TCP / IP Troubleshooting: Structural Methods - Part 1: Introduction

What do you think when you hear the phrase 'Troubleshooting TCP / IP'? Is TCP / IP troubleshooting simple? This article will show you the structural method for troubleshooting problems with TCP / IP network problems.

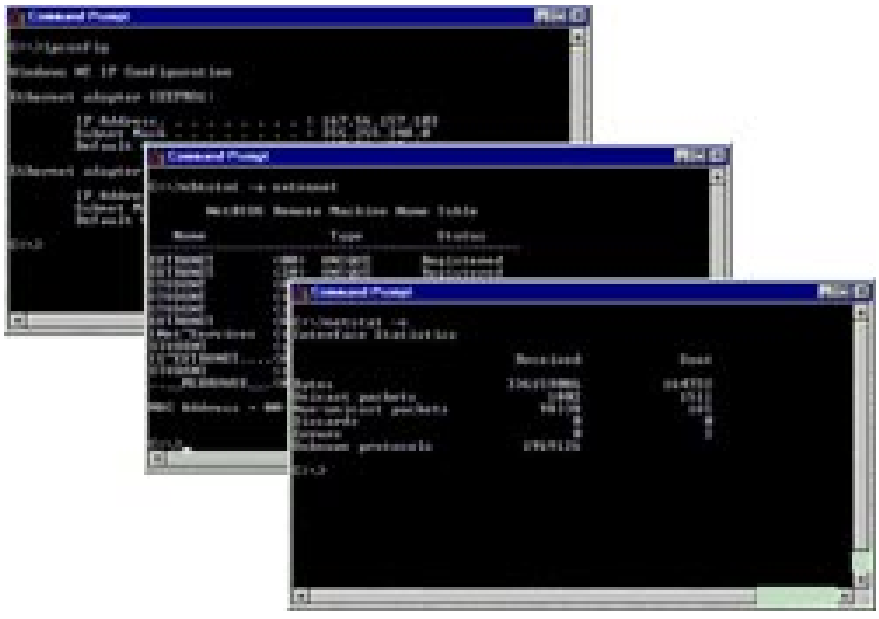
This article will show you the structural method for troubleshooting problems with TCP / IP network problems.

This article is the first in a series on TCP / IP troubleshooting, the following articles will introduce in detail the issues raised in this introduction.

What do you think when you hear the phrase ' *Troubleshooting TCP / IP* '? Imaginative people can see a process chart. Many types of linear tendencies can be seen in a series of numbered steps. While others may feel dissatisfied and disappointed.

Is TCP / IP troubleshooting simple? After all, this is just a protocol - some steps to transmit bits on the network. But it is a protocol - four layers and many protocols in each class.

Traditional method



A few years ago when researching about TCP / IP networks, we approached the following simple steps for troubleshooting problems. The method is similar to the following:

• Enter ipconfig to check your IP address, subnet mask and default gateway if it is correct.

• Then ping to 127.0.0.1 to see if your network adapter is working.

• Ping to the IP address of your own computer

• Try pinging to another computer's IP address on the same subnet.

• Try pinging to your default port (the router's next interface is used to connect the subnet to the rest of the network).

• Try pinging the IP address of the computer on another subnet.

• .

We think this is a very rigid method, because it is too methodical and you may not need to use your brain, just follow the steps available. It is also somewhat inefficient because it is like automatically recognizing the problem is very likely to start with your own computer and may be closer (due to network card, computer IP address configuration, internal subnet) compared to other subnets. It is a method that could be developed before the Internet actually took off, before the DNS became popular with a name solution, before firewalls and VPNs became practical for most public networks. company.

Structure method

The method we introduced to handle TCP / IP troubleshooting is structured around the following three main issues:

1. Specify the components that are causing the problem . This means:

- ***Client*** : Clients are having problems.

- ***Servers*** : Servers, printers or other resources (like the Internet) that users are having problems with.

- ***Network in the middle*** : Connection wires (if not wireless systems), hubs, switches, routers, firewalls, proxy servers and other network infrastructures between users and servers.

- ***Environment*** : Extended cases can affect your network such as fluctuations in capacity, maintenance of construction, .

- ***Scope*** : One or more related clients / servers.

- ***Time frame*** : Continuous, intermittent, sometimes; when starting.

- ***Type of connection problem*** : Physical, network, transmission or application layer; access control or control .

- ***Instructions*** : Error message on the client; Login dialog .

2. Determine which of the above processing steps can be applied to the problem . Include as follows:

- Evaluate the physical connection environment for users, servers and related network infrastructure hardware. That means checking the cable, making sure that the network adapter is properly set up and looking for other causes that make the network connection show a disconnected state.

- Verify TCP / IP configuration of clients, servers and related network infrastructure hardware. On the client and server, this means the IP address, subnet mask, default gateway, DNS settings . With the network infrastructure hardware is typically the routing table on the router and Internet port.

- Verify the routing connection between the client and the server concerned. This means using the ping , pathping , tracert commands, and similar tools to verify TCP / IP connections throughout the network level; packet sniffing to check transport layer sessions; Use nslookup , telnet and other tools to handle application layer problems related to name, authentication .

3. Understand, ask and test

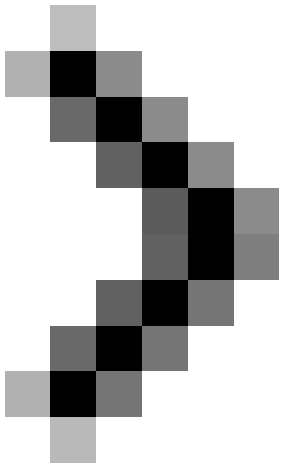
- Understand how the protocol works, how packets are forwarded by routing tables, some tools like Netdiag.exe tell you what is important. Successful TCP / IP troubleshooting is based on understanding how TCP / IP issues work and the tools that can be used to test it. If you never learn about Network Monitor traces, then you can hardly handle the problem.

- Providing appropriate questions is also a good troubleshooting problem, acquiring knowledge in a methodical way and implementing mental thinking is essential in the art of troubleshooting and it is related to your entire left (logic) and right brain (intuitive ability) performance.

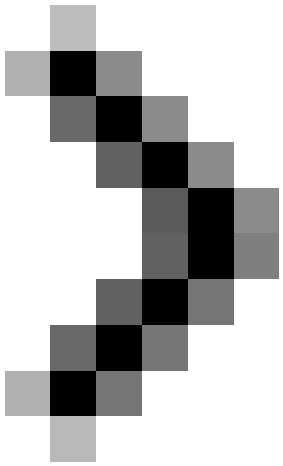
- Finally, check and isolate the problem, this is an important step and to do this you need a toolbox in the troubleshooting tool that you know how to use. This will help solve the problem even if you never know before.

Conclude

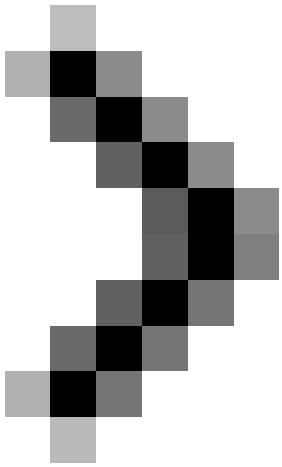
Handling TCP / IP networks can make you 'sweat' but it also has many interesting things. In the next articles in this series, we will focus specifically on some of the basic steps and tools needed to successfully solve the problems that arise with our network.



Part 2: Troubleshooting routing tables



Part 3: Fix network connections



Part 4: Use Netdiag.exe