Command Reference

ARP
Displays and modifies entries in the Address Resolution Protocol (ARP) cache, which contains one or more tables that are used to store IP addresses and their resolved Ethernet physical addresses. There is a separate table for each Ethernet network adapter installed on your computer.

Syntax
arp [**-a** [*InetAddr*] [**-N** *IfaceAddr*]]

Parameters
-a [*InetAddr*] [**-N** *IfaceAddr*] **:** Displays current ARP cache tables for all interfaces. To display the ARP cache entry for a specific IP address, use arp -a with the InetAddr parameter, where InetAddr is an IP address. To display the ARP cache table for a specific interface, use the -N IfaceAddr parameter where IfaceAddr is the IP address assigned to the interface. The -N parameter is case-sensitive.

/? : Displays help at the command prompt.

Remarks
- The physical address for *EtherAddr* consists of six bytes expressed in hexadecimal notation and separated by hyphens (for example, 00-AA-00-4F-2A-9C).

- This command is available only if the **Internet Protocol (TCP/IP)** protocol is installed as a component in the properties of a network adapter in Network Connections

Examples
To display the ARP cache tables for all interfaces, type:
arp –a

To display the ARP cache table for the interface that is assigned the IP address 10.0.0.99, type:
arp -a -N 10.0.0.99

Ping
Verifies IP-level connectivity to another TCP/IP computer by sending Internet Control Message Protocol (ICMP) Echo Request messages. The receipt of corresponding Echo Reply messages are displayed, along with round-trip times. Ping is the primary TCP/IP command used to troubleshoot connectivity, reachability, and name resolution.

Syntax
ping [**-t**] [**-a**] [*TargetName*]

Parameters
-t : Optional - Specifies that ping continue sending Echo Request messages to the destination until interrupted. To interrupt and display statistics, press CTRL-BREAK. To interrupt and quit ping, press CTRL-C.
-a : Optional - Specifies that reverse name resolution is performed on the destination IP address. If this is successful, ping displays the corresponding host name.
TargetName : Specifies the destination, which is identified either by IP address or host name.
/? : Displays help at the command prompt.

Remarks
- You can use **ping** to test both the computer name and the IP address of the computer. If pinging the IP address is successful, but pinging the computer name is not, you might have a name resolution problem. In this case, ensure that the computer name you are specifying can be resolved through the local Hosts file, by using Domain Name System (DNS) queries, or through NetBIOS name resolution techniques.

- This command is available only if the **Internet Protocol (TCP/IP)** protocol is installed as a component in the properties of a network adapter in Network Connections

Examples
The following example shows **ping** command output:
C:\>ping example.microsoft.com
Pinging example.microsoft.com [192.168.239.132] with 32 bytes of data:
Reply from 192.168.239.132: bytes=32 time=101ms TTL=124
Reply from 192.168.239.132: bytes=32 time=100ms TTL=124
Reply from 192.168.239.132: bytes=32 time=120ms TTL=124
Reply from 192.168.239.132: bytes=32 time=120ms TTL=124

To **ping** the destination 10.0.99.221 and resolve 10.0.99.221 to its host name, type:
ping -a 10.0.99.221

Cmd
Starts a new instance of the command interpreter, Cmd.exe. Used without parameters, **cmd** displays Windows XP version and copyright information.

Syntax
cmd

Ipconfig
Displays all current TCP/IP network configuration values and refreshes Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) settings. Used without parameters, **ipconfig** displays the IP address, subnet mask, and default gateway for all adapters.

Syntax
ipconfig [/all] [/renew [Adapter]] [/release [Adapter]]

Parameters

/all : Displays the full TCP/IP configuration for all adapters. Without this parameter, ipconfig displays only the IP address, subnet mask, and default gateway values for each adapter. Adapters can represent physical interfaces, such as installed network adapters, or logical interfaces, such as dial-up connections.

/renew [Adapter] : Renews DHCP configuration for all adapters (if an adapter is not specified) or for a specific adapter if the Adapter parameter is included. This parameter is available only on computers with adapters that are configured to obtain an IP address automatically. To specify an adapter name, type the adapter name that appears when you use **ipconfig** without parameters.

