Network System Implementation for the Marconi Law Firm, LLC.

Orlando, Florida

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Palm Beach Network Corporation

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Project Scope

I am initiating this project with Marconi Law to provide them with a plan to continue their growth and to be able to operate more efficiently. Additionally, to help them expand their capability.

The key objectives on high-level work specifications that I will provide to Marconi Law will be establishing static IP addresses for proposed LAN and determining network objectives.

The hardware and software needed to be delivered to Marconi Law are one router, one server, one switch, 10 computers, two WAPs, ten VoIP phones, one printer, one conference phone, and one Smart TV for conference, server software, and client computer software.

What is not included in this project are objects under $50 like keyboards, mice, cables, and adapters, these will be chosen by Marconi and his team.

Some of the project constraints could be how many employees will be on my team, as well as how much product the vendor currently has on hand. Additionally, if part of the hardware is defective it can cause problems.

Five key success factors that will define this project are comprehensive network design, timely implementation, reliable and secure infrastructure, effective communication and collaboration, and comprehensive project reporting and maintenance.

The project will take five weeks to complete, and it will have a cost of $60,000. The $60,000 includes the hardware and software as well as the labor and maintenance contract.

Network Objectives/Benefits

- Improved Operational Efficiency – The new network system will enable Marconi Law, LLC. to operate more efficiently. This streamlined access and sharing of information will save time, reduce errors, and improve overall operational efficiency.
- Enhanced Data Security – By incorporating security measures such as firewalls, encryption, and access controls, the network will safeguard against unauthorized access and potential threats.
- Cost Savings – The streamlined operation and improved efficiency resulting from the network implementation can lead to long-term cost savings for the company.

-	IP Address	Reserved
Netmask	255.255.255.0	-
First IP	10.10.119.0	
Last IP	10.10.119.255	
Total Host	256	-

Node	Hardware Name	Static IP address
1	Marconi Computer	10.10.119.1
2	Jones Computer	10.10.119.2
3	Stark Computer	10.10.119.3
4	Drums Computer	10.10.119.4
5	Shoemaker Computer	10.10.119.5
6	Brooks Computer	10.10.119.6
7	Long Computer	10.10.119.7
8	Adams Computer	10.10.119.8
9	Smith Computer	10.10.119.9
10	Schultz Computer	10.10.119.10
11	Marconi VoIP Phone	10.10.119.11
12	Jones VoIP Phone	10.10.119.12
13	Stark VoIP Phone	10.10.119.13
14	Drums VoIP Phone	10.10.119.14
15	Shoemaker VoIP Phone	10.10.119.15
16	Brooks VoIP Phone	10.10.119.16
17	Long VoIP Phone	10.10.119.17
18	Adams VoIP Phone	10.10.119.18
19	Smith VoIP Phone	10.10.119.19
20	Schultz VoIP Phone	10.10.119.20
21	Router	10.10.119.21
22	Server	10.10.119.22
23	Switch	10.10.119.23
24	WAP 1	10.10.119.24
25	WAP 2	10.10.119.25
26	Printer	10.10.119.26
27	Smart TV	10.10.119.27
28	Conference Phone	10.10.119.28

User Accounts	Setup and Configuration Process
Dan Marconi Phil Jones Karen Stark Evelyn Schultz Bill Shoemaker Mike Drums Lisa Brooks Terry Long Samuel Adams Brian Smith	Step 1: Launch **Windows Server 2019** VM Step 2: Log into server using admin password Step 3: Open **Server Manager** by going to **Windows Start Menu** and click on **Server Manager** Next step: Click on **tools** Next step: Click on Computer Management Next step: Expand Local Users and Groups Next step: Right click on Users and click on New User Next step: Add Username, Full name, and Password. Then deselect user must change password at next logon. Next step: Click on create and follow the same steps for the rest of the users.
Groups	Setup and Configuration Process
_Attorneys _Accounting _Administrative	Step 1: Launch **Windows Server 2019** VM Step 2: Log into server using admin password Step 3: Open **Server Manager** by going to **Windows Start Menu** and click on **Server Manager** Next step: Click on Tools Next step: Click on Computer Management Next step: Expand Local Users and Groups Next step: Right click on Groups and then click on New Group Next step: Add the Group name then click on Add to add members to the group. Next step: Add the members and click OK. Next step: Follow the same steps for the other groups.
Folders and Permissions	Setup and Configuration Process

