Network Upgrade for B & B Manufacturing

Matthew J Rondel

Western Governors University

Table of Contents -WORRY ABOUT THIS LATER WHEN CONTENT IS IN

A. Proposal Overview X

A.1 Problem Summary X

A.2 IT Solution X

A.3 Implementation Plan X

B. Review of Other Works and

B .1 Relation of Artifacts to Project Development X

Review of work 1 X

Review of work 2 X

Review of work 3 X

Review of work 4 X

C. Project Rationale X

D. Current Project Environment X

E. Methodology X

F. Project Goals, Objectives, and Deliverables X

F1. Goals, Objectives, and Deliverables Table X

F.2 Goals, Objectives, and Deliverables Descriptions X

G. Project Timeline with Milestones X

H. Outcome X

I. References X

Appendix A X

Title of Appendix X

Appendix B X

Title of Appendix X

Appendix C X

Title of Appendix X

Appendix D X

Title of Appendix X

Summary……………………………………….……………………………………….………………………………………….……………Done

Review of Other Work ………………….………………………………………….………….…………………………….……………………2

Changes to Project Environment ….……….……………..………………….………….…………………………….……………………2

Methodology .…………………..…………….……………………………………….………….…………………………….……………………2

Project Goals and Objectives ...……….……………………………………….………….…………………………….……………………2

Project Timeline ……….…………………….……………………………………….…………….………………………….……………………2

Unanticipated Results ….………………….……………………………………….……………………………………….……………………2

Conclusions ………….…….…………………………………….……………………………………….……………………………………………2

Project Deliverables………….………………………………………….……………………………………….…………………………………2

References ………….………………………………………….…………………………………………..…………………….……………………2

Appendix A ………….……………………………………………………………………………………………….…………………………………2

Title of Appendix A ………….………………………………………….……………………………………….…………………………………2

Appendix B ………….………………………………………...………….………………………………….…….…………………………………2

Title of Appendix B ………….………………………………………….……………………………………….…………………………………2

# Proposal Overview

B&B Manufacturing is a medium-sized company of 275 employees located in Valencia, CA. The company consists of 5 adjacent buildings including administration, assembly, manufacturing, and maintenance. Their network is a mix of multi-vendor hardware that lacks standardization, and network separation and it includes equipment that has been deemed end-of-life by the manufacturer. Since the Biden Administration has pushed to bring more manufacturing jobs back to America, the company has experienced tremendous growth. Due to this unexpected growth employees had complained about slow connections to on premise resources such as file stores and ERP systems. Along with this growth the company has also stated they want to replace an aging phone system with an IP-based one.

As a former employee turned managed service provider (MSP) I was hired to assist with documenting, proposing, standardizing, and upgrading the network infrastructure. This process included creating a network diagram of the current network infrastructure, discussing future technology with upper management and on-site suggesting future expansion such as the desired IP phone system, then proposing and installing a solution that would provide them with a secure and reliable network with room for future growth.

Phase one of the project began with interviewing the on-site IT staff and upper management to determine the needs and expectations of the network, as well as discussing future growth of the company and IP phone system requirements. While these interviews took place, notes of the existing infrastructure were taken and a site survey was preformed to confirm locations of existing equipment.

Phase two of the project consisted of determining what equipment to replace and designing the network, including the new IP address schemes DHCP polls and VLANS. Once logical design was completed a list of what equipment was needed for each building and location. Once this list was complete it was emailed to the purchasing department and the equipment was ordered.

Phase three began with receiving, verifying, and configuring the new equipment. The new equipment was powered up thoroughly tested ports protocols and services gathered from phase 1 were taken into account and access control lists were configured on the switches. Recommended Quality of Service (QOS) settings were configured on the switches for the future phone system.

Phase four was carried out then one building at a time beginning with the core of the network in Building 2’s main distribution frame (MDF) then progressing to each intermediate distribution frame (IDF) within the building. Throughout this document, the main distribution frame (MDF) refers to the central connection point for each of the buildings to the rest of the network and IDFs refer to the smaller network closets within the buildings across the corporate campus. The justification for this method was that it minimized the downtime of each of the buildings and ease problem isolation that might arise and could be addressed without affecting the company as a whole.

