Southern New Hampshire University

IT 340 Final Project Guidelines and Rubric

Overview

A computer network is the foundation of every organization's information technology (IT) infrastructure. Computing networks provide the backbone and framework for running business applications, sharing content, communication, and collaboration. In your assessment in this course you will take on the role of a junior network administrator, with responsibility for managing, supporting, and recommending networking solutions. Within this role, you will create a report for the senior administrators, based on the scenario provided in which the organization is looking to expand to a new location. While writing your report you will apply networking concepts, fundamentals, and troubleshooting skills in developing recommendations to a real-world scenario. This report provides an opportunity for you to illustrate critical thinking in evaluating and solving networking business requirements that would assist in meeting organizational goals and objectives.

The Project in Context: Course Learning Objectives and the Newton Ad Agency: There are two key contexts that should help to guide your work in this project. The first is the function of this project in the organizational culture and business drivers of your imagined employer, Newton Ad Agency. Be sure to carefully review the scenario below to help you formulate your recommendations.

The second key context is your learning in the whole of this course. This project has been selected and developed in part because it allows you to directly address the following course outcomes:

- Analyze standard network designs and infrastructures for informing optimal support practices
- Explain troubleshooting approaches to network problems for informing potential solutions to network errors and ensuring rapid resolution
- Explain network technology suggestions based on how they support business goals and objectives
- Apply networking concepts to real-world situations for informing management and upgrade suggestions

As you can see, these outcomes ask you to relate your scholarly engagement with networking theory and practice to specific business cases. In your final project, this connection comes to life in your recommendations for networking a new office for Newton Ad Agency.

You will work toward a successful final project throughout the course, most notably through the completion of **two milestones,** which will be submitted at various points throughout the course to scaffold learning and ensure quality final submissions. In Milestone One, due in **Module Three**, you will draft the introduction of the project and the first section of the body. This milestone will address key considerations for network design and local area network (LAN) topology. In Milestone Two, due in **Module Five**, you will draft additional sections of the project. These sections are on the selection of an internet service provider and networking considerations that include hardware and software selection, printer configuration, and bandwidth. The final project itself will include revised versions of your work on these milestones, as well as additional work on network errors and a conclusion to the project. The final project is due in **Module Seven**.

Scenario: The Newton Ad Agency: Take a close-up look at the Newton Ad Agency scenario for this project, which will also be used throughout the course.

The Newton Ad Agency is an advertising firm with offices in Austin, Texas; Minneapolis, Minnesota; and New York City, New York. The offices in Austin include a headquarters and a satellite office located two miles away in a rural area.

The Austin headquarters is home to the executive team and 750 employees. The headquarters also stores the corporate data and is the corporate internet backbone. It hosts the IT department that centrally manages all LAN services, including the wireless LAN. The IT department also manages the wide area network (WAN) that connects all of the offices via site-to-site virtual private network (VPN) tunnels.

The Minneapolis and New York offices host about 200 employees each. Approximately 50% of these employees are mobile (i.e., travelling more than 80% of the time). The New York office focuses on producing and disseminating large advertising media content to clients. For this reason, the New York office hosts the corporate media and web servers. The rural satellite office in Austin focuses on billboard ad designs and is connected to the corporate WAN with a wireless point-to-point bridge to the Austin headquarters data center. The rural office is home to 100 employees.

To hire and retain the best talents, Newton Ad Agency allows employees to work from home. This removes the constraint that employees have to live within commuting distance from the firm's offices. Remote and mobile employees are provided access to the corporate network via a VPN client. The VPN client requires employees to have access to reliable internet services to allow for effective collaboration across teams, and for access to media content. The company provides all employees with a laptop with full disk encryption, data loss prevention (DLP), and antivirus software. The IT department manages all corporate laptops and has the ability to log into all systems for support. This means that all laptops are centrally managed by the one IT department.

Due to an increase in opportunities for expansion to new markets, Newton has embarked on an initiative to hire and train new college graduates to support the company's Vision 2020 program. Vision 2020 focuses on global expansion. The initiative is to hire graduates into the marketing, finance, and IT departments.

Final Project: New Location Network: You were hired as part of the Vision 2020 program and have been working at Newton for some time now. You have spent a considerable portion of your time troubleshooting and analyzing the organization's computer network to keep it running smoothly. Your direct supervisor and lead network administrator have been very impressed with your skills and fast learning abilities. In order to determine if you are ready to take on more responsibility, you have been asked for your input in regard to the new office location setup project.

