Experiential Learning Portfolio for 10150111 Cisco CCNA 1 Introduction to Networks

Student Contact Information:

Name: _____Student ID#: _____

Email: _____ Phone: _____

*It is **required** that you speak with the Academic Dean or instructor who teaches this course prior to completing a portfolio.*

Directions

Consider your prior work, military, volunteer, education, training and/or other life experiences as they relate to each competency and its learning objectives. Courses with competencies that include speeches, oral presentations, or skill demonstrations may require scheduling face-to-face sessions. You can complete all of your work within this document using the same font, following the template format.

1. Complete the Student Contact Information at the top of this page.
2. Write an Introduction to the portfolio. Briefly introduce yourself to the reviewer summarizing your experiences related to this course and your future goals.
3. Complete each "Describe your learning and experience with this competency" section in the space below each competency and its criteria and learning objectives. Focus on the following:
   - What did you learn?
   - How did you learn through your experience?
   - How has that learning impacted your work and/or life?
4. Compile all required and any suggested artifacts (documents and other products that demonstrate learning).
   - Label artifacts as noted in the competency
   - Scan paper artifacts
   - Provide links to video artifacts
   - Attach all artifacts to the end of the portfolio
5. Write a conclusion for your portfolio. Briefly summarize how you have met the competencies.
6. Proofread. Overall appearance, organization, spelling, and grammar will be considered in the review of the portfolio.
7. Complete the Learning Source Table. Provide additional information on the business and industry, military, and/or volunteer experiences, training, and/or education or other prior learning you mentioned in your narrative for each competency on the Learning Source Table at the end of the portfolio. Complete this table as completely and accurately as possible.

The portfolio review process will begin when your completed portfolio and Credit for Prior Learning Form are submitted and nonrefundable processing fees are paid to your local Credit for Prior Learning contact. Contact Student Services for additional information.

Your portfolio will usually be evaluated within two weeks during the academic year; summer months may be an exception. You will receive an e-mail notification regarding the outcome of the portfolio review from the Credit for Prior Learning contact. NOTE: Submission of a portfolio does not guarantee that credit will be awarded.

You have 6 weeks to appeal any academic decision. See your student handbook for the complete process to appeal.

To receive credit for this course, you must receive "Met" on 6 of the 7 competencies.

10150111, Cisco CCNA 1 Introduction to Networks, 3 Associate Degree Credits

Course Description: Cisco CCNA 1 Introduction to Networks Cisco CCNA 1 Introduction to Networks (ITN) covers networking architecture, structure, and functions. The course introduces IPv4 and IPv6 addressing structure and design, the fundamentals of Ethernet concepts, media, and operations, the OSI and TCP/IP models and associated protocols to set a strong networking foundation. Wireshark is used to examine protocols on the network. Students configure and troubleshoot routers (IOS), switches and clients for a basic network.

If you receive credit for prior learning for this portfolio, you will also receive a "Met" score for the following Technical Skills Attainment Program Outcomes that are assessed in this specific course:

Introduction: Briefly introduce yourself to the reviewer summarizing your experiences related to this course and your future goals.

Competency 1: Examine the extent and importance of communications networks

Criteria: Performance will be satisfactory when:
- you install and configure network applications such as webservers
- you use network applications such as DNS, e-mail, and Telnet

Learning Objectives:
a. Identify the extent of communication networks in business and personal life
b. Identify the components of communications networks
c. Identify devices, software, and data content in modern networks
d. Describe the requirements of different data types on communications networks
e. Compare LANs and WANs

Required Artifacts: 1. A diagram of a network configured by the student showing LAN, WAN and devices (routers, switch, workstations)
2. A description of the above diagram indicating service on the network.

Suggested Artifacts: None

Describe your learning and experience with this competency:

Met/ Not Met Evaluator Feedback:

Competency 2: Summarize the importance of models for describing networks
Criteria: Performance will be satisfactory when:
- you identify the layers of the OSI and TCP/IP network models
- you examine and identify PDU information using a protocol analyzer such as Wireshark
- you describe the services provided by each of the layers of the TCP/IP network model
- you identify the protocols used at each layer of the TCP/IP network model

Learning Objectives:
a. Explain the benefits of using layered models for describing and building networks
b. Explain the importance of protocols for making communication across networks possible
c. Identify and describe the layers of the OSI network model
d. Identify and describe the layers of the TCP/IP network model
e. Explain the importance of segmentation and encapsulation for sending data across a network
f. Examine PDUs using Wireshark
g. Analyze network traffic using PacketTracer

Required Artifacts: A diagram of the OSI model along with a description of each layer and the physical device operating at each appropriate layer.
2. A sample of a wireshark capture of traffic on the network.
3. A description of a protocols and the layer it operates at (3 different layers/protocols).