Phase five is when the full switchover from the old equipment to new equipment took place. Once all of the equipment was fully switched over connectively tests were performed from both MDFs and IDFs to insure links were good. After these tests were concluded the old equipment was removed from their locations and returned to the IT department for disposition. Once the equipment was returned then the IT staff was trained on how troubleshoot and networking basics.

# Review of Other Work (four needed)

Review 1

Network segmentation improves security by controlling the flow of data between different networks. This is most commonly accomplished with virtual local area networks (VLANs). They should be implemented within all networks including home, business, and internet. Effective network security requires protection of wired and wireless networks with firewalls, anti-malware software, intrusion detection systems, access control, and more. Trend Micro, a global cybersecurity recommends (Trend Micro, 2023)

Review 2

Technology standardization is the process of positioning your applications and IT infrastructure to a baseline of standards that fit your business strategy, security policies, and goals. Standardized technology reduces complexity and offers benefits such as cost savings through economies of scale, ease of integration, improved efficiency, and better IT support. It also simplifies your management of IT.

Not every company’s IT needs look the same. Some companies have internal IT departments, some have managed IT service providers, or some even have a combination of both. No matter how your IT department is structured, having the most standardized systems allows for your IT providers to work quickly and efficiently. It ultimately creates a better work relationship with your IT provider. It ends up being a win- win for everyone. Your IT provider can address and fix problems quicker and give you the results you desire. (Importance of IT Standardization Biz Technology Solutions, 2023).

Some people think it’s risky to work with one vendor, but we felt confident moving toward our single-vendor integration with Cisco. Cisco offers a wide range of high-quality solutions with high interoperability, we can get support in every country where we operate, and they offer transparency of documentation and certification. They are leaders in networking, and they are constantly working to improve solution functionality. (Boksan, 2022)

Review 3

Flat networks provide fast and reliable connectivity for all connected devices, and security efforts generally concentrate on isolating internal networks from external networks. This traditional approach, however, is no longer satisfactory to secure modern enterprises' complex web of interconnected systems and organizations. Flat network architecture has led to high-profile cybersecurity incidents like the WannaCry ransomware attack and breaches at large financial services firms.

The National Institute of Standards and Technology (NIST) defines network segmentation as "splitting a network into sub-networks...by creating separate areas on the network which are protected...to reject unnecessary traffic. Network segmentation minimizes the harm of malware and other threats by isolating it to a limited part of the network."

Network segmentation is a powerful but underutilized security measure, and it is one of the cornerstones of a successful information security program. It directly addresses the reality of today's threat landscape--that you cannot prevent a cyber breach, but you can isolate one. (Kambic and Fricke, 2020)

Review 4

Qos

Incorporate this here:

https://corescholar.libraries.wright.edu/infosys\_scm/34/

Another important aspect to incorporate into the design is QoS or Quality of Service. Network switches normally all traffic the same and with voice traffic, it is very sensitive to delay, jitter and packet loss.

# Current Project Environment

B&B manufacturing had a very fundamental setup. Within Building 2, in the MDF there were 3 NETGEAR unmanaged 24 port JFS524 10/100 switches serving as the “core network”. An unmanaged switch comes with a fixed configuration and does not allow any changes to its configuration.

Attached to one of these switches was a Linksys SRW2024 power-over-Ethernet (POE) switch connected to the IP-cameras. This same switch had a cat 5 cable going underground via a conduit to building 3. On another of the NETGEAR switches there was a post-it note taped on both ends labeled “to building rear IDF”. On the lowest of the NETGEAR stack, a SonicWALL Firewall was found connected to the internet service provider’s modem. All of these connections were connected via 100 Mbps (megabits per second).