Attorneys Accounting Administrative	<u>Create Folders</u> Step 1: Launch **File Manager** Step 2: Double-click on **Local C drive** Next step: Double-click on Shares folder Next step: Right click then go to New then Folder Next step: Name the folder Marconi Documents Next step: Then double-click on Marconi Documents Next step: Right click then go to New then Folder Next step: Name the folder Accounting. Next step: Another Admin Assistant Next step: and the last one Attorneys <u>Set Sharing Permissions</u> Step 1: Launch **Windows Server 2019** VM Step 2: Log into server using admin password Step 3: Open **Server Manager** by going to **Windows Start Menu** and click on **Server Manager** Next step: Tools Next step: Click on Shares Next step: On the white space right click and New Share Next step: A Shared Folder Wizard is going to open up Next step: Click Next Next step: Next to the Folder Path click on Browse Next step: Scroll down to Local Disk (C:) click on it Next step: You will scroll to Marconi Documents and click on it to expand it Next step: Click on the first Folder you want to share Next step: Then click OK and then click next Next step: It will automatically names your Share Name then click next Next step: Click on Customize permissions and click on Custom Next step: Select Everyone and click remove Next step: Click on Add and add the group name for the folder and click OK Next step: Under Permissions for _GroupName you will select change and read only then click OK Next step: Then click Finish Next step: Follow the same steps for the other folders

Employee Name	Employee Title	Login ID	Password
Dan Marconi	President	Dmarconi	Fullsail1!
Phil Jones	Attorney	Pjones	Fullsail1!
Karen Stark	Attorney	Kstark	Fullsail1!
Evelyn Schultz	Admin Assistant	Eschultz	Fullsail1!
Bill Shoemaker	Attorney	Bshoemaker	Fullsail1!
Mike Drums	Attorney	Mdrums	Fullsail1!
Lisa Brooks	Attorney	Lbrooks	Fullsail1!
Terry Long	Attorney	Tlong	Fullsail1!
Samuel Adams	Attorney	Sadams	Fullsail1!
Brian Smith	Accountant	Bsmith	Fullsail1!

Network Topology Diagram with Employee Names and Node Numbers

Hardware and Software	Per Unit Cost	Quantity	Total Cost
Laptops	2,689	10	**26,890**
Router	144.00	1	**144.00**
Server	7,899.99	1	**7,899.99**
Switch	579.99	1	**579.99**
Server Hard Drives	289.99	3	**869.97**
VoIP Phones	259.99	10	**2,599.90**
Conference Phone	622.99	1	**622.99**
WAPs	433.49	2	**866.98**
Printer	379.99	1	**379.99**
Smart TV	1,899.99	1	**1.899.99**
Windows Server 2019	569.99	1	**569.99**
Windows 10 Pro	108.99	10	**1089.90**
Labor (@ $75/hour)	$75	40 hrs	**$3,000**
Annual ongoing network maintenance and support	$12,000	1 yr	**$12,000**
GRAND TOTAL	-	-	**59,413.69**

Hardware and Software Specification Tables

Laptops

Brand/Manufacturer	**HP**
Product Line	ZBook Studio
Model	G9 Mobile Workstation PC
Processor/Clock Speed	Core i7-12700H
Memory/Speed	32GB
Hard Drive/Capacity	512GB
Embedded Security	Wolf Pro (NVIDIA)
Display/Size/Resolution	16" (1920 x 1200)
Networking	Intel vPro IT
Operating System	Windows 10 Pro
Cache	24 MB L3
OS	Windows
Page URL	HP ZBook Studio 16" G9 Mobile Workstation PC Wolf Pro Security Edition NVIDIA - Newegg.com

Server

Brand/Manufacturer	**HPE**
Product Line	HPE ProLiant
Model	ML 350 Gen10 High Performance
Hard Drive/Capacity	
Chassis	
Processor	PCI Express 3.0 x8
Memory/Speed	2666 megahertz
Storage Controller	HPE Smart Array P408i-a SR Gen10
Monitor	None
Ethernet	HP 369i
Operating System	HPE iLO
Networking	
Expansion Bays	8
Expansion Slots	2
Page URL	[HPE ProLiant ML350 Gen10 High Performance - tower - Xeon Gold 5218R 2.1 GHz - 32 GB - no HDD - P25008-001 - Rack Servers - CDW.com](#)

Server Hard Drives

Brand/Manufacturer	Seagate
Product Line	Exos X20
Storage Type	
Hard Drive Type	Internal Hard Drive
Form Factor	
Interface	SATA 6.0Gb/s
Capacity	20TB
Data Transfer Rate (DTR)	285MB/s
Page URL	[Seagate Exos X20 ST20000NM007D 20TB 7200 RPM 256MB Cache SATA 6.0Gb/s 3.5" Internal Hard Drive - Newegg.com](#)

Router

Brand/Manufacturer	ASUS
Product Line	RT
Model	RT-AX3000
RAM	512 MB
Flash Memory	256 MBNetgear
WAN Ports Qty	1 x 10/100/1000M

