

## Mid-State Technical College

10-150-170 Beginning Network Troubleshooting

# Course Design

### Course Information

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| --- | --- | --- |
|  | Description | Beginning Network Troubleshooting provides general networking theory, practical experience, and opportunities for skills development. The curriculum teaches networking based on application, covering networking concepts within the context of network environments. An in-depth coverage of the OSI model is included.   |
|  | Career Cluster | Information Technology |
|  | Instructional Level | A.A.S. - Associate in Applied Science  |
|  | Total Credits | 3.00 |
|  | Total Hours | 54.00 |

Types of Instruction

|  |  |
| --- | --- |
| Instruction Type | Credits/Hours |
| Lecture/Lab | 3/54 |

Pre/Corequisites

|  |  |
| --- | --- |
| Prerequisite | Network Fundamentals |

Textbooks

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| *IT essentials course booklet*. Cisco Press (Publisher)*.* Indianapolis, IN: 2013. ISBN-10: 1-58713-309-1 ISBN-13: 978-1-58713-309-1 |

Learner Supplies

|  |
| --- |
| External Hard Drive - 80 GBs or larger |

### Employability Skills

|  |  |
| --- | --- |
| 1. | Communicate effectively |
| 2. | Demonstrate effective critical and creative thinking |

### Course Competencies

|  |  |
| --- | --- |
| 1. | Identify computer hardware. |
|  | Assessment Strategies |
|  | Final Exam |
|  | Skill demonstration |
|  |  |
|  | Identify classes of computers |
|  | Criteria |
|  | You will know when you are successful when: |
|  | you can identify computer hardware components and use correct terminology  |
|  | you illustrate and identify computer ports |
|  | you use ESD protective measures when handling hardware components |
|  | you diagnose computer hardware issues |
|  | Learning Objectives |
|  | Identify computer hardware components including motherboard, memory, drives, peripheral cards, and devices. |
|  | Utilize diagnostic tools.  |
|  | Use ESD precautions such as wrist straps and antistatic bags. |
|  | Install various component configurations in peripheral cards, devices, and hard drive partitioning and formatting. |
|  | Draw computer ports. |
|  | Select hardware |
|  | Diagnose computer hardware issues |
| 2. | Install an operating system. |
|  | Assessment Strategies |
|  | Demonstration a hardware operating system installation. |
|  | Demonstrate creation of a virtual hard disk. |
|  | Final Exam |
|  | Criteria |
|  | you demonstrate a hardware operating system installation - Operating system boots and functions without screen or LED light errors. |
|  | you demonstrate creation of a virtual hard disk - virtual hard disk boots and has a stable environment for end user. |
|  | you determine correct environment and version of operating system to be installed for specific situations. |
|  | you determine correct hardware resources for selected operating system. |
|  | Learning Objectives |
|  | Install an operating system on hardware. |
|  | Install a virtual hard disk. |
|  | Analyze hardware resources needed for operating system installation. |
|  | Prepare disk space for installation of virtual hard disk. |
| 3. | Identify computer roles in a network. |
|  | Assessment Strategies |
|  | Skill Demonstration |
|  | Final Exam |
|  | Criteria |
|  | you build a Peer-to-Peer Network where all computers communicate successfully. |
|  | you identify and list both physical and logical addressing. |
|  | you set logical addressing and demonstration successful communication between computers. |
|  | you share computer resources between devices by creating and sharing a folder. |
|  | Learning Objectives |
|  | Build peer-to-peer network. |
|  | Determine both physical address and logical address of network devices and how computers communicate. |
|  | Connect and configure hardware to the network. |
|  | Share resources between devices. |
| 4. | Repair connectivity and driver issues. |
|  | Assessment Strategies |
|  | Skill Demonstration |
|  | Final Exam |
|  | Criteria |
|  | you identify devices that are not functioning in device manager |
|  | you demonstrate how to download and install device drivers to resolve driver issues. |
|  | you verify that all devices are functioning properly |
|  | Learning Objectives |
|  | Identify devices that are not functioning in device manager. |
|  | Demonstrate how to download and install device drivers to resolve driver issues. |
|  | Verify that all devices are functioning properly. |
| 5. | Interpret power on and system events. |
|  | Assessment Strategies |
|  | Demonstration |
|  | Final Exam |
|  | Criteria |
|  | you demonstrate skills - Roles of Protocols in Network Communication |
|  | you identify which transport protocol is being used - TCP and UDP Transport Protocols |
|  | you identify the correct application port being used - TCP/IP Port Numbers |
|  | you use the layered OSI Model and correct protocols to determine system events |
|  | Learning Objectives |
|  | Use resources to determine roles of protocols in network communication. |
|  | Locate logs to determine TCP and UDP transport protocols. |
|  | Demonstrate understanding of layered OSI Model and Protocols |
|  | Monitor TCP/IP Port Numbers being used on network. |
| 6. | Determine network address and subnet. |
|  | Assessment Strategies |
|  | Skill Demonstration |
|  | Final Exam |
|  | Criteria |
|  | you use Windows calculator to convert network addresses to binary. |
|  | you complete network address translations  |
|  | you configure DHCP addressing on local machines |
|  | you set static addresses on local machines and devices |
|  | Learning Objectives |
|  | Explain the purpose of the IP address. |
|  | Define the IP address structure. |
|  | Determine the parts of an IP address. |
|  | Determine the types of IP addresses. |
|  | Manage IP addresses. |
| 7. | Troubleshoot computer hardware components and network connectivity. |
|  | Assessment Strategies |
|  | Demonstration |
|  | Final Exam |
|  | Criteria |
|  | you use network utilities to troubleshoot a network. |
|  | you troubleshoot and resolve device connectivity issues. |
|  | you determine and utilize the correct troubleshooting method for a given problem. |
|  | Learning Objectives |
|  | Explain the troubleshooting process. |
|  | Repair issues contributing to a network problem |
|  | Determine correct troubleshooting approach to use to resolve network issue. |
|  | Troubleshoot issue utilizing physical and utility based solutions. |