In the rear of building 2 found in the IDF there were two more NETGEAR switches connected together with category 5 cable and another Linksys POE switch for cameras. One of these NETGEAR switches had a 100 Mbps (megabits per second) cat 5 cables going underground through the conduit to Building 1. In Building 1’s MDF there were 3 more NETGEAR switches along with 1 of the same Linksys POE switches. One of the NETGEAR switches went out to two IDFs and another went through the underground conduit to building 4 and then to two IDFs within its building. Each IDF contained the same number of switches found in the MDF. In building 4 was a direct copy of building 1 with the same number of devices in each IDF and MDFs. Exploring Building 3, 3 more NETGEAR and 1 Linksys POE were found along with a conduit to Building 5. Once again building 5 contained the same quantity and manufacturer of switches all connected via the same speed of 100 Mbps. Although this equipment was still functioning, the network was fully saturated and running as capacity and could not keep up with the volume of devices and growth over the last few years.

The current network design was a flat network with no IP segmentation or security. The problem with this setup is that if a broadcast packet is sent out from an end device in building 1 then a broadcast packet is sent to every building and network device connected to the network. One of the issues in the past the On-site IT staff mentioned is that they had experienced a network loop and had crashed the company network and taken it down for a few days. A network loop is caused when a patch cable gets plugged in from one network port directly to another. This causes the packets to reflect back to the source in which locks up the switch.

The new equipment installed in building 2 consists of 5 Cisco POE switches configured in a stack configuration. Some network switches have the ability to be connected to other switches and operate together as a single unit. These configurations are called stacks. Stacking shows the characteristics and functionality of a single switch, while adding an increased number of ports. Stacks quickly increase the capacity of a network. (Cisco Business: Glossary of New Terms, 2020)

The Proposal Overview section (suggested length of 2–4 pages) introduces the problem and overviews the solution. It contains the "road map" for the rest of the paper. First, describe the problem the project addresses and then provide an overview of the project and the paper's organization. Finally, summarize the capstone's highlights. Include the following in your summary:

The proposed

# Problem Summary

B and B Manufacturing has seen rapid employment growth and because of this the network has become strained and users have complained about network slowness. Prior to the company’s growth B and B’s network has not seen any changes for over 13 years. When interviewing the stakeholders it was revealed that they had been wanting to upgrade their aging phone system with an IP-based one but due to budgetary reasons only the network will be upgraded at this time.

#Summaries of the problem should include the context in which this problem exists. Summarize what will and will not be included in the project. Provide sufficient background information so that the reader can appreciate the need for a solution and the approach taken in the project.

# IT Solution

#Describe the proposed IT solution to the problem. Identify the relationship between the problem and the proposed solution.

During the meeting with stakeholders it was proposed, once an assessment was taken place, to replace all Ethernet-connected switches with redundant fiber-connected connections between buildings for the backbone with all endpoints like computers and printers with new category 6 cable. For the core network and each point joining between the buildings the switches would be stacked for redundancy.

Each switch will be replaced with Cisco Catalyst C9300X-48HX 48 port POE switches this will provide enough ports for both cameras and computer printers and also provide adequate power to the cameras and eliminate the need for a separate set of switches for a specific function. Between each building and each IDF and MDF reduntanct fiber connections configured as EtherChannel ports

for similar devices and groups such as servers, IP-based cameras, shops, guests, IT management and future IP-based phones. Per Cisco’s best practices article “Create a “Dead End” VLAN for Unused Ports”(Cisco, 2020) recommendation the default VLAN would be changed and a “dead-end” VLAN would be created to place unused ports in until they are needed. Access control lists (ACLs) would be created as well to either permit or deny access to resources such as printers, servers or devices with confidential information.

After the information was gathered for the physical and logical design of the new network it was time to look into prioritizing and routing traffic.

Since B and B Manufacturing had expressed interest in upgrading to an IP-based phone system in the future it was extremely important to incorporate this into the network design. VoIP calls can be prone to jitter, latency, and packet loss issues which lead to bad audio quality, network congestion, missed or jumbled audio, and dropped calls. (United World Telecom, 2021).

