Lab 2

Configuring Network Connections

This lab contains the following exercises and activities:

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| Exercise 2.1 | Troubleshooting Network Connectivity |
| Exercise 2.2 | Configuring IPv6 |
| Exercise 2.3  Exercise 2.4 | Troubleshooting Name Resolution Problems  Looking at Network Statistics and Port Usage |
| Lab Challenge | Configure Network Card Settings |

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| Exercise 2.1 | Troubleshooting Network Connectivity |
| Overview | Because the lab network you are constructing for Contoso Ltd. must be isolated from the production network, you do not want the lab computers to obtain their TCP/IP settings from the DHCP servers on the production network. Therefore, you must configure the TCP/IP client to use static IP addresses. In addition, you will be working with a partner where one of you is assigned a student number that is an odd number while the other is assigned a student number that is an even number. |
| Completion time | 20 minutes |

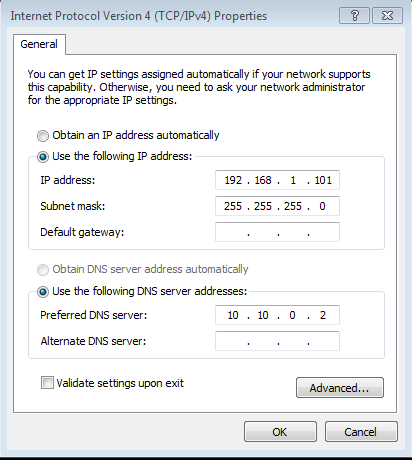
Table 2-3

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| TCP/IP Setting | Value |
| IPv4 address | 10.10.0.100 10.10.0.101 |
| Subnet mask | 255.0.0.0 255.0.0.0 |
| Default gateway | Blank Blank |
| DNS servers | 10.10.0.2 10.10.0.2 |

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| Question 1 | How did the computer obtain these settings? How can you determine this?  It determines the IP address settings from the DHCP. |

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| Question 2 | If you have an address handed out by a DHCP server and it appears to be the wrong IP configuration, what are the two things you should check?  The two things you should check are the start address and the range of address. |

17. Take a screen shot of the Internet Protocol Version 4 (TCP/IPv4) Properties sheet by pressing **Alt+Prt Scr**, and then paste the resulting image into the lab02\_worksheet file in the page provided by pressing **Ctrl+V**.



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| Question 3 | When troubleshooting any network connectivity problem, what command should you execute first in determining the problem?  Ipconfig /all |

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| Question 4 | What command should you use to verify that your TCP/IP stack is running properly?  Ping localhost |

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| Question 5 | What command would you use to test network connectivity with your partner’s computer?  Ping |

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| Question 6 | If you ping your partner’s computer by IP address, what does this tell you about your network connectivity and what does it not tell you about your network connectivity?  You are connected to a local network. You don’t know if you’re connected to a remote server and you don’t know if you have a naming solution problem. |

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| Question 7 | Were you able to ping your partner’s computer? If not, why could you not ping the computer?  Yes |

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| Question 8 | Were you able to ping your partner’s computer? If not, why could you not ping the computer?  Yes |

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| Question 9 | Can you ping your DNS server? If not, why could you not ping the DNS server?  No the server has an address on a different subnet and you have no default gateway. |

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| Question 10 | So if you could not access a DNS server, how were you able to resolve your partner’s computer address when you pinged it by name?  This is due to it being able to do a broadcast looking for the NetBIOS name with the same subnet. |

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| Question 11 | If you are trying to verify network connectivity with a computer on a remote host what is the next logical command to test network connectivity that you should execute?  Ping the default gateway |

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| Question 12 | Can you ping your partner’s computer? If not, why not?  No I can’t ping the computer. It’s because the computers have different subnets. |

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| Question 13 | Can you ping any other computers in the classroom?  Yes you can, the computers based on the odd student number (1) can ping, computers based on other odd student numbers while computers based on the even student number (2) can ping computers based on other even student numbers. |

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| Question 14 | What information does the ipconfig show?  The media is disconnected. |

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| Question 15 | Your network card most likely has two LEDs. What does each LED show?  One LED will show that you are connected while the other one shows that packets are being sent or received. |

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| Exercise 2.2 | Configuring IPv6 |
| Overview | Because IPv6 will grow in popularity and eventually replace IPv4, you need to know how to configure IPv6 settings. |
| Completion time | 10 minutes |

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| Question 16 | What is the IPv6 and Link-local IPv6 address?  IPv6: 2001:db8::2aa:ff:f328:9c01  Link-Local IPv6: fe80::945e:f37b:4146:abb%11 |

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| Question 17 | What is the IPv6 and Link-local IPv6 address of your partner’s computer in the lab?  IPv6: 2001:db8::2aa:ff:f328:9c01  Link-Local IPv6: fe80::d9c4:f59d:ec71:b9ae%11 |

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| Question 18 | Now that IPv4 and IPv6 are running on the same computer, what option do you need to add to the ping command to ping your partner’s computer using IPv4?  You would us ping 192.168.0.1 /4 |

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| Exercise 2.3 | Troubleshooting Name Resolution Problems |
| Overview | During this part of the lesson, you will be troubleshooting name resolution problems. |
| Completion time | 10 minutes |

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| Question 19 | What is the address of your computer? |

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| Question 20 | What is the address of the DNS server? |

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| Question 21 | What is the address of the DNS server? |

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| Question 22 | What is the name of the computer at 10.10.0.2? |

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| Question 23 | What command would you use to determine the address of your partner’s computer? |

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| Question 24 | What address was used for rwdc01? |

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| Question 25 | So why did the nslookup not use the host file? |

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| Question 26 | If someone makes a change on the DNS server and you need to clear the DNS cache so that it can get the new setting, what command would you use? |

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| Question 27 | If you change an IP address, what command would you use to register the new IP address with the DNS server? |

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| Exercise 2.4 | Looking at Network Statistics and Port Usage |
| Overview | When troubleshooting IP connectivity problems, there are several powerful commands that can show you what is going on with a computer connected to the network. |
| Completion time | 10 minutes |

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| Question 28 | What command would you use to display all connections and ports used? |

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| Question 29 | What option would you use with the netstat command to display all executables and the listening port associated with those executables? |

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| Question 30 | Is there an advantage to running either of these commands? |

Lab Challenge: Configure Network Card settings

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| **Completion time** | **10 minutes** |

From time to time, a network connection does not connect correctly and you have to force the network adapter to use either full duplex or half duplex, or you may need to force it to run at a certain speed such as 10 Mbps, 100 Mbps, or 1000 Mbps. Therefore, what are the exact steps you would have to perform to make these changes?