

Knowledge Base

## HOW TO: Diagnose and Test TCP/IP or NetBIOS Network Connections in Windows 2000

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PSS ID Number: 300986

Article Last Modified on 9/22/2003

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The information in this article applies to:

- Microsoft Windows 2000 Server
  - Microsoft Windows 2000 Advanced Server
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This article was previously published under Q300986

### IN THIS TASK

- [SUMMARY](#)
- - [Your Computer Configuration](#)
  - - [To View the TCP/IP Configuration by Using the Ipconfig.exe Tool](#)
    - [To Display Connection Information by Using the Nbtstat.exe Tool](#)
  - [Testing Connections to Remote Servers](#)
  - - [To Test Connections by Using Ping.exe](#)
    - [To Test Connections by Using Tracert.exe](#)
    - [To Test Connections by Using the NET VIEW Command](#)
  - [Troubleshooting](#)
  - - [I Can Contact a Network Resource Directly, but If I "Ping" the Resource It Always Returns "Request Timed Out"](#)
    - [I Can Ping a Resource by Its IP Address, but I Can Not "Ping" It by Name](#)
- [REFERENCES](#)

### SUMMARY

This article provides information about how to diagnose and test Transmission Control Protocol/Internet Protocol (TCP/IP) or NetBIOS network configurations. This article also describes the use of the most common diagnostic tools along with basic network analysis techniques.

[back to the top](#)

#### Your Computer Configuration

When you want to troubleshoot a TCP/IP networking problem, first check the TCP/IP configuration of the computer that is experiencing the problem.

[back to the top](#)

#### To View the TCP/IP Configuration by Using the Ipconfig.exe Tool

1. Click **Start**, click **Run**, type `cmd`, and then press ENTER.
2. At the command prompt, type `ipconfig`, and then press ENTER. This command displays your computer's DNS suffix, IP address, subnet mask, and default gateway.
3. If you need more information and want to display a detailed configuration report, type `ipconfig /all` at the command prompt, and then press ENTER.
4. Confirm that your computer has the appropriate settings for DNS and WINS servers, an available IP address, the proper subnet mask, the proper default gateway, and the correct host name.

[back to the top](#)

#### To Display Connection Information by Using the Nbtstat.exe Tool

NetBIOS over TCP/IP (NetBT) resolves NetBIOS names to IP addresses. TCP/IP provides many options for NetBIOS name resolution, including local cache lookup, WINS server query, broadcast, DNS server query, and LMHOSTS and HOSTS lookup.

Nbtstat.exe is a useful tool for troubleshooting NetBIOS name resolution problems. You can use the `nbtstat.exe` command to remove or correct preloaded entries. To use the `nbtstat.exe` command:

- To list the NetBIOS table of the local computer, type `nbtstat -n` at the command prompt, and then press ENTER. This command displays the names that were registered locally on the computer by programs such as the server and redirector.
- To list the contents of the NetBIOS name cache, type `nbtstat -c` at the command prompt, and then press ENTER. This command shows the NetBIOS name cache, which contains name-to-address mappings for other computers.
- To purge the name cache and reload it from the LMHOSTS file, type `nbtstat -R` at the command prompt, and then press ENTER.
- To perform a NetBIOS adapter status command against the computer that you specify by name, type `nbtstat -a NetBIOS computer name` at the command prompt, and then press ENTER. The adapter status command returns the local NetBIOS name table for that computer and the MAC address of the network adapter.
- To display a list of client and server connections, type `nbtstat -s` at the command prompt, and then press ENTER. This command lists the current NetBIOS sessions and their status, including statistics, as shown in the following example:

[NetBIOS Connection Table](#)

Local Name	State	In/Out	Remote Host	Input	Output
DAVEMAC1 <00>	Connected	Out	CNSSUP1<20>	6MB	5MB
DAVEMAC1 <00>	Connected	Out	CNSPRINT<20>	108KB	116KB
DAVEMAC1 <00>	Connected	Out	CNSSRCL<20>	299KB	19KB
DAVEMAC1 <00>	Connected	Out	STH2NT<20>	324KB	19KB
DAVEMAC1 <03>	Listening				

[back to the top](#)

### Testing Connections to Remote Servers

If you are unable to contact to a remote server, there are two common tools that you can use. Use the `ping` command to verify that a host computer can connect to the TCP/IP network and network resources. Use the `tracert` command to examine the route taken to a destination.