# Implementation Plan

This is how it’s going to be installed? Need to add more to this

(read this for ideas: https://github.com/ashejim/C769/blob/main/resources/examples/BSCIA/example\_task2-bscia-a.pdf

)

One of the dangers of lack of network segmentation is that if a customer or supplier joins the network for a presentation any malicious software or virus that could be present on their computer could inflect the entire company. Since suppler visits were mentioned during phase one It was determined that B&B would benefit greatly by creating VLANs.

In order to determine voice call needs over a network Cisco’s white papers were consulted to better plan for VOIP integration. Voice traffic has stringent QoS requirements. If user PCs and IP phones are on the same VLAN, each tries to use the available bandwidth without considering the other device. To avoid this conflict, it is good practice to use separate VLANs for IP telephony and data traffic. (Cisco/Pearson , 2023)

After the physical design of the network was completed, it was time to design the logical layout. The original network was a flat network meaning it had no IP address security segmentation or Virtual Local Area Networks (VLANs). A VLAN is a logical group of workstations, servers, and network devices \_\_\_ definition from an article hopefully finds how VLANs help with network traffic or speed (Cisco, DATE). Authors note check out the business routers article-

After the current environment is mapped the different manufacturers will be examined and a single manufacturer will be determined. By standardizing on a single manufacturer for network equipment simples the administration and network management overhead.

# This section should contain the details of an implementation plan. First, provide details on the different phases (if applicable). Then, explain how the project will be carried out and why it will be carried out in that manner. Finally, discuss the plan for implementing the project.

A. Review of Other Works and B .1 Relation of Artifacts to Project Development

● #See Task 2 part B & B.1 and watch Review of Other Work

#This section reviews works done by a third party relevant and related to your project. Review at least four other works relating to your topic. Summarize (in satisfaction of B) online articles, videos, interviews, white papers, case studies etc., produced by industry professionals, and relate (in satisfaction of B1) each work to the proposed development of the project.

#●Any citable work produced by an industry professional is acceptable, e.g., whitepaper, online articles, manuals, videos, etc.

#●The work only needs to relate to an aspect of your project, e.g., applied technology, a methodology used, risks, benefits, costs, etc.

#Review of work 1

#Start with an overview of the article, including the work's title and an in-text citation, and summarize the major points discussed. Describe how the work relates to the proposed development of the project (in fulfillment of part B1).

#Review of work 2

#Start with an overview of the article, including the work's title and an in-text citation, and summarize the major points discussed. Describe how the work relates to the proposed development of the project (in fulfillment of part B1).

#Review of work 3

#Start with an overview of the article, including the work's title and an in-text citation, and summarize the major points discussed. Describe how the work relates to the proposed development of the project (in fulfillment of part B1).

#Review of work 4

#Start with an overview of the article, including the work's title and an in-text citation, and summarize the major points discussed. Describe how the work relates to the proposed development of the project (in fulfillment of part B1). C. Project Rationale

● View Writing the Rationale and Current Environment Sections.

#-this is based on the past, no right or wrong only the need to offer sufficient support. Usually rooted in business, technical or user needs. No right or wrong only one that makes sense

#Summaries should include the rationale for choosing this project, including what makes this problem interesting or significant. The Project Rationale section (suggested length of 1–2 pages) provides a rationale for the project. It should address the reasons for implementing the project, as described in the Proposal Overview. The rationale may include and expand on business and technical reasons to support the implementation. Justify the selection of the project.

# Current Project Environment

# View Writing the Rationale and Current Environment Sections.

# - This is based on the present. This is describing how things currently work, what’s wrong with the current system of state of affairs, then the proposed solution and how it addresses what’s wrong. Don’t assume that the reader will understand how this will fix things. Tell them how including what problems might arise with the solution and what long term impacts we might reasonably expect potential problems and expectations are an excellent thing to include.

