MAC address

- A Media Access Control (MAC) address is a 48-bit address that is used for communication between two hosts in an Ethernet environment. It is a hardware address, which means that it is stored in the firmware of the network card.
- A MAC address is supposed to be globally unique. Each network card vendor gets its share of addresses (represented by the first 24 bits).
- The address is written in the form of 12 hexadecimal digits. For example, consider the following MAC address:
- **D8-D3-85-EB-12-E3**
- Every hexadecimal character represents 4 bits, so the first six hexadecimal characters represent the vendor (in this case, Hewlett Packard).

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How to find out your own MAC address?

- If you are using Windows, enter the Command Prompt (Start - Programs - Accessories - Command Prompt).
- Type the **ipconfig/all** command and you should see a field called Physical address under the Ethernet adapter settings:

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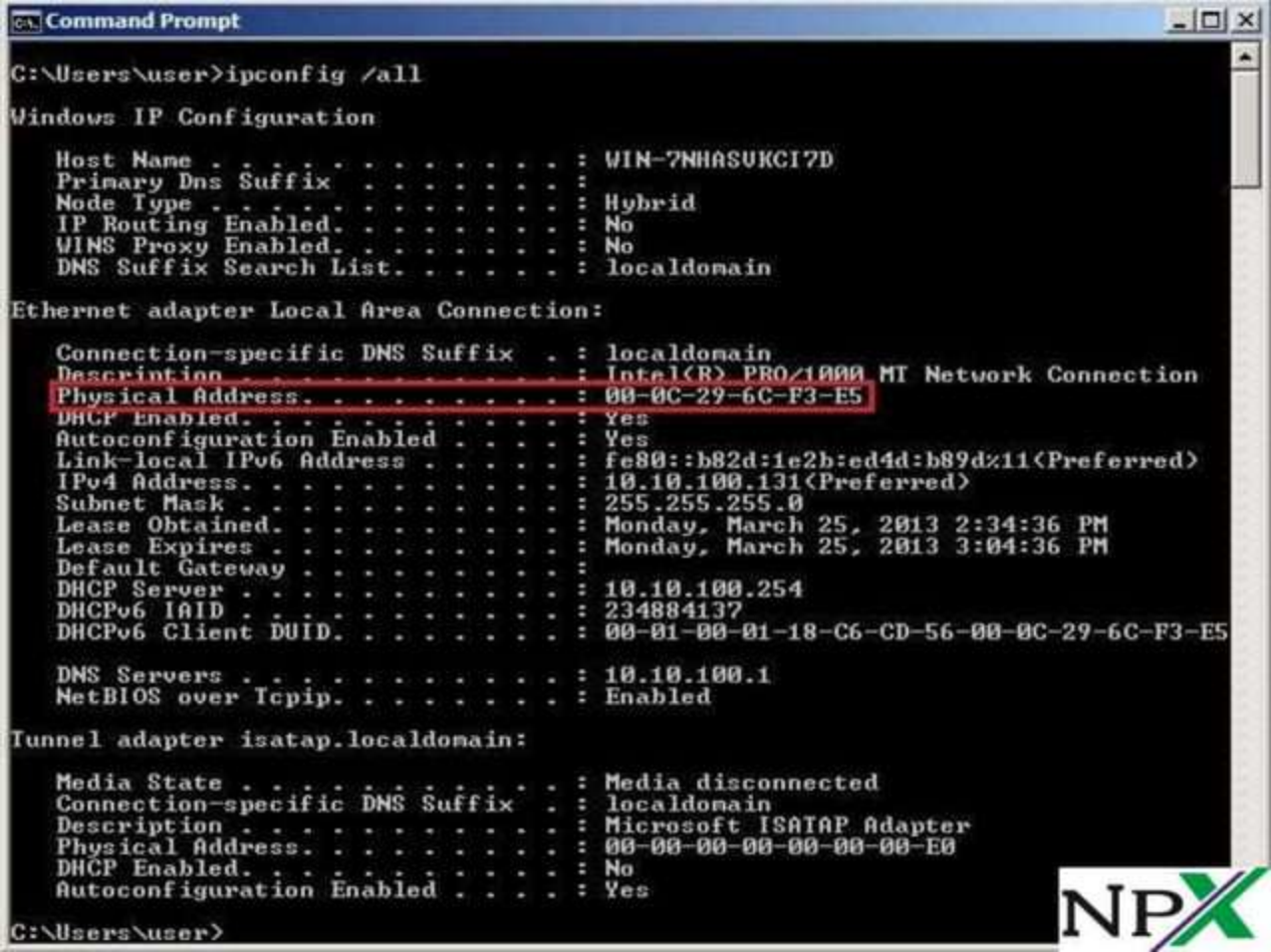
Command Prompt
C:\Users\user>ipconfig /all
Windows IP Configuration
Host Name . . . . . : WIN-7NHASVKCI7D
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No
DNS Suffix Search List. . . . . : localdomain
Ethernet adapter Local Area Connection:
Connection-specific DNS Suffix . : localdomain
Description . . . . . : Intel(R) PRO/1000 MT Network Connection
Physical Address. . . . . : 00-0C-29-6C-F3-E5
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::b82d:1e2b:ed4d:b89d%11(Preferred)
IPv4 Address. . . . . : 10.10.100.131(Preferred)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Monday, March 25, 2013 2:34:36 PM
Lease Expires . . . . . : Monday, March 25, 2013 3:04:36 PM
Default Gateway . . . . . :
DHCP Server . . . . . : 10.10.100.254
DHCPv6 IAID . . . . . : 234884137
DHCPv6 Client DUID. . . . . : 00-01-00-01-18-C6-CD-56-00-0C-29-6C-F3-E5
DNS Servers . . . . . : 10.10.100.1
NetBIOS over Tcpip. . . . . : Enabled
Tunnel adapter isatap.localdomain:
Media State . . . . . : Media disconnected
Connection-specific DNS Suffix . : localdomain
Description . . . . . : Microsoft ISATAP Adapter
Physical Address. . . . . : 00-00-00-00-00-00-00-E0
DHCP Enabled. . . . . : No
Autoconfiguration Enabled . . . . : Yes
C:\Users\user>
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- If you are using Linux, type the **ifconfig** command.
- You should see your MAC address referred to as HWaddress.

```
[root@localhost ~]# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0C:29:07:CB:15
          inet addr:10.10.200.130  Bcast:10.10.200.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:434 errors:0 dropped:0 overruns:0 frame:0
          TX packets:252 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:37487 (36.6 KiB)  TX bytes:33634 (32.8 KiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:100 errors:0 dropped:0 overruns:0 frame:0
          TX packets:100 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:6362 (6.2 KiB)  TX bytes:6362 (6.2 KiB)
```