Newton is considering adding a new office and is exploring potential locations in Tacoma, Washington; Rochester, New York; or Fayetteville, North Carolina. Your task is to choose **one** of the possible locations and deliver a report to the team with key considerations and recommendations for the setup of the network infrastructure at the new office. This office will be home to 50 employees, including the new executive vice president of sales and marketing. All the possible sites have offices located on the third floor of an office building with access to fiber, cable, and T1 internet service providers. In addition to the standard

network, the site must support live video teleconferencing calls with employees based at the other sites, as well as reliably send print jobs to billboard printers located in the satellite office in Austin.

Prompt

How would you approach setting up the network at the location you have selected? What considerations are key in informing the systems and resources necessary to meet the organization's needs and support the business goals and objectives?

Specifically, the following **critical elements** must be addressed:

I.   **Introduction**: Summarize the key considerations of the project, being sure to identify your chosen location. For example, what are the "must haves?" What are the constraints?

II.   **LAN Topology**
   A. Describe possible **LAN topologies** that could be used at the new location.
   B. Compare the identified LAN topology possibilities based on their relative **strengths and weaknesses** in regard to support practices.
   C. Based on your comparison, determine the appropriate LAN topology for this location to allow for **optimal support** practices. Be sure to explain your reasoning.

III. **Internet Service Provider** (Note: This section is based on research into actual providers at the office location that you select.)
   A. Explain **key considerations** for identifying an internet service provider for the new location.
   B. Compare at least two internet providers available in the location you have chosen in regard to **speed, security, and reliability**. Be sure to address how these specifics would impact business goals and objectives.
   C. Based on your analysis, determine the appropriate internet provider for this location to meet the **business goals and objectives**. Be sure to explain your reasoning.

IV.   **Additional Considerations**: In this section, you will address the accompanying considerations for the network based on the needs of the new office location.
   A. Make appropriate **hardware and software** recommendations to meet the needs of the new office location. Be sure to explain your reasoning.
   B. Make appropriate **printer configuration** recommendations to meet the distance printing needs of the new office location. Be sure to explain your reasoning.
   C. Make appropriate **bandwidth** and device recommendations to meet the teleconferencing needs of the new office location. Be sure to explain your reasoning.

V.   **Potential Errors**: In this section, you will discuss common network errors and how your recommendations will minimize and address these issues.
   A. Based on your previous recommendations, describe common **network errors** that the new location may encounter.
   B. Describe effective **troubleshooting** approaches to the errors you identified.
   C. Explain how the approaches you described would ensure **rapid resolution** of the errors. Be sure your response is specific to the business location.

VI.   **Conclusion**: Summarize your recommendations for the new location, being sure to support your suggestions using networking concepts.

As you develop your work, continue to look back on and consider each of these key elements. Remember, writing is a process that unfolds over time, and typically requires reconsideration and revision of key element.

Milestones

<u>Milestone One:</u> *Final Project Sections I and II*
In **Module Three**, you will submit sections one and two of the final project. Section one is the introduction section. Section two covers LAN topography. **This milestone will be graded with the Milestone One Rubric.**

<u>Milestone Two:</u> *Final Project Sections III and IV*
In **Module Five**, you will submit sections three and four of the final project. Section three focuses on the selection of an internet service provider. Section four focuses on hardware and software recommendations and printer configurations and bandwidth. **This milestone will be graded with the Milestone Two Rubric.**

<u>Final Submission:</u> *Networking Recommendations for Newton Ad Agency*
In **Module Seven**, you will submit your final project. It should be a complete, polished artifact containing **all** of the critical elements of the final project. It should reflect the incorporation of feedback gained throughout the course. **This submission will be graded with the Final Project Rubric.**

Rubric

Guidelines for Submission: Your report must be 3 to 5 pages in length. Use double-spacing, 12-point Times New Roman font, one-inch margins, and APA formatting.

Instructor Feedback: This activity uses an integrated rubric in Blackboard. Students can view instructor feedback in the Grade Center. For more information, review these instructions.

Critical Elements	Exemplary (100%)	Proficient (85%)	Needs Improvement (55%)	Not Evident (0%)	Value
Introduction	Meets "Proficient" criteria and summary demonstrates a complex grasp of the considerations necessary when adding to a network	Summarizes the key considerations of the project and identifies a new location	Summarizes the key considerations of the project and identifies a new location, but summary is cursory or inappropriate	Does not summarize the key considerations of the project	6