# This section (suggested length of 2–3 pages) describes and details the current project environment. It should also address specifically how the current state will set the direction for the definition and implementation of the proposed solution. Include other details that support the description as needed to support and briefly define the project environment. Analyze the systems and describe the status of the project environment before the project begins.

# Methodology

#remove lines starting with # when done

# View Writing the Methodology, Goals, Objectives, and Deliverables Sections.

# This section (suggested length of 1–2 pages) describes the specific methodology. The methodology is the process that the project will fill when implemented. Include specific details to adequately describe the steps that will take place to execute the project entirely. Explain how your standard methodology (such as ADDIE or SDLC) will apply to the implementation of the project.

● #directly connect steps taken in your process to development phases of the standard methodology, e.g., analysis, design, etc.

As the project manager, I choose the waterfall methodology model as this is a straightforward, well-defined project management methodology suitable with a well-defined goal that will not change. The waterfall model consists of 6 phases: Requirements, system design, Implementation, Integration, and testing. Deployments of system and maintenance. This is a common model to follow with projects such as this it has clearly defined stages that begin when the preceding stage ends.

The Requirements phase of this project was satisfied by gathering relevant stakeholders from across the company. These meetings discussed the current state of the network, past issues, the issues to overcome, and a plan for the future phone system. This phase led directly into the system design phase, where based on the information gathered, a new network design was developed to include the number of switches needed, the performance of those switches, and how they will be configured.

The implementation phase began by generating a list of equipment needed from the system design phase and ordering the equipment from the company’s preferred supplier. This equipment was delivered to the receiving department in building 2 and grouped according to the installation location. Once this equipment was received and added to the IT asset inventory, it was unboxed and configured according to the destination and network best practices according to Cisco.

The Integration and Test phase began by installing the new core switch alongside the current hardware and verifying connectivity with the existing firewall and internet. Once connectivity tests were successful System Deployment phase commenced and new equipment was installed at each building’s MDF. New equipment was powered up and connected to the network backbone. Once connectivity with the core was established the endpoint devices such as printers and client computers were connected. After endpoint devices were verified, the next IDF was connected and repeated until each building was on the new network. Verification of endpoint devices included test prints, connecting to the internet, traceroute and ping, and verifying IP-cameras were recording, and shop floor terminals would connect to the MRP database.

#Once verified this brought us to the Maintenance phase of the project, which involved cable management an labeling of all cables to make future troubleshooting easier.

# Project Goals and Objectives

Goal 1: Network design and upgrade. Create a new network design and replace all obsolete and end-of-life hardware. Completing this goal entailed designing an efficient, robust network, and selecting a single hardware manufacturer for networking hardware, which was qualified by increased network throughput, stability, and ease of management. This was the project’s primary goal consisting of four supporting objectives.

Objective 1. a. – Inventory and document existing network equipment. This was mainly needed to determine the number of switches, ports and evaluate the network’s future growth. One of the main problems with the current network was that it was a “flat” network with no IP security or IP segmentation or VLANs. Therefore, the current design of the network was not needed and thus needed to be redesigned. This objective was met when an inventory of the existing network equipment was complete along with the documentation, labeling and testing of all the fiber optic cabling performed

Objective 1. b. Design new network and order hardware. The next step in this process was to create a new network design for the company. This network design was created to be secure, redundant, and adhere to industry practices. Based on the design, an equipment list was created, ordered, and received at Building 2.

Objective 1. c. Configure network switches. All network hardware was shipped to building 2. Upon arrival, all equipment was inventoried and tagged by the IT department and then configured. The equipment was then grouped by building location then powered up to verify functionality. Once the equipment was configured prior to installation they were connected and through testing was conducted.

Objective 1. d. Install network switches and perform end-to-end connectivity checks. Fortunately for B & B, the rack they had the existing equipment installed in was an oversized 52U and this allowed for the new equipment to be installed alongside the old switches. This enabled both old and new to be running in tandem and allowed the new switches to be connected to the internet. Between each building there was an old set of Ethernet cables that was marked as “do not use” and this served as an easy method through which to pull the new fiber lines through. As the new fiber was run and connected connectivity checks were completed by wired devices such as desktop computers and printers.

