

Syllabus

Course Overview

In this course, you will demonstrate your knowledge and skills regarding the fundamentals of network architecture. You will apply knowledge of network characteristics and network topologies to develop a scope document for a proposed network architecture.

Technology Resources

This Capella course offers real-world, hands-on labs provided by Practice-Labs.com. These labs offer guided practice in performing tasks related to achieving course competencies and completing assessments. If you require the use of assistive technology or alternative communication methods to participate in these activities, please contact DisabilityServices@Capella.edu to request accommodations.

Course Competencies

(Read Only)

To successfully complete this course, you will be expected to:

- 1 Define business problems that can be solved using basic network design and engineering concepts and standards.
- 2 Assess effects of different network design choices on the overall functionality of the network infrastructure.
- 3 Design a network to meet an organization's needs.
- 4 Create a network management strategy to meet an organization's needs.
- 5 Communicate effectively.

Course Prerequisites

Prerequisite(s): IT2250 or IT-FP2250; IT3225 or IT-FP3225.

The materials listed below are required to complete the learning activities in this course.

Integrated Materials

Many of your required books are available via the VitalSource Bookshelf link in the courseroom, located in your Course Tools. Registered learners in a Resource Kit program can access these materials using the courseroom link on the Friday before the course start date. Some materials are available only in hard-copy format or by using an access code. For these materials, you will receive an email with further instructions for access. Visit the [Course Materials](#) page on Campus for more information.

Book

Meyers, M. (2018). *CompTIA network+ certification all-in-one exam guide: Exam N10-007* (7th ed.). New York, NY: McGraw Hill Education. ISBN: 9781260122381.

Library

The following required readings are provided in the Capella University Library or linked directly in this course. To find specific readings by journal or book title, use [Journal and Book Locator](#). Refer to the [Journal and Book Locator library guide](#) to learn how to use this tool.

- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Network devices and device hardening \[Tutorial\]](#).
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Network storage, virtualization, and WAN technologies \[Tutorial\]](#).
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Networking devices \[Tutorial\]](#).
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Policies and best practices \[Tutorial\]](#).
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Ports and protocols and the OSI model \[Tutorial\]](#).
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Security devices, wireless security, and access control \[Tutorial\]](#).
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Troubleshooting connectivity and performance issues \[Tutorial\]](#).
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Troubleshooting methodologies and tools \[Tutorial\]](#).

Suggested

The following materials are recommended to provide you with a better understanding of the topics in this course. These materials are not required to complete the course, but they are aligned to course activities and assessments and are highly recommended for your use.

Optional

The following optional materials are offered to provide you with a better understanding of the topics in this course. These materials are not required to complete the course.

Projects

Project >> Enterprise Network Optimization

Project Overview

Throughout this course, you will learn about best practices and strategies for building an effective, efficient enterprise network architecture. This includes methods for analyzing critical components and integrating them with one another in such a way that they are interoperable and configured for optimum performance.

Using the strategies you learn, you will create a plan for an enterprise network and support the decisions for your plan with relevant professional resources. Specific detailed instructions for each component of the project are located within each assignment.

For your course project, you will need to choose an organization's IT department upon which to base your project. You should choose an organization with which you are currently affiliated, have worked for in the past, or one you would like to learn more about. The organization you select should be one that is relevant to your professional goals. You will use the same organization for all of the course assignments that will contribute to the course final project.

The Enterprise Network Optimization Project will showcase the performance mechanisms that apply for your network, discuss how each mechanism should apply, and describe the relationships within the performance architecture and other components architecture. You will also consider global business concerns that must be

Introduction

This week you will:

- Learn about the network engineering process.
- Participate in one discussion.
- Complete a practice lab.
- Complete and submit your first assignment, due by 11:59 p.m. Central time, Sunday.

Within an organization, the enterprise network serves as the communications hub—connecting computers and other devices across the organization. All systems within an organization should be able to communicate with each other and share information. The enterprise network ensures this function, along with reliability and security.

Learning Activities

u01s1 - Software Preparation and Technology Access

In this course, you will be using software and technology that is needed to complete designated activities and assignments. There is no additional cost for this software and technology. Some software packages will be made available to you at no additional cost through Capella's subscription with Microsoft, while other software packages are available for free download through open-source licensing.

Capella University requires learners to meet certain minimum [computer requirements](#). Please note that some software required for a course may exceed these minimum requirements. Check the requirements for the software you may need to download and install to make sure it will work on your device. Most software will require a Windows PC. If you use a Mac, refer to [Installing a Virtual Windows Environment](#).