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IP address

- An IP address is a 32-bit number that identifies a host on a network. It is usually written in the form of four decimal numbers separated by periods (e.g. 10.0.50.1).
- In contrast to MAC address, an IP address is a logical address. Any device that wants to communicate with other device using TCP/IP needs to have an IP address. It can be configured manually or it can be obtained from a DHCP server.
- The term "IP address" is usually used for IPv4, which is the fourth version of the IP protocol. A newer version exists, IPv6, and uses 128-bit addressing.

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Private IP addresses

- There are three ranges of addresses that can be used in a private network (e.g. your home LAN). These addresses are not routable through the Internet.

- Private addresses ranges:

- 10.0.0.0 – 10.255.255.255
  172.16.0.0 – 172.31.255.255
  192.168.0.0 – 192.168.255.255

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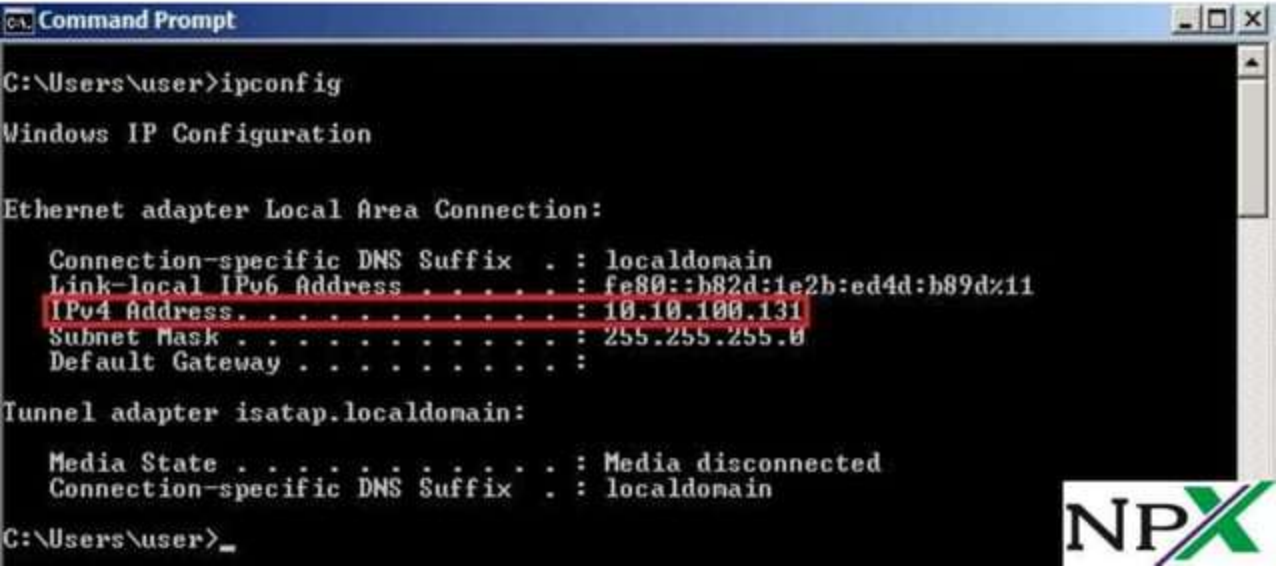
How to find out your IP address

- Windows users:
- Enter the Command Prompt (Start - Programs - Accessories - Command Prompt). Enter **ipconfig**. You should see a field called IP address.



Linux users:

- Enter **ifconfig**. You should see a field called inet add:

```
[root@localhost ~]# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:0C:29:07:CB:15
          inet addr:10.10.200.130  Bcast:10.10.200.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:434 errors:0 dropped:0 overruns:0 frame:0
          TX packets:252 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:37487 (36.6 KiB)  TX bytes:33634 (32.8 KiB)

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:100 errors:0 dropped:0 overruns:0 frame:0
          TX packets:100 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:6362 (6.2 KiB)  TX bytes:6362 (6.2 KiB)
```