### Grading Information

|  |  |
| --- | --- |
| **Grade Scale** | **Percentages** |
| A | 95%-100% |
| A- | 93%-94% |
| B+ | 90%-92% |
| B | 88%-89% |
| B- | 86%-87% |
| C+ | 83%-85% |
| C | 80%-82% |
| C- | 78%-79% |
| D+ | 75%-77% |
| D | 72%-74% |
| D- | 70%-71% |
| F | Below 70% |

**This is a total points course. The grade breaks down to be approximately:**

*Practice Exams, Presentations, and Worksheets - 25%*

*Labs/ PATs 30%*

*Final Exam 45%*

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| --- |
| Meta Data Tags |
| network, networking, operating system, computer hardware, OSI,  |
| Acceptable Use Agreement for MSTC Information Technology Resources |
| All users of Mid-State information technology resources are required to abide by the acceptable use agreement terms and agree to all terms in the Network Policies found at [mstc.edu/student-resources/ technology/network-policies](http://www.mstc.edu/student-resources/technology/network-policies). These terms govern the access to and use of the information technology applications, services, and resources of Mid-State and the information they generate. This access is considered a necessary privilege in order to perform authorized functions. Users shall not knowingly permit use of their entrusted access control mechanism for any purposes other than those required to perform authorized functions. The college reserves the right to, without notice, limit or restrict access and to inspect, remove, or otherwise alter any data, file, or system resource that may undermine the authorized use of any Mid-State IT resources. Violations of the Acceptable Use Policy are subject to disciplinary action.  |
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|  |
| Employability Skills |
| EMPLOYABILITY SKILLS - In addition to specific job-related training, Mid-State has identified a set of employability skills that are transferable and go beyond the content of a specific course. The college supports the following skills for all graduates of Mid-State: • Act with Integrity • Communicate Effectively • Demonstrate Effective Critical and Creative Thinking • Demonstrate Global Social Awarenes |
| HelpDesk Contact Information |
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| Students who have questions about accessing Mid-State online services can contact the Help Desk at 877.469.6782. All student online services and Mid-State Help Desk services are available 24 hours a day, seven days a week, including holidays. Additional information regarding technology at Mid-State can be found at mstc.edu/studentresources/technology.  |