The software and technologies below are strongly recommended to support you in completing the course objectives. If you have access to other tools that you believe may still meet course requirements or if you have any difficulties accessing this resource or completing the related assignments, please contact your course faculty member to discuss potential alternatives.

If you use assistive technology or any alternative communication methods to access course content, please contact DisabilityServices@Capella.edu with any access-related questions or to request accommodations.

For this course, follow the instructions provided through the links below to download and install software or register for an account, as required.

Microsoft Software

1. Visit Capella's [Microsoft Software](#) page for instructions on obtaining free Microsoft software.
2. Identify the version of MS Visio that is compatible with your operating system.
3. Download and install.

Practice Labs

This Capella course offers real-world, hands-on labs provided by Practice Labs in many of the units of this course. Click the Practice Labs Orientation link in this unit to access an introductory lab.

Note: As a Capella learner, you have access to IT online resources through Capella's [Skillsoft](#) subscription, where you can find helpful materials.

u01v1 - Practice Labs Orientation: Module Zero – Basics

This lab is designed to familiarize you with the Practice Labs platform. This is a great time to ensure that you can access the labs without any technical difficulty.

Click the linked title heading above to access the hands-on lab.

u01v2 - Hands-On Lab: Introduction to the OSI Model

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u01v3 - Hands-On Lab: Network Services and Protocols: Part 1

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u01v4 - Hands-On Lab: Network Services and Protocols: Part 2

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u01v5 - Hands-On Lab: Network Services and Protocols: Part 3

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u01d1 - Enterprise Networks

Discussion Resources

The following resources may be useful in completing this discussion and the course assignments.

- Meyers, M. (2018). *CompTIA network+ certification all-in-one exam guide: Exam N10-007* (7th ed.). New York, NY: McGraw Hill Education.
 - Chapter 1, “Network Models,” pages 2–41.
 - Chapter 18, “Managing Risk,” pages 627–640.

Discussion Instructions

For this discussion, consider the following scenario:

Sally is the project manager for a mid-sized publishing firm. She is currently working on a project that involves a complete Windows upgrade for her organization. All of the organization's PCs are being upgraded with Windows 7 and all of the servers are being migrated to Windows 2008. Halfway through the upgrade, Sally is ahead of schedule and under budget when she discovers that there is a compatibility issue with several major printers throughout the organization. With research, she finds that 64-bit drivers are not available for the printers the organization currently owns.

Use the discussion resources and your own research to discuss the following:

- Explain the network engineering life cycle and identify the stage in which Sally made her error.
- Discuss ways that Sally can now rectify her mistake in planning without jeopardizing both the schedule and the budget.
- If you were Sally's superior, discuss what you would do in response to this potentially serious situation with a high-visibility project.

Response Guidelines

After posting your discussion, please respond to at least two other learners. Have they thought of ways to rectify the situation that you did not? How different or similar are your responses to the situation?

Course Resources

Undergraduate Discussion Participation Scoring Guide

u01d1 - Learning Components

- Define business problems.
- Explain the fundamental components of a network.
- Describe the network engineering life cycle process.
- Determine the requirements for a network architecture design.
- Apply undergraduate level skill in research, writing, and critical thinking.

u01a1 - Project Scope

Preparation

To prepare for this assignment, first complete the required practice lab and unit discussion, as both will help you with the assignment.

Search the Internet and the Capella library to find recent articles or books on the topic of IT projects and project scope. You will need at least three articles or other resources to support your work in this assignment. You may use the resources provided in this unit, but must include resources from your own research as well.

Next, you will need to choose an organization that will be the basis for all your course assignments. You should choose an organization you are currently working for, have worked for in the past, or one you would like to work for in the future. The organization should be relevant to your professional goals and have a global presence, as this will make your assignments more meaningful for you.

Instructions

Because the enterprise network is the communications backbone of an organization, it is important to carefully consider all aspects. Completing each step of a project such as the one in this course, will help you explore established protocols and strategies to design a secure, reliable enterprise network.

Prepare a project scope document in which you:

- Describe the organization. Be sure you provide enough information to support the project scope.
- Describe the project and project goals.
- Explain the role of each of the main stakeholders in the project.
- Create a high-level requirements network diagram or map that shows geographic locations, organizational functional areas, and network connections between locations.
 - Visio or a graphical drawing tool of your choice may be used. **Note:** Microsoft Visio is provided for your use via MS Imagine. See the Microsoft Software section in the Unit 1 studies for more information.
 - Export the diagram to an image and include in the Word document, or copy and paste into Word document.
- Develop a project timeline/outline that aligns with the network engineering life cycle stages.
- Given the global nature of the organization, describe the international and cultural concerns that must be addressed.

