

TCP/IP Network Information Card

Version 1.0

Definitions

ARP – Short for Address Resolution Protocol. Resolves IP addresses to Mac addresses. There is also a tool by this name that is used to manipulate the local arp table.

Default gateway – AKA Default router. All traffic that is not destined for an IP address on the same network is sent to the default gateway.

DHCP Server – AKA Dynamic Host Control Protocol Server. A server that dynamically assigns IP Addresses.

Domain – A group of computers whose hostnames share a common suffix. This suffix is the "domain name".

Host - A computer or other device that has an IP address.

Octet – 8 bits which allow for values between 0-255.

Physical Address – AKA MAC (Median Access Control) Address. This is a twelve digit hex number that uniquely identifies an Ethernet card.

Name Server – AKA Domain Name Server or DNS Server. A server that resolves host names to IP Addresses.

Subnet – A portion of a network. Computers that are on the same physical network and that have the same physical address are on the same subnet.

Subnet Mask – A 32 bit number that identifies which part of an IP address is the network id and which is the host Id.

Network Tools

Tool	Description
ipconfig	Displays the IP address, subnet and default gateway of all attached network connections. <u>Useful Options:</u> /all – Shows DHCP and Name Server information. /release – releases the current DHCP lease /renew – renews the current DHCP lease
ping <i>[host]</i> <i>[ipaddress]</i>	Tests connection to the hostname. The host will echo a response.
arp	Displays the ARP table and allows entries to be added or removed
tracert <i>host</i>	Traces a route to the destination host and time it takes at each router.
netstat	Shows active connection and ports. <u>Useful Options:</u> -a – Also show ports that you computer is listening on. -vb – show the application that has the connection or that is listening on each port.
telnet <i>host</i> <i>[port]</i>	Tests for host listening on a port.

Use --help to display help for above. Value in [] represent optional parameters.

Subnet Mask Example

- IP address is 192.168.3.5 and subnet is 255.255.255.0
- Subnet converts to 11111111.11111111.11111111.00000000
- Network address is 192.168.3.0
- Host address is 0.0.0.5
- Another way to specify the mask is with CIDR notation as 192.168.3.5/24

Private Non-routable IP Addresses

One Class A Block – 10.x.x.x

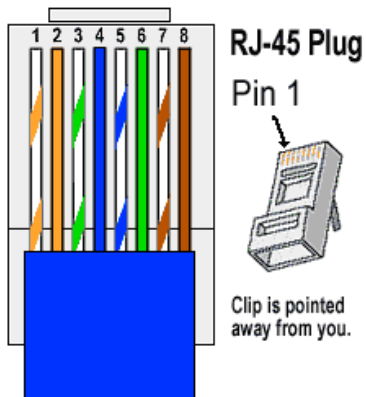
One Class B Block – 172.16.x.x

256 Class C Blocks – 192.168.x.x

Troubleshooting step when having trouble contacting to a Remote host

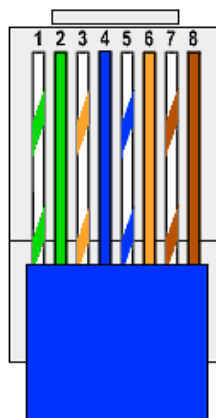
You are not able to contact the remote host using its host name.	Use ping to test connection using the host name.	If ping returns "Ping request could not find host <i>hostname</i> ." Either you are using the wrong name or there is a DNS problem. Check your DNS settings using <code>ipconfig /all</code> .
		If the request timed out. Check that your IP network address matches that of the target host.
You are not able to contact the remote host using its IP address.	Check your IP address using ipconfig .	If the adapter you are using has a Media State of Media Disconnected, then you have a cabling problem between your computer and the switch. Suspect the cable, wall jack, or patch cable to the switch. Also, some laptops shut down their Ethernet adapter when on low battery power.
		If your IP address that starts 169.254.xxx.xxx, then your computer cannot find a DHCP or BOOTP server. Ensure a DHCP server is available or manually set an IP address.
		Make sure the IP address you have is on the same subnet as the host you are trying to contact.
You are able to ping the remote host, but your application is still not working.	Use telnet to connect to the port that the application is trying to connect to.	Not all applications will answer telnet but if it is working, then check reliability and speed of the connection using ping .
Is the connection fast enough?	Check the response time using ping .	On a local area network the response time should be near 0. If the traffic goes through a router use tracert to check each hop.
Is there another host with the same IP address?	Unplug your target device and ping again.	If you get a response, then there is a duplicate. Change your device's IP address and try again.

Standard 568B Pinout



Pin	Signal
1	Transmit+
2	Transmit-
3	Receive+
4	Unused
5	Unused
6	Receive-
7	Unused
8	Unused

Crossover



(Wire one end this way)

Common Ports

Port	Description
22	ssh
23	telnet
25	SMTP
80	http
443	https
1433	MS SQLServer
2025	Velocity