Video – Network CLI Commands (11 min)

This video demonstration will cover network configuration and troubleshooting commands from the Windows CLI, or Windows command prompt.

I'll start by going to the Start menu, type cmd and press Enter to open a Windows command prompt. Let's start with a command that we can use to discover our IP Address. I'll type in ipconfig, and press Enter. You can see that it returns the IP Address of my Local Area Connection. This is my network interface card, or network adapter, my IP Address, 192.168.3.167, my Subnet Mask, and the Default Gateway, which is the nearest router at 192.168.3.1. Another thing that's revealed is my Link-local IPv6 Address, here. If I want more information, let's say about my DNS Servers, or the DHCP Server, or let's say my MAC Address, I can type in the command, ipconfig, a space, forward slash, all. If I put in that command, I'm given additional information. ipconfig all. You can see that it's also given me my Host Name. The name of this computer is WIN7-PC. The Physical Address is my MAC Address, here. I can scroll down to see the DHCP Server, which is located at 192.168.3.1, same as the Default Gateway, and my DNS Server, which, in this case, also happens to be at 192.168.3.1. I'll clear the screen with a cls, and press Enter.

Another useful command is the ping command. The ping command is used to test network connectivity to devices on the Network. In other words, I can type ping, and then the IP Address of the Default Gateway to see if I can reach my Default Gateway router. I'll press Enter, and you can see that I'm getting replies from 192.168.3.1. A ping is an ICMP echo request, and the replies are ICMP echo replies, so Packets Sent were four, Received were four, Lost were zero. If I wanted to do an extended test, beyond just four pings, I can type in the command ping, space, forward slash, n, for number, and then the number of pings that I wish to issue. I'll put in the number 10, and then the IP Address once again, and you can see that, this time, the pings will count to 10. Not only can you test network connectivity by pinging IP Addresses, you can also ping Domain Names. For instance, I can ping cisco.com and, this time, I get a reply from IP Address 72.163.4.161. This is the server, at cisco.com, replying to my ping.

Another useful command is a trace command, or trace route command. On Windows, this command is spelled out tracert. A trace command will also test network connectivity, but, additionally, it will return replies from every router or hop along the way until it reaches its destination, so I'll put in the command, tracert, and then a space, and then cisco.com, and you can see that I'm getting replies in sequence. Each one of these replies is from a router along the way until it reaches the cisco.com server. The first reply is from the localdomain, the router, the Default Gateway router at 192.168.3.1. You can then see the cable company, the broadband cable company routers. Here's a reply from Portland. There are a couple of timeouts here, and then you can start seeing Cisco replies. Here's a Cisco system reply from Dallas, and then Cisco routers replying, and, finally, the www1.cisco.com web server at 72.163.4.161. This lets me know the exact path that it took, city to city, or router to router, to reach the Cisco server. I'll type in cls to clear the screen.

Another useful command for resolving names to IP Addresses is nslookup. nslookup is also known as name server lookup. To use it, I'll type in nslookup, and press Enter. It lets me know that my name server is located at 192.168.3.1, and it's now ready to look up or resolve names and IP Addresses. For instance, I'll type in cisco.com, and you can see that it resolves to two IP Addresses, an IPv4 Address, 72.163.4.161, which we've seen before, but it also returned an IPv6 Address at 2001:420:1101:1::a. Let's see if we can do a reverse lookup and put in an IP Address and have it resolve to a name. I'll type in 72.163.4.161 and you can see that it returned www1.cisco.com. This is an example of a reverse nslookup. I'll type quit, and then cls to clear the screen.

Another useful command is the net command, which is used for configuring and troubleshooting network computers, network shares, and network users. For instance, let's put in the command net, a space, forward slash, and a question mark to get more information about the command. You can see that the net command has many options to it, or many different applications that it can be used for. Instead of putting in a net, forward slash, question mark, I can get the same information if I put net, space, forward slash, and type the word help. I'll clear the screen, and put in net, space, share, to see all of the shares on this computer. You can see that it returns three administrative shares. You can tell that these are administrative shares because they're followed by a $ sign, as well as the share on my Desktop, named MyShare, here, at Users\student\Desktop\MyShare. I can also use this net command to map any network shares that are out on the network, to my computer. For instance, if I open up a folder and click on Network, you can see that there

are some computers on the Network. I'll double-click on STUDENT-PC22, and you can see that it has a SharedFolder, with a shared-file.txt file inside. This SharedFolder I can map to my computer by going to the command prompt, typing net, use. I'll put in an asterisk to map the share to the next available Drive letter, and then the UNC path to the SharedFolder, back slash, back slash, student, dash, pc22, back slash, sharedfolder. I'll press Enter, and you can see that Drive Z: is now connected to student, dash, pc22, back slash, sharedfolder. The command completed successfully. If I go to my Start menu now, and go to Computer, you can see that I now have a mapped Network Drive to that sharedfolder, here, at the Z: Drive. If I double-click on it, there's the shared-file.

The last thing that I wanted to share, before ending this video, is not only can we ping IPv4 Addresses, as well as Domain Names, but we can also ping IPv6 Addresses. This is the IPv6 Address of student-pc22. I'll copy it, go back to my command prompt, type in cls, and let's see if we can ping the student-pc22 using its IPv6 Address. I'll type in ping, space, slash, six, for IPv6, and then I'll paste in that IPv6 Address, and let's see if we can get some replies, and we do. There's a reply from fe80, and then the rest of the address. I got four replies from student-pc22 using its IPv6 Address. If I want to ping myself using IPv6, and let's say test to see that IPv6 is bound to my NIC and working, I can just do ping, forward slash, six, for IPv6, and then colon, colon, one, to ping my loopback address in IPv6. You can see that I'm given replies, which lets me know that IPv6 is working and bound to this network adapter. To ping your loopback address in IPv4, you simply type ping, 127.0.0.1, and you can see I'm given replies, so the IPv4 protocol is successfully enabled and bound to my network adapter.