The assignment you submit should be approximately 4–5 pages in length, including the diagram or map you create. Be sure your document is professionally written, free of errors, and that your citations and references follow APA guidelines.

Additional Requirements

- **Length:** 4–5 double-spaced pages, not including a title page and references page.
- **Font and font size:** Times New Roman, 12-point font.

- **References:** At least three recent, relevant, and professional resources.

Unit 2 >> WAN Network Design

Introduction

This week you will:

- Study WAN Network Design and the various elements associated with it.
- Participate in one discussion.
- Complete a series of practice labs.
- Complete and submit your second assignment, due by 11:59 p.m. Central time, Sunday.

In today's global business environment, organizations are very dependent on their networks to keep widely dispersed internal and external customers connected. The key to this connection is a wide area network (WAN) design that fully supports the organization's existing needs and allows for future capacity planning and management.

Learning Activities

u02v1 - Hands-On Lab: Configure IPv4 and IPv6 Addressing

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u02v2 - Hands-On Lab: Install Hyper-V

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part

of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u02v3 - Hands-On Lab: Routing Concepts and Protocols

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u02v4 - Hands-On Lab: Install and Configure DHCP and DNS Servers

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u02d1 - Network Challenges

Discussion Resources

The following resources may be useful in completing this discussion and the course assignments.

- Meyers, M. (2018). *CompTIA network+ certification all-in-one exam guide: Exam N10-007* (7th ed.). New York, NY: McGraw Hill Education.
 - Chapter 2, “Cabling and Topologies,” pages 45–50.

- Chapter 6, “TCP/IP Basics,” pages 164–197.
 - Chapter 7, “Routing,” pages 217–219.
 - Chapter 8, “TCP/IP Applications,” pages 263–278.
 - Chapter 9, “Network Naming,” pages 308–343.
 - Chapter 11, “Advanced Networking Devices,” pages 389–407.
 - Chapter 12, “IPv6,” pages 424–431.
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Ports and protocols and the OSI model \[Tutorial\]](#).
 - Skillsoft. (n.d.). [CompTIA Network+ N10-007: Networking devices \[Tutorial\]](#).

Discussion Instructions

For this discussion, consider the following scenario:

Ken has been hired as the project manager at a local hospital and is in charge of implementing a new electronic health record system, which was designed in India. He discovers that the network staff woefully underestimated the impact of the application on the available bandwidth of the network. The poor response time of the application now threatens the user acceptance of the software. Ken must present a change request to senior management for a network upgrade that will put the project over budget and behind schedule by thousands of dollars and several weeks.

To further complicate the matter, the network manager is a member of senior management and is expected to argue vociferously that his staff was not properly informed, thus not in a position to provide accurate information to the project team.

Use the resources provided as well as your own research to support your discussion of the following:

- Describe some techniques and strategies that can be used to maintain high availability on a network.
- Offer some suggestions on how Ken can help senior management accept the need for additional funding without fracturing his relationship with the network manager.
- Explain how you would handle cultural issues with the overseas developers of the application.

Be sure you correctly cite any references you use according to APA guidelines.

Response Guidelines

After posting your discussion, respond to at least two other learners. Comment on the similarities and differences of your suggestions and how you would handle the cultural issues. Are there any flaws in the ideas presented?

Course Resources

Undergraduate Discussion Participation Scoring Guide

u02d1 - Learning Components

- Define business problems.
- Describe a strategy for maintaining the security of a wireless infrastructure.
- Apply routing and switching strategies within a network design.

u02a1 - WAN Network Design

Preparation

Before you begin this assignment, please complete the practice labs and discussion for this unit.

Then use the Internet and the Capella library to research the assignment topic. You will need at least three recent, relevant, professional resources to support your work.

Instructions

WAN is the core component to your network, as it encompasses all your local area networks (LANs) and all needed network infrastructures such as routers, switches, and servers.