[back to the top](#)

#### To Test Connections by Using Ping.exe

You can use the `ping` command as a troubleshooting tool to sequentially test connectivity to various network resources. To ping a network host directly:

1. Click **Start**, click **Run**, type `cmd`, and then press ENTER.
2. Type `ping IP address of the remote network host` (for example, `ping 192.168.1.104`) or `ping host name` (for example, `ping www.microsoft.com`), and then press ENTER.
3. Check for a reply that may look like this:

```
Reply from 192.168.1.104: bytes=32 time=40ms TTL=61
```

If this message displays, the server is available on the network. If you are unable to contact the resource, you can troubleshoot the connection by using the `ping` command to test connectivity to various network resources:

- a. Ping the loopback address (by using the `ping 127.0.0.1` command) to verify that TCP/IP is installed and working correctly on the local computer.
- b. Ping the IP address of the local computer to verify that it was added to the network correctly.
- c. Ping the IP address of the default gateway to verify that the gateway is functional and it is possible to connect to a local host on the local network. You can obtain the IP address of the local default gateway by using the `ipconfig` command.
- d. Ping the IP address of another remote host to verify that you can communicate through a router.

[back to the top](#)

#### To Test Connections by Using Tracert.exe

Tracert.exe is a route-tracing utility that you can use to determine the network path to a destination. To determine the path that a packet takes on the network and where that path may be ending:

1. Click **Start**, click **Run**, type `cmd`, and then press ENTER.
2. At the command prompt, type `tracert IP address of the remote network host`, and then press ENTER.
3. Examine the results to determine the length of time that the packet took to reach each network segment and the point at which the connection may stop working.

[back to the top](#)

#### To Test Connections by Using the NET VIEW Command

1. Click **Start**, click **Run**, type `cmd`, and then press ENTER.
2. At the command prompt, type `net view \\computer name`, and then press ENTER. A list of the file and print shares of a computer that is running Windows 2000 is generated by establishing a temporary NetBIOS connection. If there are no file or print shares available on the specified computer, you receive a "There are no entries in the list." message. If the command does not work, type `net view \\IP address of the remote computer`, and then press ENTER. If the command works, but a net view attempt to the computer name does not work, the computer name may be resolving to the wrong address. If the command does not work and generates a "System error has occurred" error message, verify that you typed the correct name of the remote computer, that the computer is operational (and is running the File and Printer Sharing for Microsoft Networks service), and that all of the gateways (routers) between the local computer and the remote host are operational by using the `ping` command.

[back to the top](#)

### Troubleshooting

This section describes how to troubleshoot some of the issues that you may have.

[back to the top](#)

#### I Can Contact a Network Resource Directly, but If I "Ping" the Resource It Always Returns "Request Timed Out"

Many organizations block the return of ICMP (ping) packets as a security measure. Because of this, if you are trying to contact a resource across the Internet, or critical internal systems, it may not be possible to obtain a response to a "ping" or "tracert" message.

[back to the top](#)

#### I Can Ping a Resource by Its IP Address, but I Can Not "Ping" It by Name

If it is possible to contact a resource by using its IP address but a ping message to its host name does not work, the problem is likely caused by a name resolution failure, rather than network connectivity. Check to make sure that the computer is configured with the proper DNS or WINS entries, and that the DNS or WINS servers are available.

[back to the top](#)

### REFERENCES

For additional related information, please see the following "Troubleshooting Tools and Strategies" Microsoft TechNet Web site:

[http://www.microsoft.com/technet/winnt/reskit/sur\\_tbls.asp](http://www.microsoft.com/technet/winnt/reskit/sur_tbls.asp)  
[back to the top](#)

Keywords: kbHOWTOmaster kbnetwork kbtshoot KB300986  
Technology: kbwin2000AdvServ kbwin2000AdvServSearch kbwin2000Search kbwin2000Serv kbwin2000ServSearch  
kbWinAdvServSearch

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