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| Learner Roles and Responsibilities |
| You are an adult learner and as such you are responsible for your own learning. No one else can be a "stand in" for you in the learning process. You will be held accountable for all assigned activities. You matter and what you do does make a difference. You will have an opportunity to share your unique ideas and experiences with your student peers and instructor. The form and content of your participation will determine the level of achievement, satisfaction, and enjoyment that you experience. Because others are depending on you to keep the course moving, you have an obligation to meet deadlines for completing assignments and postings. |
| Mid-State Academic Integrity Policy |
| The Mid-State Board, administration, faculty, and staff believe that academic honesty and integrity are fundamental to the mission of higher education. All students are expected to maintain and promote the highest standards of personal honesty and professional integrity. These standards apply to all examinations, assigned work, and projects. Therefore, a student who is found to have been dishonest, fraudulent, or deceptive in the completion of work, willing to help others to be so, or is found to have plagiarized (presented the work of others as his or her own) is subject to disciplinary action up to and including suspension. |
| Mid-State ADA Statement |
| If you know you have a recognized disability, or suspect that you might have one, it is your responsibility to identify yourself as soon as possible to the Disability Services staff in Student Services.  Course standards will not be lowered, but various kinds of accommodations are available to you.  Adequate and reasonable time will be required to develop and provide appropriate accommodations so contact Disability Services as soon as possible.  It is MSTC's goal to assist you in your educational plan. For more information about disability services, refer to the Student Handbook. <http://www.mstc.edu/student-resources/student-handbook> |
| Mid-State Attendance Policy |
| Class attendance is considered essential to the learning process. Therefore, regular, punctual attendance is expected of all students. Students are responsible for discussing absences with their instructors and, when permitted by instructors, responsible for making up class work that is missed. Any student deciding that he or she no longer wishes to attend class must officially drop the class. Students failing to drop a class remain responsible for class costs and are issued a failing grade.  Students are expected to attend the first class period or notify the class instructor. Students who do not attend the first class period or provide appropriate notification may be administratively dropped from the class. The college will inactivate a student’s enrollment and program status after a period of two consecutive semesters of nonattendance. |
| Mid-State Email Policy |
| All students are granted an email address through Microsoft Office 365. Students will retain their email address for 180 days after the end date of the last semester the student was enrolled in. Important information regarding registration, billing, financial aid, grades, and scheduling information are distributed to students via their Mid-State email account. It is the student’s responsibility to open and read their email regularly. Mid-State email is the college’s primary means of communicating with students. Instructors may utilize the college-assigned email system to mail student academic progress information that is private. It is the student’s responsibility to ensure that their email and network account password is not shared with other persons. Please go to [mstc.edu/studentresources/email-assistance](http://mstc.edu/studentresources/email-assistance) for instructions on accessing your email account. Problems or questions may be directed to the Help Desk at 877.469.6782. |
| Mid-State Policy on Audio or Video Taping Classes |
| With prior approval, students may be allowed to audio/video record lectures to enhance their understanding of the topics presented.  Audio/video recordings are not substitutes for attending class.  If you choose to record lectures, you must sign an agreement which lists the following terms:         Recordings are not to be distributed without the permission of the instructor.  This includes sharing via the Internet, peer to peer file sharing, or other methods.         Recordings are not to be shared with other classmates unless they are to be used in collaborative assignments, or if the instructor approves sharing for other reasons.          You will turn off recorders at the request of instructor. Non-compliance with these terms violates an instructor’s intellectual property rights.  Students violating this agreement will be subject to disciplinary actions under the Student Code of Conduct.***NOTE:*** *Y*ou must complete the Agreement Form ***BEFORE*** audio/video recording lecture.   |
| Student Handbook |
| Refer to the Mid-State Student Handbook for more information related to student policies and procedures. <http://www.mstc.edu/student-resources/student-handbook> |
| Student Services |
| All students, including online students, have access to student services including but not limited to disability services, counseling and advising, career services, and financial aid. To access student services, go to [*http://www.mstc.edu/student-resources/student-services*](http://www.mstc.edu/student-resources/student-services).  |

### Course Learning Plans and Performance Assessment Tasks

LP1 - Identifying Computer Hardware

Overview/Purpose

In this learning plan you will identify computer hardware.