LAN Topology: LAN Topologies	Meets "Proficient" criteria and description demonstrates a nuanced understanding of network infrastructures	Describes possible LAN topologies that could be used at the new location	Describes possible LAN topologies that could be used at the new location, but descriptions is cursory or contains inaccuracies	Does not describe possible LAN topologies	8
LAN Topology: Strengths and Weaknesses	Meets "Proficient" criteria and comparison demonstrates a complex grasp of the differences between LAN topologies	Compares identified LAN topology possibilities based on relative strengths and weaknesses in regard to support practices	Compares identified LAN topology possibilities based on relative strengths and weaknesses, but comparison is illogical, lacking in detail, or contains inaccuracies	Does not compare identified LAN topology possibilities	8
LAN Topology: Optimal Support	Meets "Proficient" criteria and explanation demonstrates insightful awareness of the connection between network topologies and support practices	Determines the appropriate LAN topology for the location to allow for optimal support practices and explains reasoning	Determines LAN topology for the location, but topology is not appropriate or explanation contains gaps in logic or accuracy	Does not determine the LAN topology for the new location	8
Internet Service Provider: Key Considerations	Meets "Proficient" criteria and explanation demonstrates an insightful awareness of the considerations necessary to meet the needs of the new location	Explains key considerations for identifying an internet service provider for the new location	Explains considerations for identifying an internet service provider for the new location, but explanation is cursory, illogical, or contains inaccuracies	Does not explain key considerations for identifying an internet service provider for the new location	6
Internet Service Provider: Speed, Security, and Reliability	Meets "Proficient" criteria and comparison demonstrates an insightful awareness of how speed, security, and reliability relate to business goals and objectives	Compares at least two internet providers available in the location chosen in regard to speed, security, and reliability, addressing the impact on business goals and objectives	Compares at least two internet providers, but comparison is cursory, illogical, or contains inaccuracies	Does not compare at least two internet providers	6
Internet Service Provider: Business Goals and Objectives	Meets "Proficient" criteria and explanation demonstrates an insightful awareness of the connection between internet service providers and business goals and objectives	Determines an appropriate internet provider for the location to meet the business goals and objectives and explains reasoning	Determines an internet provider for the location, but provider is not appropriate or explanation contains gaps in logic or accuracy	Does not determine internet provider for location	6

Additional Considerations: Hardware and Software	Meets "Proficient" criteria and explanation demonstrates an astute ability to align hardware and software to the needs of business locations	Makes appropriate hardware and software recommendations to meet the needs of the new office location, and explains reasoning	Makes hardware and software recommendations, but hardware and software is not appropriate, or explanation contains gaps in logic or accuracy	Does not make hardware and software recommendations	6
Additional Considerations: Printer Configuration	Meets "Proficient" criteria and explanation demonstrates an astute ability to align printer configuration and the distance printing needs of the new office location	Makes appropriate printer configuration recommendations to meet the distance printing needs of the new office location, and explains reasoning	Makes printer configuration recommendations, but printer configuration is not appropriate, or explanation contains gaps in logic or accuracy	Does not make printer configuration recommendations	6
Additional Considerations: Bandwidth	Meets "Proficient" criteria and explanation demonstrates an astute ability to align bandwidth and devices to the teleconferencing needs of the new office location	Makes appropriate bandwidth and device recommendations to meet the teleconferencing needs of the new office location, and explains reasoning	Makes bandwidth and device recommendations, but bandwidth or devices are not appropriate, or explanation contains gaps in logic or accuracy	Does not make bandwidth and device recommendations	6
Potential Errors: Network Errors	Meets "Proficient" criteria and description demonstrates an insightful awareness of common network errors	Describes common network errors that the new location may encounter based on previous recommendations	Describes common network errors that the new location may encounter, but description is cursory or contains inaccuracies	Does not describe common network errors	8
Potential Errors: Troubleshooting	Meets "Proficient" criteria and approaches demonstrate a sophisticated grasp of effective troubleshooting practices	Describes effective troubleshooting approaches to identified errors	Describes troubleshooting approaches to identified errors, but description is cursory or approaches are not effective for identified errors	Does not describe troubleshooting approaches to identified errors	8
Potential Errors: Rapid Resolution	Meets "Proficient" criteria and explanation demonstrates a nuanced understanding of how to ensure rapid resolution when troubleshooting potential errors in business networks	Explains how the described approaches would ensure rapid resolution	Explains how the described approaches would ensure rapid resolution, but explanation is inappropriate for the business location or contains inaccuracies	Does not explain how the described approaches would ensure rapid resolution	8

Conclusion	Meets "Proficient" criteria and support demonstrates a complex grasp of network concepts	Summarizes recommendations for the new location, supported with application of network concepts	Summarizes recommendations for the new location, but support is cursory, inappropriate, or illogical	Does not summarize recommendations for the new location	6
Articulation of Response	Submission is free of errors related to citations, grammar, spelling, syntax, and organization and is presented in a professional and easy to read format	Submission has no major errors related to citations, grammar, spelling, syntax, or organization	Submission has major errors related to citations, grammar, spelling, syntax, or organization that negatively impact readability and articulation of main ideas	Submission has critical errors related to citations, grammar, spelling, syntax, or organization that prevent understanding of ideas	4
				Total	**100%**