Suggested Artifacts: None

Describe your learning and experience with this competency:

Met/ Not Met Evaluator Feedback:

Competency 3: Explain how applications communicate with the network

Criteria: Performance will be satisfactory when:
- you identify the well-known port numbers associated with important network applications
- you describe the three-way handshake used by TCP to establish connection-oriented communications
- you describe how application data is segmented, encapsulated, reliably sent across the network, reassembled, and delivered to the appropriate application
- you use utilities such as Wireshark and PacketTracer to monitor and analyze network traffic

Learning Objectives:
- a. Identify how port addresses are used to identify network applications on remote computers
- b. Identify common (well-known) port addresses
- c. Explain the difference between reliable (TCP) and unreliable (UDP) communications
- d. Explain the difference between connection-oriented and connectionless communications
- e. Describe the three-way handshake that TCP uses to create a connection
- f. Explain how TCP uses acknowledgements to guarantee delivery of data on a TCP/IP network
- g. Explain how TCP segments and reassembles application data transported across the network
- h. Use utilities such as Wireshark and PacketTracer to identify transport layer information
- i. Install network applications such as webservers
- j. Configure network applications such as webservers
- k. Analyze application layer traffic such as http, e-mail, and Telnet using network analyzers such as Wireshark and PacketTracer

Required Artifacts: 1. Wireshark capture of 3 way handshake
2. A wireshark capture of a specific protocol (http, email, dns, …) identifying port number usage.
3. A description how TCP and UDP protocols function.

Suggested Artifacts: **None**

Describe your learning and experience with this competency:

Met/ Not Met Evaluator Feedback:

Competency 4: Demonstrate the ability to segment the IPv4 address space
Criteria: Performance will be satisfactory when:
- you identify classful networks based on the first octet of the IP address
- you divide both classful and classless networks into smaller networks
- you summarize networks into larger supernets
- you assign the appropriate network number and subnet mask for networks given specific design requirements

Learning Objectives:
a. Identify classful networks based on the first octet of the IP address
b. Subnet both classful and classless networks into smaller networks
c. Summarize both classful and classless networks into larger networks
d. Identify the range of a network based on the network number and the subnet mask
e. Divide a range of IP address into smaller subnets to meet network design requirements

Required Artifacts: 1. A document showing the subnet planning including mask,host range, network number and broadcast addresses**.**
2. Include a rational for the above subnet planning.
3. Include a plan to show network summarization.
4. Include the identification of different types of addressing used.

Suggested Artifacts: **None**

Describe your learning and experience with this competency:

Met/ Not Met Evaluator Feedback:

Competency 5: Explain the Ethernet Standard

Criteria: Performance will be satisfactory when:

- you correctly describe how physical (MAC) addresses are used on TCP/IP networks
- you predict what physical address will be used and how it will change over an internetwork given various conditions
- you describe how the CSMA/CD algorithm is used to allow multiple computers to access a shared network
- you explain how the Address Resolution Protocol is used to find the destination MAC address
- you predict the behavior of the Address Resolution Protocol under various network conditions
- you determine the MAC address using the ARP command line utility

Learning Objectives:

a. Identify why the Physical (MAC) address is important for communicating on the Local Area Network
b. Contrast the use and extent of network addresses with physical addresses
c. Describe how the CSMA/CD algorithm is used to allow multiple computers to access a shared network
d. Identify Collision and Broadcast domains
e. Describe how the Address Resolution Protocol is used to find the destination MAC address
f. Examine ARP traffic using utilities such as ARP, Wireshark, and PacketTracer
g. Analyze broadcast traffic using network utilities such as Wireshark and PacketTracer

Required Artifacts: 1. A document showing the part of an ethernet frame.
2. A document showing a systems addressing details and the associated commands used,
3. The identification of a broadcast and collision domains in a network.
4. A description of the function of the ARP protocol.

Suggested Artifacts: None

Describe your learning and experience with this competency:

Met/ Not Met Evaluator Feedback:

Competency 6: Create TCP/IP internetworks
Criteria: Performance will be satisfactory when:
- you create an internetwork according to design specifications
- you demonstrate that all hosts are able to communicate with each other
- you document your work with configuration information and show and debug command output

Learning Objectives:
- a. Create straight-through and crossover cables based on the EIA/TIA 568 Standard
- b. Terminate cables at wall outlets and Patch panels
- c. Connect network devices such as hosts, switches, and routers
- d. Identify the appropriate use of straight-through and crossover cables
- e. Configure host computers with an IP address, subnet mask, and default gateway
- f. Configure routers to direct data to remote networks
- g. Use PacketTracer to create virtual networks

Required Artifacts:
1. A Diagram of the use of different network cabling.
2. A Network diagram for a logical topology.
3. An interpretation of a routing table
4. A picture of the network cabling the student has worked with.

Suggested Artifacts: None

Describe your learning and experience with this competency:

Met/ Not Met Evaluator Feedback:

Competency 7: Troubleshoot TCP/IP internetworks

Criteria: Performance will be satisfactory when:

- you troubleshoot an improperly functioning network until all host devices can communicate with each other and all other design requirements are met

Learning Objectives:

a. Use built-in computer utilities such as ipconfig to check IP addressing and other host configuration information
b. Use built-in computer and switch and router utilities such as ping and traceroute to analyze network behavior
c. Use a variety of show and debug commands to analyze network behavior
d. Use nslookup to test name resolution
e. Use third-party utilities such as Wireshark to analyze network traffic
f. Use PacketTracer to analyze TCP/IP networks

Required Artifacts: 1. Document troubleshooting a network problem using command line tools like ping,nslookup, tracert, ipconfig. This should explain the output of each of these tools.

Suggested Artifacts: None

Describe your learning and experience with this competency:

Met/ Not Met Evaluator Feedback:

Conclusion: Summarize how you have met the competencies of the course.

Learning Source Table

Learning Source (name of employer, training, military, volunteer organization, etc.)	Supervisor	Start-End Date	Total Hours	Related Competencies
Ex: XYZ Corporation	Bucky Badger	8/2012-9/2014	2000	#1, 2, 3, and 7