Target Competencies

|  |  |
| --- | --- |
| 1. | Identify computer hardware. |
|  | Assessment Strategies |
|  | Practice Exam |
|  | Online Unit Exam |
|  | Drawing/Illustration |
|  | Identify classes of computers |
|  | Criteria |
|  | You will know when you are successful when: |
|  | you can identify computer hardware components and use correct terminology  |
|  | you illustrate and identify computer ports |
|  | you use ESD protective measures when handling hardware components |
|  | you diagnose computer hardware issues |
|  | Learning Objectives |
|  | Identify computer hardware components including motherboard, memory, drives, peripheral cards, and devices. |
|  | Utilize diagnostic tools.  |
|  | Use ESD precautions such as wrist straps and antistatic bags. |
|  | Install various component configurations in peripheral cards, devices, and hard drive partitioning and formatting. |
|  | Draw computer ports. |
|  | Select hardware |
|  | Diagnose computer hardware issues |

### Learning Activities

|  |  |
| --- | --- |
| 1. | READ – Chapter 1: Personal Computer Hardware |
| 2. | PARTICIPATE in instructor lecture and demo - Chapter 1 content |
| 3. | COMPLETE a Sketch of Computer Ports |
| 4. | COMPLETE Lab 1.3.2 Measuring Data Storage Capacity (Cisco Proprietary)  |
|  | Teaching Notes |
|  | Proprietary--see textbook. |
| 5. | COMPLETE Lab 1.3.3 Measuring Speed, Resolution, and Frequency.(Cisco Proprietary)  |
|  | Teaching Notes |
|  | Proprietary--see textbook. |
| 6. | PREPARE to COMPLETE the practice exam (total of three opportunities)  |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | COMPLETE Chapter 1 Labs |

LP2 - Installing Operating System

Overview/Purpose

In this learning plan you will learn how to select hardware and install an operating system.

Target Competencies

|  |  |
| --- | --- |
| 1. | Install an operating system. |
|  | Assessment Strategies |
|  | Demonstration a hardware operating system installation. |
|  | Demonstrate creation of a virtual hard disk. |
|  | Unit Final Exam |
|  | Criteria |
|  | you demonstrate a hardware operating system installation - Operating system boots and functions without screen or LED light errors. |
|  | you demonstrate creation of a virtual hard disk - virtual hard disk boots and has a stable environment for end user. |
|  | you determine correct environment and version of operating system to be installed for specific situations. |
|  | you determine correct hardware resources for selected operating system. |
|  | Learning Objectives |
|  | Install an operating system on hardware. |
|  | Install a virtual hard disk. |
|  | Analyze hardware resources needed for operating system installation. |
|  | Prepare disk space for installation of virtual hard disk. |

### Learning Activities

|  |  |
| --- | --- |
| 1. | READ chapter 2 – Operating Systems |
|  | Teaching Notes |
|  | Proprietary textbook content. |
| 2. | PREPARE to COMPLETE the practice exam (total of three opportunities)  |
| 3. | PARTICIPATE in instructor lecture and demo - Chapter 2 content |
| 4. | COMPLETE OS hardware installation (Cisco Proprietary)  |
| 5. | COMPLETE VMware OS installation (Cisco Proprietary)  |
| 6. | COMPLETE Lab 2.3.3.2 OS Application Version (Cisco Proprietary)  |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | COMPLETE Chapter 2 Labs |
| 2. | COMPLETE the 2.2.4.7 Computer Disassembly PAT |

2.2.4.7 - Computer Disassembly

Directions

Make sure you read though the entire lab before you begin.