Objective X.a. Verify network documentation. Once the new networking equipment was installed and functioning properly, documentation on the network design along with IP and VLAN configurations were verified and stored safely.

This documentation was stored along with IP addresses, VLAN configurations, and passwords was stored in a fireproof safe in the IT department’s office.

During this project, there were two obstacles that caused the project to take longer than expected. The first problem was discovered when the fiber was installed between building 2 and 3. During this phase, it was discovered that the ground conduit had collapsed and the cable could not be pulled through. To rectify this, the concrete had to be removed, the conduit repaired, and buried back in the ground. The next issue did not affect the timeline very much as it was discovered the circuit and ISP modem had to be upgraded to support the new speeds on the inside of the company otherwise this would become a choke point in the network. This was simply a phone call to the ISP and the new hardware was sent out and an ISP technician arrived to install the new equipment during the same time the equipment was being installed throughout the switch install phase.

Unanticipated Requirements

While installing the fiber cabling backbone between buildings it was discovered over time that the underground line connecting building 2 and 3 had been crushed. Once this was discovered the conduit line had to be unburied repaired and then covered up and new cement poured. This delayed the project caused a delay in the project by 2 weeks because the cabling was over a frequently used driveway but did not cause any issues with the budget.

The unanticipated requirement was when it was discovered that the ISP modem and circuit needed to be upgraded to allow for the new bandwidth needs of the company. Since this was discovered during the beginning of the installation phase this did not affect the schedule as this upgrade took place at the same time. As for the circuit and modem upgrade, this was at no cost to the customer as this was included with the business internet plan.

Conclusions

The success of this project was determined by the positive and helpful response from the administrative and on-site IT staff. Another determining factor is that not a single network crash or slowdown – even during peak business hours- had occurred since the installation of the new equipment. Administrative staff had commented on how the network shares did not “hesitate” when opening frequently used folders like it previously did. Shop floor and tool crib attendants commented on how quicker and more responsive the MRP system felt.

#Choke point, upgrade circuit, end-to-end test

#some stuff here

Conclusions

#Add conclusions here

#Project Deliverables

#Project Deliverables mentioned here

#F. Project Goals, Objectives and Deliverables

#Goal | Supporting objectives |

#View Writing the Methodology, Goals, Objectives, and Deliverables Sections.

#In Project Goals, Objectives, and Deliverables (suggested length of 3–5 pages), provide a detailed explanation of the goals and objectives for the project and explain what the project will provide. There should be a specific identification of each goal and objective and a clear and logical description with adequate detail. Address and explain the criteria used to measure the objectives to demonstrate how each goal and objective is measured. The project will include a formal report. In addition, it will likely have a technical IT product, a user's manual, or other documentation. Deliverables should provide a detailed logical explanation of the project to substantiate the work and completion. Include the following in the description:

#F1. Goals, Objectives, and Deliverables Table

#View Writing the Methodology, Goals, Objectives, and Deliverables Sections.

Every project has one or more goals. Each goal is supported by at least one project objective. Each objective is enabled by at least one project deliverable. Fill out this or a similarly organized table:

#Goal Supporting objectives Deliverables enabling the project objectives

#1 Summarize project goal 1

#1.a. Describe project objective 1.a.

#1.a.i. Explain project deliverable 1.a.i

#1.a.ii. Explain project deliverable 1.a.ii

#1.b. Describe project objective 1.b.

#1.b.i. Explain project deliverable 1.b.i

#1.b.ii. Explain project deliverable 1.b.ii

#2 Summarize project goal 2

#2.a. Describe project objective 2.a.

#2.a.i. Explain project deliverable 2.a.i

#2.a.ii. Explain project deliverable 2.a.ii

2.b. Describe project objective 2.b.

