203.176:domain  TIME_WAIT
TCP    192.168.203.204:62469    151.101.38.172:http     TIME_WAIT
TCP    192.168.203.204:62533    192.168.203.176:domain  TIME_WAIT
TCP    192.168.203.204:62534    192.168.203.176:domain  TIME_WAIT
TCP    192.168.203.204:62535    192.168.203.176:domain  TIME_WAIT
TCP    192.168.203.204:62536    192.168.203.176:domain  TIME_WAIT
TCP    192.168.203.204:62537    192.168.203.176:domain  TIME_WAIT
```

4. traceroute/tracert,

shows the path the data packets takes from your computer to another computer on the network.

```
C:\Users\windows11>tracert www.google.com

Tracing route to www.google.com [2404:6800:4009:827::2004]
over a maximum of 30 hops:

  0  5 ms  7 ms  4 ms  2409:40c1:10b9:84f2::34
  1  37 ms 21 ms 21 ms 2405:200:5210:2:3924:0:3:65
  2  30 ms 24 ms 26 ms 2405:200:5210:2:3925::ff09
  3  30 ms 31 ms 27 ms 2405:200:801:2d00::245
  4  *      *      *      Request timed out.
  5  *      *      *      Request timed out.
  6  34 ms 27 ms 32 ms 2405:200:801:200::31d
  7  27 ms 25 ms 25 ms 2001:4860:1:1::a7c
  8  265 ms 158 ms 154 ms 2404:6800:8157::1
  9  51 ms 44 ms 42 ms 2001:4860:0:1::5cd2
 10  61 ms 54 ms 37 ms 2001:4860:0:1::f7c
 11  61 ms 35 ms 60 ms 2001:4860:0:1::870f
 12  30 ms 22 ms 21 ms 2001:4860:0:1::2b4b
 13  30 ms 35 ms 24 ms bom12s14-in-x04.1e100.net [2404:6800:4009:827::2004]

Trace complete.
```

5. route,

Shows routing table and use for do changes in the network routing table

```

C:\Users\windows11>route PRINT 192.168.204.1
=====
Interface List
13...90 78 41 6c a8 aa .....Microsoft Wi-Fi Direct Virtual Adapter
18...92 78 41 6c a8 a9 .....Microsoft Wi-Fi Direct Virtual Adapter #2
16...00 50 56 c0 00 01 .....VMware Virtual Ethernet Adapter for VMnet1
5...00 50 56 c0 00 08 .....VMware Virtual Ethernet Adapter for VMnet8
11...5a 3e f1 7a aa 1f .....Intel(R) Dual Band Wireless-AC 8265
19...90 78 41 6c a8 ad .....Bluetooth Device (Personal Area Network)
1.....Software Loopback Interface 1
=====

IPv4 Route Table
=====
Active Routes:
Network Destination        Netmask          Gateway          Interface        Metric
    192.168.204.1    255.255.255.255      On-link         192.168.204.1        291
=====
Persistent Routes:
    None

IPv6 Route Table
=====
Active Routes:
    None
Persistent Routes:
    None

```

6. nslookup,

nslookup command is used to get Ip address of specified domain name server

```

Microsoft Windows [Version 10.0.21996.1]
(c) Microsoft Corporation. All rights reserved.

C:\Users\windows11>nslookup
Default Server:  UnKnown
Address:  192.168.180.73

> www.google.com
Server:  UnKnown
Address:  192.168.180.73

Non-authoritative answer:
Name:     www.google.com
Addresses: 2404:6800:4009:81e::2004
          142.250.182.196

>

```

7. hostname,

Displays or sets the name of your computer on the network.

```
C:\Users\windows11>hostname  
dharm
```

8. dig,

dig is same as nslookup command which is used to get information about DNS

```
; <<>> Dig 9.18.28-0ubuntu0.22.04.1-Ubuntu <<>> www.google.com  
; global options: +cmd  
; Got answer:  
; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 9789  
; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1  
  
; OPT PSEUDOSECTION:  
; EDNS: version: 0, flags:;, udp: 1280  
; QUESTION SECTION:  
; www.google.com.                IN      A  
  
; ANSWER SECTION:  
www.google.com.                117     IN      A      142.250.192.4  
  
; Query time: 79 msec  
; SERVER: 10.255.255.254#53(10.255.255.254) (UDP)  
; WHEN: Sun Jul 28 14:57:58 IST 2024  
; MSG SIZE rcvd: 59
```

9. telnet,

it is used for establishing remote connection between two system

10. ssh

Connects to another computer over the network using the Secure Shell

11. arp address resolution protocols

ARP cache stores IP addresses and their resolved physical addresses.

