

# Cisco Troubleshooting Commands

(Listed by IP Protocol Layer)

Escape: <Shift> <Ctrl> and 6 then x



- >sh run  
Command lists current running IOS configuration – the first command to run
- >sh version  
Displays the system hardware, IOS version, ROM bootstrap version, how the last power up was done and time/date started, amount of RAM/Flash, config register (hexadecimal number used to tell the device what to do when it boots)
- >sh tech-support [page | password]  
Displays general information for reporting a problem.

## Layer-1 Physical

(Do not proceed to the upper layers until the physical interface is functional)

- >sh interface [type]  
Interface/protocol status, CRC, line traffic – should issue clear  
>clear counter [interface] prior to reviewing stats  
(For serial connections with external CSU/DSU – check for Carrier Detect (CD) and Data Terminal Ready (DTR), UP status lights)
- Bandwidth monitoring** -- routers / switches  
router#sho int g N/P | include protocol | Description: | 5 minute
- >sh controllers [interface]  
Command displays hardware-related information useful to diagnose issues – framing, clock source, bandwidth limit – T1/T3 serial devices.

## Layer-2 Data

- >sh arp [traffic] [location] (Address Resolution Protocol)  
Displays the age, MAC and associated layer-3 IP address from ARP cache – static and dynamic (default time out 4 hours)
- >sh cdp [ne | int ] {detail} (Cisco Discovery Protocol, layer-2 multicast)  
Neighbor option displays other Cisco devices, if CDP is active. List hardware and interfaces and port detail. Int lists running CDP interface.

## Layer-3 Network (IP)

- >sh ip interface [brief]  
Command lists type of interface and IP address with status.  
"YES" means IP address is currently valid.  
Interface IP-Address OK? Method Status Protocol  
Ethernet0 172.16.1.2 YES NVRAM up up
- >ping [ip | appletalk | decnet | ipx] {host | address} (default)

The ping (Packer InterNet Groper) command uses two types of messages – Echo request/replies to determine whether the destination is active and the amount of time it takes to receive a reply.

Extended ping allows source IP changed to any interface on the router. Standard ping uses source IP of the interface.  
(#ping <enter> Repeat count, Data size, timeout, source IP)

### DF bit - Extended Ping

May specifies whether or not the ping packet. If yes is specified, the packet will not be fragmented when it hits the destination. The destination transmission unit (MTU) is the maximum size of the packet that will be received by the destination. The smallest MTU is the smallest MTU of any link in the path.

To determine Cisco router modules:  
# sh diag | inc ICNM-SerialIFRU

- >sh ip route [ip-address [mask] {protocol}]  
Displays the current state of the routing table. Lists the routes derived from each protocol code, IP subnet/addr of the remote network, administrative distance/metric of the source, address of the next router, exiting interface and the length of time the route has been known – very useful  
It is useful to GREP this command in large networks to locate specific subnets or subnets that may have just been updated – 00:00 (hh:mm)
- >sh protocols  
Displays the configured protocols – IP, Decnet, IPX, Appletalk, ...
- >sh ip protocols  
Displays the routing protocol information used in debugging – filters, gateways, AS numbers, distance for routing information sources
- >traceroute [address] the extended traceroute command allows for additional options and default overrides.  
The traceroute command verifies connectivity between two hosts and discover the paths packets take to a remote destination.  
Records the source of each ICMP "time exceeded" message and sends sent UDP datagrams with incremented TTL.

## Layer-4 Transport

- >sh tcp [line-number] [brief]  
Displays the status of the TCP connection endpoints
- >sh access-lists  
Displays current access lists
- >sh buffers  
Displays current buffers

- >sh memory [memory-type] [free] [show]  
Shows statistics about memory, including memory-free pool stats  
Types – processor, multibus, system  
Before tuning buffers, first check for enough free I/O or memory
- >sh processes  
CPU - Display the status of the processes  
process - Display the status of the processes  
utilization - Display the utilization of the processor

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>debug ip icmp (this may assist in debugging connectivity issues)

#debug ip packet detail access-list-number

voice all | protocol

Voice Call Manager