1.       With your partner from the prior lab, retrieve your computer from the shelf. As you work though the lab, make sure you either remember or write down, how the components are connects (electrical wires, data cables, etc.) as you will need to reassemble the computer. **Do not** remove **any** components that are not listed on this lab.

2.       Serial Number of Computer: (1)

3.       Remove the Power Supply

a.       Disconnect the power supply cables from all components in the computer.

b.       Remove the screws holding the power supply to the case.

c.       How many screws secure the power supply in the case? (1)

d.       Carefully remove the power supply from the case, be careful to avoid hitting other components, when you remove the power supply.

e.       What is the total wattage of the power supply? (2)

4.       Remove the Memory

a.       Carefully remove the RAM module(s)

b.       How many RAM module(s) are installed? (1.5)

c.       How many notches are found on the bottom edge of the RAM module and what do you think the notches are for? (1.5)

5.       Remove the Adapter Cards

a.       How many adapter cards are installed? (2)

b.       What is there purpose? (2)

c.       Carefully remove the adapter cards (note there might be a screw, connecting it to the case)

d.       What type of expansion slots are available on the motherboard? (2)

6.        Remove the Internal/External Drive(s)

a.       Remove the data cables connecting the motherboard to the drive(s).

                                                               i.      What type of data cable do the drives use?

1.       Internal: (1.5)

2.       External: (1.5)

b.       How many drives are installed?

                                                               i.      Internal: (1.5)

                                                             ii.      External: (1.5)

c.       Remove the screws holding the drive in place.

d.       What is the manufacture and specification of the hard drive?

                                                               i.      Manufacture: (1)

                                                             ii.      Size/Speed: (1)

                                                           iii.      Are there any jumpers installed on the drive: (1)

7.       Get a teacher signoff that the computer is disassembled.

8.       Install the power supply

a.       Align the screw holes in the power supply, with the screw holes in the case.

b.       Secure the power supply to the case with the power supply screws.

c.       How many screws did it take to secure the power supply in the case? (1)

d.       Do not connect any of the power cables yet.

9.        Install the memory on the motherboard.

a.       Locate the RAM slots on the motherboard.

b.       Align the notches on the bottom edge of the RAM module to the notches in the slot. (Use the slot that RAM module was removed from)

c.       Press down until the side tabs secure the RAM module

d.       Ensure that none of the RAM module contacts are visible and that the RAM module is latched. Reseat the RAM module if necessary.

10.   Install the Internal/External Drive(s)

a.       Hard Drive(s)

                                                               i.      Align the hard disk drive with the 3.5 inch drive bay. (Bay the hard drive was removed from)

                                                             ii.      Slide the hard drive into the bay from the inside of the case until the screw holes line up with the holes in the 3.5 inch drive bay.

                                                           iii.      Secure the hard disk drive to the case, using the proper screws.

b.       External Drive(s)

                                                               i.      Align the hard disk drive with the 5.25 inch drive bay. (Bay the CD/DVD drive was removed from)

                                                             ii.      Slide the hard drive into the bay from the inside of the case until the screw holes line up with the holes in the 5.25 inch drive bay.

                                                           iii.      Secure the hard disk drive to the case, using the proper screws.

11.   Install the Adapter Card(s)

a.       Locate a compatible expansion slot, for the adapter card you are trying to install. (Slot the adapter was removed from)

b.       Press down gently, on the adapter card, until the card is fully seated.

c.       Secure the adapter card to the case with a screw. (If it was installed with one)

12.   Connect the data cable(s) and power cables

a.       Connect the data cables to the internal and external drives (Make sure all cables are plugged into the same motherboard connector, adapter on the cable, and device)

b.       Align the motherboard power supply connector to the socket on the motherboard.

c.       Gently press down on the connector until the clip clicks into place.

d.       Install the remaining power connectors that you removed.