For this assignment, prepare a project document that includes the following:

- Create a diagram that will:
 - Display the basic topology for your selected organization. Be sure you include routers, switches, and all of the basic network connection hardware.
 - Diagram your IP addresses. Calculate and add your IP ranges and subnets into your diagram. **Note:** Microsoft Visio is provided for your use via MS Imagine. See the Microsoft Software section in the Unit 1 studies for more information.
- Explain the switching and routing choices, topology choice, and overall wired infrastructure decisions.
- Explain the strategy you used for assigning IP addresses for the organization. Why did you choose the IP addresses that you did?
- Describe IP addressing strategies for maintaining privacy on a network. How do your strategies maintain privacy on your network?
- Describe at least three networks addressing or topology standards that influenced your network design.

The assignment you submit should be approximately 3–4 pages in length, including the diagram you create. Be sure your document is professionally written, free of errors, and that your citations and references follow APA guidelines.

Additional Requirements

- **Length:** 3–4 double-spaced pages, not including a title page and references page.
- **Font and font size:** Times New Roman, 12-point font.

- **References:** At least three recent, relevant, and professional resources.

Unit 3 >> Wireless Network Design

Introduction

This week you will:

- Examine wireless and mobile networking and cloud computing.
- Participate in one discussion.
- Complete a series of practice labs.
- Complete and submit your third assignment, due by 11:59 p.m. Central time, Sunday.

Developing a new wireless network design requires thoughtful consideration of a number of factors such as physical size of the location, how the network will be used, how many people will be using it, the types of devices that will be accessing the network, and so on. Careful planning before implementation, will help you design a wireless network that will meet the needs of your organization.

Learning Activities

u03v1 - Hands-On Lab: VPN Technologies and Services

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u03v2 - Hands-On Lab: Configure Switching Features

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part

of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u03v3 - Hands-On Lab: Configure and Verify Switch Security Features

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u03v4 - Hands-On Lab: Configure Switching Concepts

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u03v5 - Hands-On Lab: Controlling VPN Access With RADIUS

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

Discussion Resources

The following resources may be useful in completing this discussion and the course assignments

- Meyers, M. (2018). *CompTIA network+ certification all-in-one exam guide: Exam N10-007* (7th ed.). New York, NY: McGraw Hill Education.
 - Chapter 14, “Wireless Networking,” pages 497–547.
 - Chapter 15, “Virtualization and Cloud Computing,” pages 551–569.
 - Chapter 16, “Mobile Networking,” pages 579–580 and 591–594.
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Network storage, virtualization, and WAN technologies \[Tutorial\]](#).

Discussion Instructions

Use the resources provided and your own research to complete this discussion.

While mapping data for the wireless network architecture in a large mature organization, you encounter duplication of effort and redundant data.

- Discuss whether the redundant data should be addressed prior to beginning the wireless network architecture project, in coordination with the network architecture project, or after the project has been completed.
- Provide a supported rationale for your choice.
- What strategy would you use to maintain security of data within a wireless infrastructure? Why?

Be sure you correctly cite any references you use according to APA guidelines.

Response Guidelines

After posting your discussion, respond to at least two other learners. Do you agree with their decisions of when to address the redundant data? Have they offered valid supporting evidence? Comment on their strategies for maintaining security of data within a wireless infrastructure.

Course Resources

Undergraduate Discussion Participation Scoring Guide

u03d1 - Learning Components

- Describe a strategy for maintaining the security of a wireless infrastructure.
- Describe wireless standards.
- Identify IP addressing strategies.
- Apply undergraduate level skill in research, writing, and critical thinking.

u03a1 - Wireless Network Design

Preparation

Before you begin this assignment, please complete the practice labs and the discussion for this unit.

Then use the Internet and the Capella library to research the assignment topic. You will need at least three recent, relevant, professional resources to support your work.

Instructions

For this assignment, you will create a wireless network design strategy. The wireless network strategy is the overall umbrella encompassing wireless access controllers (WACs) and wireless access points (APs). The wireless service provider can play a role by connecting these, thereby providing connectivity to the entire network.

Start with the network diagram you created in the Unit 2 assignment. You may want to make some changes depending on the feedback you received from your instructor. Using this diagram, complete the following:

- Add a wireless infrastructure to your network diagram.
 - Include your IP addresses. Calculate and add your IP ranges and subnets into your diagram.
 - Use Visio or a graphical drawing tool of your choice. **Note:** Microsoft Visio is provided for your use via MS Imagine. See the Microsoft Software section in the Unit 1 studies for more information.
 - Export your diagram to an image and include in the Word document, or copy and paste the diagram into the Word document.
- Explain hardware placement, hardware device choices, topology choice, and overall wireless infrastructure decisions.
- Explain your IP addressing strategy.
- Describe at least three wireless standards that influenced your network structure.