```
C:\Users\windows11>arp -a  
  
Interface: 192.168.204.1 --- 0x5  
Internet Address      Physical Address      Type  
192.168.204.255       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  
239.255.255.250       01-00-5e-7f-ff-fa    static  
  
Interface: 192.168.180.139 --- 0xb  
Internet Address      Physical Address      Type  
192.168.180.73        a2-39-d7-18-0b-48    dynamic  
224.0.0.22            01-00-5e-00-00-16    static  
224.0.0.251           01-00-5e-00-00-fb    static  
239.255.255.250       01-00-5e-7f-ff-fa    static  
255.255.255.255       ff-ff-ff-ff-ff-ff    static  
  
Interface: 192.168.154.1 --- 0x10  
Internet Address      Physical Address      Type  
192.168.154.255       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  
239.255.255.250       01-00-5e-7f-ff-fa    static
```



```
(rohankedaria199@LAPTOP-R5SQVEA1) ~
```

```
$ whois google.com
Domain Name: GOOGLE.COM
Registry Domain ID: 2138514_DOMAIN_COM-VRSN
Registrar WHOIS Server: whois.markmonitor.com
Registrar URL: http://www.markmonitor.com
Updated Date: 2019-09-09T15:39:04Z
Creation Date: 1997-09-15T04:00:00Z
Registry Expiry Date: 2028-09-14T04:00:00Z
Registrar: MarkMonitor Inc.
Registrar IANA ID: 292
Registrar Abuse Contact Email: abusecomplaints@markmonitor.com
Registrar Abuse Contact Phone: +1.2086851750
Domain Status: clientDeleteProhibited https://icann.org/epp#clientDeleteProhibited
Domain Status: clientTransferProhibited https://icann.org/epp#clientTransferProhibited
Domain Status: clientUpdateProhibited https://icann.org/epp#clientUpdateProhibited
Domain Status: serverDeleteProhibited https://icann.org/epp#serverDeleteProhibited
Domain Status: serverTransferProhibited https://icann.org/epp#serverTransferProhibited
Domain Status: serverUpdateProhibited https://icann.org/epp#serverUpdateProhibited
Name Server: NS1.GOOGLE.COM
Name Server: NS2.GOOGLE.COM
Name Server: NS3.GOOGLE.COM
Name Server: NS4.GOOGLE.COM
DNSSEC: unsigned
URL of the ICANN Whois Inaccuracy Complaint Form: https://www.icann.org/wicf/
>>> Last update of whois database: 2024-08-06T04:07:35Z <<<
```

For more information on Whois status codes, please visit <https://icann.org/epp>

NOTICE: The expiration date displayed in this record is the date the registrar's sponsorship of the domain name registration in the registry is currently set to expire. This date does not necessarily reflect the expiration date of the domain name registrant's agreement with the sponsoring registrar. Users may consult the sponsoring registrar's Whois database to view the registrar's reported date of expiration for this registration.

TERMS OF USE: You are not authorized to access or query our Whois database through the use of electronic processes that are high-volume and automated except as reasonably necessary to register domain names or modify existing registrations; the Data in VeriSign Global Registry Services' ("VeriSign") Whois database is provided by VeriSign for information purposes only, and to assist persons in obtaining information about or related to a domain name registration record. VeriSign does not guarantee its accuracy. By submitting a Whois query, you agree to abide by the following terms of use: You agree that you may use this Data only for lawful purposes and that under no circumstances will you use this Data to: (1) allow, enable, or otherwise support the transmission of mass unsolicited, commercial advertising or solicitations via e-mail, telephone, or facsimile; or (2) enable high volume, automated, electronic processes that apply to VeriSign (or its computer systems). The compilation, repackaging, dissemination or other use of this Data is expressly prohibited without the prior written consent of VeriSign. You agree not to use electronic processes that are automated and high-volume to access or query the Whois database except as reasonably necessary to register domain names or modify existing registrations. VeriSign reserves the right to restrict your access to the Whois database in its sole discretion to ensure operational stability. VeriSign may restrict or terminate your access to the Whois database for failure to abide by these terms of use. VeriSign reserves the right to modify these terms at any time.

The Registry database contains ONLY .COM, .NET, .EDU domains and Registrars.

```
Domain Name: google.com
Registry Domain ID: 2138514_DOMAIN_COM-VRSN
Registrar WHOIS Server: whois.markmonitor.com
Registrar URL: http://www.markmonitor.com
Updated Date: 2024-08-02T02:17:33+0000
Creation Date: 1997-09-15T07:00:00+0000
Registrar Registration Expiration Date: 2028-09-13T07:00:00+0000
Registrar: MarkMonitor, Inc.
Registrar IANA ID: 292
Registrar Abuse Contact Email: abusecomplaints@markmonitor.com
Registrar Abuse Contact Phone: +1.2086851750
Domain Status: clientUpdateProhibited (https://www.icann.org/epp#clientUpdateProhibited)
Domain Status: clientTransferProhibited (https://www.icann.org/epp#clientTransferProhibited)
Domain Status: clientDeleteProhibited (https://www.icann.org/epp#clientDeleteProhibited)
Domain Status: serverUpdateProhibited (https://www.icann.org/epp#serverUpdateProhibited)
Domain Status: serverTransferProhibited (https://www.icann.org/epp#serverTransferProhibited)
Domain Status: serverDeleteProhibited (https://www.icann.org/epp#serverDeleteProhibited)
Registrant Organization: Google LLC
Registrant State/Province: CA
Registrant Country: US
Registrant Email: Select Request Email Form at https://domains.markmonitor.com/whois/google.com
```