2.b.i. Explain project deliverable 2.b.i

2.b.ii. Explain project deliverable 2.b.ii

Project Deliverables

i. Objective 1 Deliverables

1. Updated network topology diagram

2. Site map

3. Network inventory

ii. Objective 2. Deliverables:

1. Cisco 9300 Series switches

2. Stackwise cables

3. Cat 6 cabling

4. Fiber cabling

iii. Objective 3. Deliverables:

1. Configured switches, configure to work with existing wireless access points

2. RE-IP devices and new DHCP pools created

3. VLANS for departmental data security and quality of service

4. Installed cabling

iv:. Objective 4. Deliverables:

Detailed system test report

V: Objective 5. Deliverables:

1. Old switching equipment returned to IT department for disposition

2. New equipment is up and running without issue

3. IT staff is trained

h. Projected Project End Date – May 31 2023

F.2 Goals, Objectives, and Deliverables Descriptions

Describe each of the project goals. Describe each objective. Explain how the objectives support the goals and explain how the objectives will be achieved. Explain what types of deliverables the project will provide, and describe the project deliverables expected by the end of the project. Finally, define the goals, objectives, and deliverables that align with the Goals, Objectives, and Deliverables Table.

# Project Timeline with Milestones

● View Writing the Timeline and Outcomes Sections.

This section (suggested length of 1–2 pages) provides a projected timeline with milestones for the project. These may be estimates that will most likely be adjusted, as the project will often require adjustments during the development and implementation phases.

● Include a narrative describing each milestone.

● include a table (as below) with projected milestones, duration, start, and end dates. Projections should be as authentic as possible without regard to academic plans. Dates from task 2 must be in the future, and dates from task 3 must be in the past -they do not need to align.

Milestone or deliverable Duration

(hours or days) Projected start date anticipated end date

# Outcome

● View Writing the Timeline and Outcomes Sections.

This section describes the anticipated project outcomes and explains how the project's success will be measured once completed. Next, define the expected project outcomes and describe the evaluation framework to be used once the project is completed to assess the project's success and effectiveness.

# References

These are examples

Smyth, A. M., Parker, A. L., & Pease, D. L. (2002). A study of enjoyment of peas. Journal of Abnormal Eating, 8(3), 120-125. Retrieved from

http://www.articlehomepage.com/full/url/

Bernstein, M. (2002). 10 tips on writing the living Web. A List Apart: For People Who Make Websites, 149. Retrieved from http://www.alistapart.com/articles/writeliving

Bell, T., & Phillips, T. (2008, May 6). A solar flare. Science @ NASA Podcast. Podcast retrieved from http://science.nasa.gov/podcast.htm

OLPC Peru/Arahuay. (n.d.). Retrieved April 29, 2011, from the OLPC Wiki: http://wiki.laptop. org/go/OLPC\_Peru/Arahuay

Plath, S. (2000). The unabridged journals. K. V. Kukil (Ed.). New York, NY: Anchor.

● List all the outside sources that the narrative refers to in the text.

● Only list references with matching in-text citations.

● Sources and grammar are the most common reasons for rejected submission.

o Evaluators use grammarly.com. The free side of gramamrly.com has been sufficient for this project.

o We recommend using MS Word's 'reference' feature to manage citations and your reference page. Use this APA Quick Reference, follow the style of this Task 2 Proposal Example, and these formatting guidelines:

▪ For B. Other Works have at least four different works referenced using in-text citations.

▪ For every reference listed, have at least one in-text citation in APA style.

▪ Use consistent formatting.

▪ Use hanging Indent.

▪ Right-click to remove hyperlinks.

Get the best writing help from the writing experts: WGU Writing Center. You can set up an appointment or send them your document for review and suggestions.