The assignment you submit should be approximately 3–4 pages in length, including the diagram you create. Be sure your document is professionally written, free of errors, and that your citations and references follow APA guidelines.

Additional Requirements

- **Length:** 3–4 double-spaced pages, not including a title page and references page.
- **Font and font size:** Times New Roman, 12-point font.
- **References:** At least three recent, relevant, and professional resources.

Unit 4 >> Network Management

Introduction

This week you will:

- Examine important topics such as security, managing risk, and remote connectivity.
- Participate in one discussion.
- Complete a series of practice labs.
- Complete and submit your fourth assignment, due by 11:59 p.m. Central time, Sunday.

Network management is a broad concept that covers a wide range of areas from procedures to operations to maintenance. Essentially, it involves the methods, processes, and tools necessary to track, monitor, operate, and maintain the enterprise network systems.

Learning Activities

u04v1 - Hands-On Lab: Network Management: Diagrams, Symbols, and Documentation

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u04v2 - Hands-On Lab: Troubleshoot Internet Connection and DNS Issues

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u04v3 - Hands-On Lab: Troubleshoot Network Connectivity With Network Utilities

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u04v4 - Hands-On Lab: Configure E-Mail Client Protocols

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u04v5 - Hands-On Lab: Install and Configure SNMP

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u04d1 - Network Management

Discussion Resources

The following resources may be useful in completing this discussion and the course assignments

- Meyers, M. (2018). *CompTIA network+ certification all-in-one exam guide: Exam N10-007* (7th ed.). New York, NY: McGraw Hill Education.
 - Chapter 10, “Securing TCP/IP,” pages 349–381.
 - Chapter 13, “Remote Connectivity,” pages 448–494.
 - Chapter 18, “Managing Risk,” pages 641–656.
 - Chapter 19, “Protecting Your Network,” pages 655–695.
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Security devices, wireless security, and access control \[Tutorial\]](#).
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Policies and best practices \[Tutorial\]](#).
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Network devices and device hardening \[Tutorial\]](#).

Discussion Instructions

For this discussion, consider the following scenario:

The CIO of the organization for which you are developing your project network decides after seeing the data flow maps you created that the timing is right to alter their relationship with their primary supplier. Currently, inventory requirements are maintained by the organization and orders are placed over the phone. The CIO would like to give the supplier a direct connection into the organization's inventory system and make them responsible for maintaining stock.

Use the resources provided as well as your own research to support your discussion of the following:

- Explain the pros and cons of making this kind of change as part of the development of a secure network infrastructure. How would you support or dispute this request for change in the project scope, and address the ethical standards and implications of this decision?
- Describe 2–3 enterprise network management tools (for example, HP OpenView, Entuity) that you have used. Would you recommend using them to manage the network for the vendor relationship?

Be sure you correctly cite any references you use according to APA guidelines.

Response Guidelines

After posting your discussion, respond to at least two other learners. Comment on their list of pros and cons and the strength of their argument either for or against the change. Have they listed enterprise network management tools that you did not?

Course Resources

Undergraduate Discussion Participation Scoring Guide

u04d1 - Learning Components

- Describe the role of network management.
- Identify tools for network management.
- Explain network management strategies.
- Apply knowledge of APA citation style.

u04a1 - Network Management Strategy

Preparation

Before you begin this assignment, please complete the practice labs and the discussion for this unit. **Note:** Microsoft Visio is provided for your use via MS Imagine. See the Microsoft Software section in the Unit 1 studies for more information.

Then use the Internet and the Capella library to research the assignment topic. You will need at least three recent, relevant, professional resources to support your work.

Instructions

For this assignment, you will develop a network management strategy. Such a strategy can add value to your network by improving and updating your monitoring tools and ensuring that you are up-to-date with all of the processes and procedures needed to quantify risks to your network.

Prepare a 3–4 page network management strategy that you could present to the CIO of the organization you have selected. Your strategy should support the design of your network that you completed in the previous assignments.

Within your network management strategy:

- Explain the role of network management.
- Describe at least three tools used for network management.
- Describe at least three tools used to monitor network performance.
- Explain the role that remote access plays in managing a network.

- Propose a strategy for managing the organization's network infrastructure.

The assignment you submit should be approximately 3–4 pages in length, including the diagram you create. Be sure your document is professionally written, free of errors, and that your citations and references follow APA guidelines.