/release [Adapter] : Sends a DHCPRELEASE message to the DHCP server to release the current DHCP configuration and discard the IP address configuration for either all adapters (if an adapter is not specified) or for a specific adapter if the Adapter parameter is included. This parameter disables TCP/IP for adapters configured to obtain an IP address automatically. To specify an adapter name, type the adapter name that appears when you use **ipconfig** without parameters.

Remarks

- This command is most useful on computers that are configured to obtain an IP address automatically. This enables users to determine which TCP/IP configuration values have been configured by DHCP, Automatic Private IP Addressing (APIPA), or an alternate configuration.

- For adapter names, **ipconfig** supports the use of the asterisk (*) wildcard character to specify either adapters with names that begin with a specified string or adapters with names that contain a specified string. For example, Local* matches all adapters that start with the string **Local** and ***Con*** matches all adapters that contain the string Con.

- This command is available only if the **Internet Protocol (TCP/IP)** protocol is installed as a component in the properties of a network adapter in Network Connections

Examples

To display the basic TCP/IP configuration for all adapters, type:
Ipconfig

To display the full TCP/IP configuration for all adapters, type:
ipconfig /all

To renew a DHCP-assigned IP address configuration for only the Local Area Connection adapter, type:
ipconfig /renew

To flush the DNS resolver cache when troubleshooting DNS name resolution problems, type:
ipconfig /release

Trace (Microsoft cmd: Tracert)

Determines the path taken to a destination by sending Internet Control Message Protocol (ICMP) Echo Request messages to the destination with incrementally increasing Time to Live (TTL) field values. The path displayed is the list of near-side router interfaces of the routers in the path between a source host and a destination. The near-side interface is the interface of the router that is closest to the sending host in the path.

Syntax
tracert [*TargetName*]

Parameters

TargetName : Specifies the destination, identified either by IP address or host name.

-? : Displays help at the command prompt.

Remarks

- This diagnostic tool determines the path taken to a destination by sending ICMP Echo Request messages with varying Time to Live (TTL) values to the destination. Each router along the path is required to decrement the TTL in an IP packet by at least 1 before forwarding it. Effectively, the TTL is a maximum link counter. When the TTL on a packet reaches 0, the router is expected to return an ICMP Time Exceeded message to the source computer. Tracert determines the path by sending the first Echo Request message with a TTL of 1 and incrementing the TTL by 1 on each subsequent transmission until the target responds or the maximum number of hops is reached. The maximum number of hops is 30 by default and can be specified using the **-h** parameter. The path is determined by examining the ICMP Time Exceeded messages returned by intermediate routers and the Echo Reply message returned by the destination. However, some routers do not return Time Exceeded messages for packets with expired TTL values and are invisible to the tracert command. In this case, a row of asterisks (*) is displayed for that hop.

- To trace a path and provide network latency and packet loss for each router and link in the path, use the **pathping** command.

- This command is available only if the **Internet Protocol (TCP/IP)** protocol is installed as a component in the properties of a network adapter in Network Connections

Examples

To trace the path to the host named corp7.microsoft.com, type:
tracert corp7.microsoft.com

Nbtstat

Displays NetBIOS over TCP/IP (NetBT) protocol statistics, NetBIOS name tables for both the local computer and remote computers, and the NetBIOS name cache.

Syntax

nbtstat [-a RemoteName] [-A IPAddress]

Parameters

-a RemoteName : Displays the NetBIOS name table of a remote computer, where RemoteName is the NetBIOS computer name of the remote computer. The NetBIOS name table is the list of NetBIOS names that corresponds to NetBIOS applications running on that computer.
-A IPAddress : Displays the NetBIOS name table of a remote computer, specified by the IP address (in dotted decimal notation) of the remote computer.
/? : Displays help at the command prompt.

Remarks

- **Nbtstat** command-line parameters are case-sensitive.

- **This command is available only if the Internet Protocol (TCP/IP) protocol is installed as a component in the properties of a network adapter in Network Connections.**

Examples

To display the NetBIOS name table of the remote computer with the NetBIOS computer name of CORP07, type:
nbtstat -a CORP07

To display the NetBIOS name table of the remote computer assigned the IP address of 10.0.0.99, type:
nbtstat -A 10.0.0.99

To display the NetBIOS name table of the local computer, type:
nbtstat -n