13.   Get a teacher signoff that the computer is reassembled.

14.   Connect a monitor, keyboard, mouse and power to the computer.

15.   Check to ensure your computer still is able to power on, without any BIOS errors.

16.   What is something interesting you learn during this lab? (2)

17.   You are now ready for Lab 4. Please remember to clean up your workspace and submit this lab on Blackboard.

Target Course Competencies

|  |  |
| --- | --- |
| 1. | Identify computer hardware. |
| 2. | Install an operating system. |
|  |  |

### Scoring

Rating Scale

|  |  |
| --- | --- |
| Value | Description |
| Met | Fully or adequately met expectations (Full Points) |
| Not Met | Did not meet expectations, incomplete or missing (0 Points) |

Scoring Standard

To demonstrate competence you must complete the entire lab and earn full points (Met) on the questions and criteria.

### Scoring Guide

|  |  |  |
| --- | --- | --- |
|  | Criteria | Ratings |
| **1.** | **Install an operating system and Identify computer hardware.** |  |
| 2. | you demonstrate a hardware operating system installation - Operating system boots and functions without screen or LED light errors. | Met Not Met |
| 3. | you demonstrate creation of a virtual hard disk - virtual hard disk boots and has a stable environment for end user. | Met Not Met |
| 4. | you determine correct environment and version of operating system to be installed for specific situations. | Met Not Met |
| 5. | you determine correct hardware resources for selected operating system. | Met Not Met |

LP3 - Identifying Computer Roles

Overview/Purpose

In this learning plan you will discover how to identify computer roles in a network.

Target Competencies

|  |  |
| --- | --- |
| 1. | Identify computer roles in a network. |
|  | Assessment Strategies |
|  | Skill Demonstration |
|  | Final Online Exam |
|  | Criteria |
|  | you build a Peer-to-Peer Network where all computers communicate successfully. |
|  | you identify and list both physical and logical addressing. |
|  | you set logical addressing and demonstration successful communication between computers. |
|  | you share computer resources between devices by creating and sharing a folder. |
|  | Learning Objectives |
|  | Build peer-to-peer network. |
|  | Determine both physical address and logical address of network devices and how computers communicate. |
|  | Connect and configure hardware to the network. |
|  | Share resources between devices. |

### Learning Activities

|  |  |
| --- | --- |
| 1. | READ the chapter –  Connecting to the Network |
| 2. | PARTICIPATE in instructor lecture and demo - Chapter 3 content |
| 3. | COMPLETE   Lab 3.6.4 Connect and Configure Hosts (Cisco Proprietary)  |
| 4. | COMPLETE  Lab 3.1.5 Building a Peer-to-Peer Network (Cisco Proprietary)  |
| 5. | COMPLETE  Lab 3.3.3 Determine the MAC Address of a Host (Cisco Proprietary)  |
| 6. | COMPLETE Lab 3.3.6 Determine the IP Address of a Computer (Cisco Proprietary)  |
| 7. | COMPLETE Lab 3.5.2 IP Addresses and Network Communication (Cisco Proprietary)  |
| 8. | COMPLETE  Lab 3.6.5 Sharing Resources (Cisco Proprietary)  |
| 9. | PREPARE to COMPLETE the practice exam (total of three opportunities)  |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | COMPLETE Chapter 3 Labs |

LP4 - Diagnosing and Repairing Connectivity and Drivers

Overview/Purpose

In this learning plan you will explore how to diagnose and repair connectivity and driver issues, including updating and maintaining operating systems.

Target Competencies

|  |  |
| --- | --- |
| 1. | Repair connectivity and driver issues. |
|  | Assessment Strategies |
|  | Skill Demonstration |
|  | Online Final Exam |
|  | Criteria |
|  | you identify devices that are not functioning in device manager |
|  | you demonstrate how to download and install device drivers to resolve driver issues. |
|  | you verify that all devices are functioning properly |
|  | Learning Objectives |
|  | Identify devices that are not functioning in device manager. |
|  | Demonstrate how to download and install device drivers to resolve driver issues. |
|  | Verify that all devices are functioning properly. |