Integrated Switch	
Data Link Protocol	
Network/Transfer Protocol	IPv4, IPv6
Page URL	[ASUS RT-AX3000 Dual Band WiFi Router, WiFi 6, 802.11ax - Newegg.com](#)

Switch

Brand/Manufacturer	**NETGEAR**
Product Line	NETGEAR smart
Model	GS724TPP-100NAS
RAM	128Mb
Flash Memory	32MMb
Performance	500 Megahertz
Capacity	
Ports Qty*	24
Page URL	[NETGEAR Smart GS724TPP - switch - 24 ports - smart - rack-mountable - GS724TPP-100NAS - Ethernet Switches - CDW.com](#)

*Switch needs to accommodate all hardware for this LAN project.

Printer

Brand/Manufacturer	HP
Product Line	Officejet Pro
Model	9020
Duty Capacity	
Printing Output Type	color
Chassis	
Processor	31 – 40 PPM
RAM	512 MB
Hard Drive	
Printing System	wireless
Networking	
Connectivity	
Page URL	[HP Officejet Pro 9020 All-in-One - multifunction printer - color - 1MR78A#B1H - All-in-One Printers - CDW.com](#)

Wireless Access Points (WAPs)

Brand/Manufacturer	Linksys
Product Line	Linksys

Model	LAPAX36000C
Antenna	**8- internal**
Chassis	
Capacity	SSIDs total 8
Networking	2.4 GHz, 5 GH
Interface	1 x 1 Gigabit Ethernet (High Availability) - RJ-45, 1 x 100M/1G/2.5 Gigabit Ethernet - RJ-45
Power	PoE+
Page URL	[Linksys LAPAX3600C - wireless access point - Wi-Fi 6 - cloud-managed - TAA Compliant - LAPAX3600C - Wireless Access Points - CDW.com](#)

Smart TV

Brand/Manufacturer	Samsung
Model	QN55S90CAF
Series	S90C
Video Interface	
HDMI Ports Qty	4
Diagonal Size	48.2
Resolution	3840 X 2160
Display Format	
Viewing Angle	
Digital Audio Format	Dolby Atmos, Dolby Digital Plus output
Output Power	40 watt
Speaker System	2.1 channel
USB Ports Qty	2
Wi-Fi Protocol	802.11ac
Page URL	[Samsung QN55S90CAF S90C Series - 55" Class (54.6" viewable) OLED TV - 4K - QN55S90CAFXZA - TVs - CDW.com](#)

Conference Phone

Brand/Manufacturer	Poly
Product Line	**Poly SoundStation**
Model	**Duo**
Type	**Conference VoIP phone**

Dialer Locations	**Base**
Call Services	**Call Forwarding, Call Hold, Call Transfer, Call Waiting, Caller ID, Voice Mail**
Speakerphone	Yes
Features	Echo cancellation, HD voice
Phone connections	2 x microphone jack / RJ-9, Headset jack / sub-mini-phone 2.5 mm, PSTN line jack
Page URL	[Poly SoundStation Duo - conference VoIP phone - 3-way call capability - 2200-19000-001 - Conference & Speaker Phones - CDW.com](#) [Poly SoundStation Duo - conference VoIP phone - 3-way call capability - 2200-19000-001 - Conference & Speaker Phones - CDW.com](#)

Server Software

Brand/Manufacturer	Microsoft
Product Line	**Microsoft Windows**
Version	**2019**
Licensing	1, 64-bit
Page URL	[Microsoft Windows Server 2019 Essentials - box pack - 1 processor - G3S-01184 - Network Operating Systems - CDW.com](#)

Client Software

Brand/Manufacturer	Microsoft
Product Line	**Windows**
Version	**Professional**
Licensing	1 device
Page URL	[Windows Pro - Right-To-Use license (upgrade) - 1 device - AAA-49336-CCF - Network Operating Systems - CDW.com](#)

VoIP Phones

Brand/Manufacturer	Cisco
Product Line	**Cisco IP phone**
Model	**8841**

Type	
Conference Call Capability	**Yes**
Call Services	**Call Forwarding, Call Hold, Call Transfer, Call Waiting, Caller ID, Message Waiting Capability, Voice Mail**
Speakerphone	Yes
Additional Functions	Call timer, Intercom
Features	
VoIP Protocols	RTCP, RTP, SDP, SIP, SRTP
IP Address Assignment	
Voice Codecs	G.711a, G,711u, G.722, G.729a, iLBC, iSAC
Quality of Service	IEEE 802.1p, IEEE 802.1Q (VLAN)
IP Address Assignment	
Network Protocols	Cisco Discovery Protocol (CDP), DNS, HTTP, HTTPS, IP, Link Layer Discovery Protocol - Media Endpoint Discovery (LLDP-MED), RTCP, RTP, SRTP, TFTP, UDP
PoE Support	Yes
Voice Features	
Page URL	Cisco IP Phone 8841 - VoIP phone - CP-8841-3PCC-K9= - VoIP Phones - CDW.com