# **My References:**

Trend Micro (2023). What are Network Security Basics?

https://www.trendmicro.com/en\_us/what-is/network-security/network-security-basics.html

Biz Technology Solutions (2023) Importance of IT Standardization - Biz Technology Solutions

https://biztechnologysolutions.com/importance-of-it-standardization/

Dan Kambic and Jason Fricke Carnegie Mellon University October 19, 2020

Network Segmentation: Concepts and Practices

https://insights.sei.cmu.edu/blog/network-segmentation-concepts-and-practices/

Making hybrid work: Unifying Infrastructure to support a new model for manufacturing

Marinel Boksan Cisco May 20, 2022

https://upshotstories.com/stories/making-hybrid-work-unifying-infrastructure-to-support-a-new-model-for-manufacturing

Not sure if I should use them:

Campus LAN and Wireless LAN Solution Design Guide – Cisco

https://www.cisco.com/c/en/us/td/docs/solutions/CVD/Campus/cisco-campus-lan-wlan-design-guide.html

Cisco Datasheet on VOIP

“IP Telephony – Best Practices Part 1” datasheet 1992-2006

https://www.cisco.com/c/dam/en\_us/about/ciscoitatwork/downloads/ciscoitatwork/pdf/IPT\_Best\_Practices\_Transcript\_1.pdf

According to the VLAN Best Practices and Security tips Guide?

https://www.cisco.com/c/en/us/support/docs/smb/routers/cisco-rv-series-small-business-routers/1778-tz-VLAN-Best-Practices-and-Security-Tips-for-Cisco-Business-Routers.html

Dell practice guide

https://infohub.delltechnologies.com/static/media/a6db0ca1-66bd-46bd-a955-8f3604395191.pdf

Cisco reasoning behind 2 tier in our case:

https://www.ciscopress.com/articles/article.asp?p=2202410

or :

https://www.cisco.com/c/en/us/td/docs/solutions/CVD/Campus/cisco-campus-lan-wlan-design-guide.html

Campus design guide:

https://www.cisco.com/c/en/us/solutions/design-zone/networking-design-guides/campus-wired-wireless.html

Best Practice Recommendations for the Catalyst 9300 (not sure if used)

https://www.cisco.com/c/en/us/support/switches/catalyst-9300-series-switches/products-installation-and-configuration-guides-list.html

VOIP jitter stuff mentioned

https://www.unitedworldtelecom.com/blog/voip-qos/

new idea

https://documentation.meraki.com/MR/Wi-Fi\_Basics\_and\_Best\_Practices/What\_is\_Jitter%3F

Stack configuration mentioned (Cisco Business: Glossary of New Terms):

https://www.cisco.com/c/en/us/support/docs/smb/switches/Cisco-Business-Switching/kmgmt-2331-glossary-of-non-bias-language.html

Vlans Cisco 2020 “in other works”

https://www.cisco.com/c/en/us/support/docs/smb/routers/cisco-rv-series-small-business-routers/1778-tz-VLAN-Best-Practices-and-Security-Tips-for-Cisco-Business-Routers.html#some-quick-vocabulary-for-the-newbies

Benefits of a managed switch

https://uniontestprep.com/comptia-a-core-series-exam/blog/network-switches-managed-vs-unmanaged

VOIP Stringent requirements:

https://www.ciscopress.com/articles/article.asp?p=2181837&seqNum=11

# Appendix or stuff to show deliverables

Appendix A

Title of Appendix

Put any supporting material in these appendices. Add additional or delete superfluous appendices as needed.

Appendix B

Title of Appendix

Put any supporting material in these appendices. Add additional or delete superfluous appendices as needed.

Appendix C

Title of Appendix

Put any supporting material in these appendices. Add additional or delete superfluous appendices as needed.

Appendix D

Title of Appendix

Put any supporting material in these appendices. Add additional or delete superfluous appendices as needed.

Project deliverables

• VLAN Excel graph

• After the topology image

Appendix A: Final network diagrams of the physical topology of the campus. Included on these diagrams are the design notes and the connection speeds between the switches

Appendix B contains screenshots of the spreadsheets that document the IP address and VLAN schemes for the company

Appendix C contains screenshots of the network monitoring software that was installed to assist with the configuration, troubleshooting, and day-to-day monitoring of the new network equipment. Passler?