### Learning Activities

|  |  |
| --- | --- |
| 1. | Read Chapter - Preventive Maintenance and Operating Systems |
| 2. | PARTICIPATE in instructor lecture and demo - Chapter 5 content |
| 3. | PARTICIPATE in creating a troubleshooting process presentation in a small group |
|  | Learning Materials |
|  | Troubleshooting Process | [Troubleshooting Process (1).docx](https://mstc.wids.org//PublicDocuments.axd?DocumentID=3080fc93-d5aa-45fd-b30e-71d0c25a17d6) |
| 4. | COMPLETE Lab 5.2.1.9 - Check for Updates in Windows 7  (Cisco Proprietary)  |
| 5. | COMPLETE Lab 5.3.4.2 - Hard Drive Maintenance in Windows 7 (Cisco Proprietary)  |
| 6. | PREPARE to COMPLETE the practice exam (total of three opportunities)  |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | PRESENT troubleshooting process presentation |
|  | Learning Materials |
|  | Troubleshooting Process | [Troubleshooting Process (1).docx](https://mstc.wids.org//PublicDocuments.axd?DocumentID=3080fc93-d5aa-45fd-b30e-71d0c25a17d6) |
| 2. | COMPLETE Chapter 5 Labs |

LP5 - Determining Network Addresses and Subnets

Overview/Purpose

In this learning plan you will determine the components of IP addresses and how to manage them.

Target Competencies

|  |  |
| --- | --- |
| 1. | Determine network address and subnet. |
|  | Assessment Strategies |
|  | Skill Demonstration |
|  | Final Exam |
|  | Criteria |
|  | you use Windows calculator to convert network addresses to binary. |
|  | you complete network address translations  |
|  | you configure DHCP addressing on local machines |
|  | you set static addresses on local machines and devices |
|  | Learning Objectives |
|  | Explain the purpose of the IP address. |
|  | Define the IP address structure. |
|  | Determine the parts of an IP address. |
|  | Determine the types of IP addresses. |
|  | Manage IP addresses. |

### Learning Activities

|  |  |
| --- | --- |
| 1. | Read Chapter - Networks |
| 2. | PARTICIPATE in instructor lecture and demo - Chapter 6 content |
| 3. | COMPLETE Lab 6.3.2.7 - Configure a NIC to Use DHCP in Windows 7 (Cisco Proprietary)  |
| 4. | COMPLETE Lab 6.4.2.4 - Building Straight-Through and Crossover UTP Cables (Cisco Proprietary)  |
| 5. | COMPLETE IPs and Subnets Worksheet  |
|  | Learning Materials |
|  | IPs and Subnets Worksheet | [IPs and Subnets Worksheet (1).docx](https://mstc.wids.org//PublicDocuments.axd?DocumentID=89fd7271-cb96-47c5-8aec-8758a7d851d2) |
| 6. | COMPLETE Lab 6.8.3.5 - Connect to a Router for the First Time (Cisco Proprietary)  |
| 7. | COMPLETE Lab 6.8.3.5 - Connect to a Router for the First Time (Cisco Proprietary)  |
| 8. | Understanding Network Concepts Worksheet  |
|  | Learning Materials |
|  | Understanding Network Concepts Worksheet | [Understanding Network Concepts Worksheet(1).docx](https://mstc.wids.org//PublicDocuments.axd?DocumentID=91e5258a-5f06-4341-adf1-372d363d0c28) |
| 9. | PREPARE to COMPLETE the practice exam (total of three opportunities)  |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | COMPLETE IPs and Subnets Worksheet |
|  | Learning Materials |
|  | IPs and Subnets Worksheet | [IPs and Subnets Worksheet (1).docx](https://mstc.wids.org//PublicDocuments.axd?DocumentID=89fd7271-cb96-47c5-8aec-8758a7d851d2) |
| 2. | COMPLETE Understanding Network Concepts Worksheet |
|  | Learning Materials |
|  | Understanding Network Concepts Worksheet | [Understanding Network Concepts Worksheet(1).docx](https://mstc.wids.org//PublicDocuments.axd?DocumentID=91e5258a-5f06-4341-adf1-372d363d0c28) |
| 3. | COMPLETE the 6.4.2.5 Cabeling a Simple Network PAT |
| 4. | COMPLETE Chapter 6 Labs |

6.4.2.5 - Cabling a Simple Network

Directions

Complete lab 6.4.2.5 in the Cisco Workbook (Cisco Proprietary) Submit your work as requested by the instructor. It will graded in the following manner.