Timesheets

Milestone	Activity Description (be descriptive)	Start Time	End Time	Total Activity Time	Activity Date

Milestone 1	Worked on the diagram to provide all the hardware needed to complete assignment which included research of all the materials needed to be added to the diagram	1000	1900	9 hours	06/02/23
Milestone 1	Began working on the cost and searching for the best equipment to complete the assignment. Also, completed the tables on the report	1500 1300	2000 1700	9 hours	06/03/23 06/04/23
Milestone 1	Completed the rest of the milestones needed to complete the assignment	1700	1800	1 hour	06/04/23
Milestone 2	Answered all question for the second part after going over the lecture	2130	2345	2 hours	06/08/23
Milestone 2	Created the IP addresses and nodes	2130	0230	5 hours	06/09/23
Milestone 2	Completed the rest of the milestones	1500	1900	4 hours	06/12/23
Milestone 3	Added Users and Groups to the VMs	1200	1300	1 hour	06/18/23
Milestone 3	Added shared folders and added the groups	1330	1600	2.5 hours	06/18/23
Milestone 3	Made sure that all accounts were working and that I was able to map each user to the server	1600	2200	6 hours	06/18/23
Milestone 4	Completed Project report	1630	2135	5 hours	06/23/23
Milestone 4	Made sure everything was according to instructions	2100	2130	30 mins	06/25/23
Milestone 4	Completed Video	1520	2055	5 hours	06/25/23
TOTAL HOURS				50 hours	06/25/23

Status Reports

Accomplished this week

Milestone 1: Went over what needed to be accomplished for this week on the business
Milestone 1: Went over the diagram and researched on the materials needed to accomplish this week.
Milestone 1: completed the report documentation needed for this week
Milestone 2: Went over what needed to be accomplished this week
Milestone 2: Went over the questions and how to complete them
Milestone 2: Completed the diagram as well as the documentation needed
Milestone 3: Went over what I needed to accomplish this week with the milestones
Milestone 3: Completed the Virtual machine assignments
Milestone 3: Completed the Project Report portion for milestone 3
Milestone 4: Completed project report
Milestone 4: Completed video for idea
Milestone 4: Completed class

Planned for next week

Coming up for milestone 2: Install and customize different operating systems
Coming up for milestone 2: Assign fixed IP addresses for the intended local area network
Coming up for milestone 2: Revise and enhance the network diagram by adding any missing or incorrect elements, as well as providing proper labeling.
Coming up for milestone 3: Set up accounts and configurations
Coming up for milestone 3: Establish appropriate permissions for groups

Coming up for milestone 3: Finish report by documenting the set up process
Coming up for milestone 4: Complete the project report to deliver it to the client
Coming up for milestone 4: Make sure that everything is working and that it is presentable
Coming up for milestone 4: Make sure I am confident in my skills to promote my project.

Comments for each milestone

Milestone 1: What problems did you run into? My main problem was trying to figure which hardware was the best option for the case since there were so many options. How did you fix them? I tried reading into what the hardware offers and what is mainly used for and that is how I chose each one of them. Is there anything that you did not complete that you now have to push off into the next milestone? I think I completed all the information necessary except in some aspects of the hardware I was not able to find the corresponding information. Therefore, there are some blanks. Any other comments?
Milestone 2: What problems did you run into? I think my main problem was how to add the nodes at the beginning I was confused but after reading all the instructions I understood what I had to do. How did you fix them? I went over what I needed to do for that section and I looked up what nodes were. Is there anything that you did not complete that you now have to push off into the next milestone? I believe that I completed everything I needed to complete. Any other comments? N/A
Milestone 3: What problems did you run into? At first, I was having issues with the shared folders and how to give the groups access. Also, I was having issues mapping out the server through the accounts. How did you fix them? I went back and looked at the lecture and figured out what I was doing wrong and once I fixed it I was able to give the groups access. The server issue I fixed by looking at the command and I was able to connect them. Is there anything that you did not complete that you now have to push off into the next milestone? I believe I completed everything and that I do not need to push anything into next week.

Any other comments? N/A
Milestone 4: What problems did you run into? I kept having problems with my voice since I got sick, but I think I got as much as I could into the video. How did you fix them? I tried taking breaks as I recorded the video. Is there anything that you did not complete that you now have to push off into the next milestone? I think I completed everything for the project, and I did not have to leave anything incomplete. Any other comments? It was a really interesting class and I learned a lot from it.