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How to use [netstat\(TC\)](#) to troubleshoot network connections.

Keywords

netstat interrupt vector irq base address configuration network tcpip tcp/ip xenix unix connections lost trouble **troubleshoot**

Release

SCO TCP/IP Generic
SCO Open Desktop Generic

Problem

How do I use [netstat\(TC\)](#) to analyze network card installation and configuration issues?

Solution

The [netstat\(TC\)](#) -i option can be used to analyze network card installation and configuration issues. The command:

```
netstat -i
```

will display the state of the network interfaces that have been configured (your network cards and loopback driver). Here is an example of the output from this command:

```
-----  
Name      Mtu    Network      Address      Ipkts    Ierrs  Opkts    Oerrs  Collis  
e3A0     1500   xenix        nyneve      487731   26     304195   29     2  
lo0      2048   loopback     localhost    2344     0       2344     0     0  
-----
```

There are a few things to look for here:

1. Does it show the correct network card(s) installed? The loopback driver, "lo0", is always installed. Exactly one additional line should be displayed for each network card in the system. In the above example, the 3Com 3c503 driver for SCO UNIX System V/386 is installed. Make sure that the right number of drivers is installed and that they correspond correctly to the hardware in your system.

2. Ipkts shows how many incoming packets have successfully been received. Ierrs shows how many incoming packets have been received incorrectly (for instance, with a bad checksum).

If both Ipkts and Ierrs are zero, the connection to the network is bad, the network card is bad, or the driver is not receiving interrupts from the card. Interrupts could be blocked because the driver and the card are configured for different interrupts, or because another device in the system is using the same interrupt. Check the interrupts used by all devices in the system, including devices that are not recognized by the kernel or drivers. Verify that the card is set for the same interrupt as the driver. Verify the continuity of the network connection and that the terminators are correctly placed and are of the right resistance, as specified by the manufacturer of the network cards and/or cabling. Run the diagnostics supplied by the manufacturer of the network card.

If Ipkts is zero but Ierrs is non-zero, the network, cabling or card may be bad, another machine on the network may be generating bad packets, or the network may be incorrectly terminated.

3. Opkts shows how many outgoing packets have successfully been transmitted. Oerrs shows how many failed attempts have been made to transmit a packet. If Opkts is zero and Oerrs is nonzero, there may be a conflict of I/O addresses; some other card in the system may be using the same I/O address range as the network card. If both Opkts and Oerrs are zero, and if the network card uses shared memory (such as the Western Digital WD80x3 series), another card in the system may be interfering with shared memory. Shared memory conflicts are often difficult to trace because many cards use shared memory without documenting this use, and because a card that is using a small area of shared memory may sometimes affect a large area of memory around it. This is particularly true of VGA cards. Check and verify the I/O and shared memory addresses of all devices in the system, including those devices which are not recognized by the kernel or drivers. Try different I/O and shared memory addresses.
4. Collis shows how many attempts to transmit a package have been prevented by another machine trying to transmit at the same time. If this number is high (if it is more than a few percentage of Opkts), the network is very busy. Consider breaking the network into multiple separate networks.
5. Remember that an ethernet must be terminated at both ends, but nowhere in the middle. Make sure that the terminator at each end has the correct resistance. Standard ethernet uses 50 ohm resistance, but this may vary with different network adapter and cable manufacturers. A standard ethernet must be linear: there can be no branches, "Y"s, "T"s, or loops in the physical network topology. Other kinds of networks have different topologies; consult the

manufacturer of the network cards and cabling.

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