Configuration of Switch 0

20 points

Configuration of PC-A

20 points

Configuration of PC-B

20 points

Target Course Competencies

|  |  |
| --- | --- |
| 1. | Determine network address and subnet. |
| 2. | Troubleshoot computer hardware components and network connectivity. |

### Scoring

Rating Scale

|  |  |
| --- | --- |
| Value | Description |
| Met | Fully or adequately met expectations (Full Points) |
| Not Met | Did not meet expectations, incomplete or missing (0 Points) |

Scoring Standard

To demonstrate competence you must complete the entire lab and earn full points (Met) on the questions and criteria.

### Scoring Guide

|  |  |  |
| --- | --- | --- |
|  | Criteria | Ratings |
| **1.** | **Determine network address and subnet.** |  |
| 2. | you use Windows calculator to convert network addresses to binary. | Met Not Met |
| 3. | you complete network address translations  | Met Not Met |
| 4. | you configure DHCP addressing on local machines | Met Not Met |
| 5. | you set static addresses on local machines and devices | Met Not Met |
| **6.** | **Troubleshoot computer hardware components and network connectivity.** |  |
| 7. | you use network utilities to troubleshoot a network. | Met Not Met |
| 8. | you troubleshoot and resolve device connectivity issues. | Met Not Met |
| 9. | you determine and utilize the correct troubleshooting method for a given problem. | Met Not Met |

LP6 - Troubleshooting Hardware and Connectivity

Overview/Purpose

In this learning plan you will apply knowledge to work with troubleshooting hardware and connectivity.

Target Competencies

|  |  |
| --- | --- |
| 1. | Troubleshoot computer hardware components and network connectivity. |
|  | Assessment Strategies |
|  | Demonstration |
|  | Final Exam |
|  | Criteria |
|  | you use network utilities to troubleshoot a network. |
|  | you troubleshoot and resolve device connectivity issues. |
|  | you determine and utilize the correct troubleshooting method for a given problem. |
|  | Learning Objectives |
|  | Explain the troubleshooting process. |
|  | Repair issues contributing to a network problem |
|  | Determine correct troubleshooting approach to use to resolve network issue. |
|  | Troubleshoot issue utilizing physical and utility based solutions. |

### Learning Activities

|  |  |
| --- | --- |
| 1. | Read Chapter - Advanced Troubleshooting  |
| 2. | PARTICIPATE in instructor lecture and demo - Chapter 12 content |
| 3. | COMPLETE Lab 12.3.1.4 - Fix a Network Problem (Cisco Proprietary)  |
| 4. | COMPLETE Lab 12.3.1.6 - Troubleshooting Network Problems in Windows 7 (Cisco Proprietary)  |
| 5. | COMPLETE Lab 12.1.1.6 - Troubleshooting Hardware Problems in Windows 7 (Cisco Proprietary)  |
| 6. | COMPLETE Advanced Troubleshooting lab  |
|  | Learning Materials |
|  | Advanced Troubleshooting | [Advanced Troubleshooting.docx](https://mstc.wids.org//PublicDocuments.axd?DocumentID=f849e793-c7c4-4163-bd66-66d09a63a617) |
| 7. | PREPARE to COMPLETE the practice exam (total of three opportunities)  |

### Assessment Activities

|  |  |
| --- | --- |
| 1. | COMPLETE Chapter 12 Labs |
| 2. | COMPLETE the Advanced Troubleshooting

|  |
| --- |
| Learning Materials |
| Advanced Troubleshooting | [Advanced Troubleshooting.docx](https://mstc.wids.org//PublicDocuments.axd?DocumentID=f849e793-c7c4-4163-bd66-66d09a63a617) |

 |
| 3. | COMPLETE the practice exam (total of three opportunities)  |
| 4. | COMPLETE  Cisco Networking Academy Exam with a score of 80% or higher  |



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