Additional Requirements

- **Length:** 3–4 double-spaced pages, not including a title page and references page.
- **Font and font size:** Times New Roman, 12-point font.
- **References:** At least three recent, relevant, and professional resources.

Unit 5 >> Network Optimization

Introduction

This week you will:

- Learn strategies for network troubleshooting.
- Participate in one discussion.
- Complete a series of practice labs.
- Complete and submit your course project, due by 6:00 p.m. Central time, **Friday**.

Because information technology continues to expand exponentially, network optimization is critical for making sure that businesses can continue to operate effectively and is an important component of effective network management. Without network optimization in place, growth can negatively affect speed, reliability, and security; thereby reducing an organization's efficiency and productivity.

Learning Activities

u05d1 - Troubleshooting

Discussion Resources

The following resources may be useful in completing this discussion and the course assignments.

- Meyers, M. (2018). *CompTIA network+ certification all-in-one exam guide: Exam N10-007* (7th ed.). New York, NY: McGraw Hill Education.
 - Chapter 20, "Networking Monitoring," pages 699–717.

- Chapter 21, “Network Troubleshooting,” pages 722–744.
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Troubleshooting connectivity and performance issues \[Tutorial\]](#).
- Skillsoft. (n.d.). [CompTIA Network+ N10-007: Troubleshooting methodologies and tools \[Tutorial\]](#).

Discussion Instructions

This discussion is based on the following scenario:

Suppose you are monitoring the network for the organization you selected for the course project when you see a problem with one of the devices.

- Explain the troubleshooting process you would follow to resolve the issue.

Be sure you correctly cite any references you use according to APA guidelines.

Response Guidelines

After posting your discussion, respond to at least two other learners. Comment on the similarities and differences in the processes you each chose. What challenge does each process pose in resolving the issue?

Course Resources

Undergraduate Discussion Participation Scoring Guide

u05d1 - Learning Components

- Define business problems.
- Describe a strategy for maintaining the security of a wireless infrastructure.
- Determine the requirements for a network architecture design.
- Apply undergraduate level skill in research, writing, and critical thinking.

u05v1 - Hands-On Lab: Install OS Updates and Configure Security Policy

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u05v2 - Hands-On Lab: Common Network Vulnerabilities

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u05v3 - Hands-On Lab: Implement a Host-Based Firewall

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u05v4 - Hands-On Lab: Install and Configure Network Load Balancing

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u05v5 - Hands-On Lab: Assess Network Vulnerabilities and Threats Using MBSA

Read the requirements for all related course activities in this unit before completing this lab. Follow the lab instructions carefully, as you may be required to take screen captures or produce lab related documents as part of graded activities. Take notes as needed as you complete the lab to help you meet all requirements.

Click the linked title heading above to access the hands-on lab.

u05a1 - Enterprise Network Optimization Project

Preparation

To prepare for this final assignment, please complete the practice labs and the discussion for this unit. **Note:** Microsoft Visio is provided for your use via MS Imagine. See the Microsoft Software section in the Unit 1 studies for more information.

Look in the Capella library and on the Internet for articles and information on the topics of availability and load balancing. You will need at least three recent, professional resources to support your work on the final piece of the course project.

Review the feedback you received on the previous four assignments and revise your work accordingly.

Instructions

For your final project submission, you will use your work from the previous four assignments, along with the final piece from your work in this unit to produce a cohesive plan for enterprise network optimization. Organize your work logically, as if you would actually present it to senior IT leadership in the organization you selected.

Use the following structure to organize and complete your project:

- Title page.
- Executive summary (approximately one page that provides a high-level overview of what is in the document).
- Body of the document:
 - Your network diagram, updated to include the following:
 - Apply basic load-balancing techniques as an effort to ensure network availability.
 - Analyze the technology presented in your diagram (you may use the information you provided in previous assignments, but do not simply cut and paste).
 - Explain your decisions for hardware placement, hardware devices, topology, and overall infrastructure design.
 - Support your analysis with recent, relevant resources.

- Explain the techniques and strategies for maintaining high availability on the network.
- Explain your load balancing strategy.
- Explain how your network design addresses globalization. How can you be sure it will succeed internationally?
- References page.
 - Include at least six recent, relevant professional references.
 - Format references according to APA guidelines.

Your final project should be approximately 6–8 double-spaced pages, not including the title page and references page. Be sure it is professionally written, free of errors, and uses Times New Roman, 12-point font.