Network System Implementation for the Marconi Law Firm, LLC.

Orlando, Florida

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Waves Inc.

Milestone 1 – Ensure that your name and fictitious company name are on the cover page, above.

Text

Milestone 4 - Update your table of contents at the very end of the class before you submit this document. Note that the some of the titles and page numbers are incorrect.

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Project Scope

Milestone 2 – Please answer each question in its own paragraph. Please make sure that your answers are written in **complete sentences**.

Remember to look back at the business case study that you are provided in Milestone 1 as a reference.

Why are you initiating this project for Marconi Law?
This project is all about helping Marconi Law get their operations running smoothly in one big office. By setting up a modern network, we're aiming to make communication easier, improve how things flow day-to-day, and set them up for growth with a system that's ready for the future.
What are the key objectives or high-level work specifications that you will provide to Marconi Law?

The plan is to get a reliable network in place that connects all employees and devices without a hitch. We'll install and configure everything they need, like a router, server, switch, 10 computers, 10 VoIP phones, 2 wireless access points, a printer, a conference phone, and a smart TV for meetings. Everything will be secure, efficient, and ready to expand when the firm grows.
What are the project deliverables needed in terms of hardware and software?
10 Dell Latitude 5550 laptops, 1 Dell PowerEdge R450 server, 1 Cisco Catalyst 1000-24P-4G-L switch with 24 ports, 1 Ubiquiti UniFi Dream Machine Pro, 10 Cisco Desk Phone 9841 models, 1 Yealink CP965, 1 HP LaserJet Enterprise Flow M528c, 2 Ubiquiti UniFi U6 Enterprise access points, 1 Samsung UN65DU7200F 65-inch 4K Ultra HD smart TV Windows Server 2019: Installed on the Dell PowerEdge, Microsoft Office: Included with the Dell Latitude 5550 laptops, Windows 10 Pro
What is not included in this project?
We're not handling things like cloud services, third-party apps that weren't mentioned in the plan, or IT support after the initial 12-month maintenance contract.
What are the project constraints?
Budget: The whole setup has to stay within $51,620.70, Resources :Everything we set up needs to work well together and be able to handle future growth. Delays in equipment delivery as well
What are at least 5 key success factors that will define this project?
Getting the network installed and running with no major hiccups. Making sure all employees can log in and access what they need securely. Staying on budget and finishing on time. Building a system that's ready to grow with the firm. Training the team so they feel good about using the new setup.
How long and how much will this project take and cost, respectively?
The project will take about five weeks to wrap up, and the total cost is $51,620.70. This includes hardware, software, labor, and a 12-month maintenance deal.

Network Objectives/Benefits

Milestone 2 – What benefits will Marconi gain after the network is up and running? You should have at least 3 benefits listed, but there are many more.

- Easier Communication- With everyone connected on the same network, it'll be way easier to communicate and collaborate. No more running around between different floors!
- Better Productivity- The new system will cut down on tech issues and make workflows smoother, so employees can focus on their work instead of fighting with tech problems.

- Room to grow-This network is built to grow with the firm, so adding new employees or devices down the line won't be a headache.

IP Network Design Table

Milestone 2 – create static IP addresses (**use only dotted decimal format**) for your network hardware. The subnet that you're working with is 10.10.119.0/24

Please visit this website (https://www.ipaddressguide.com/cidr) to get your IP range.

You can use this website as a reference to help you understand what your network ID and broadcast address are (https://www.geeksforgeeks.org/what-is-network-id-and-host-id-in-ip-addresses/)

Subnet IP Information	
Netmask	255.255.255.0
First IP	10.10.119.0
Last IP	10.10.119.255
Total Host	256
Network ID	10.10.119.0
Broadcast Address	10.10.119.255

Group IP Ranges	
Computers	10.10.119.100-10.10.119.109
VoIP Phones	10.10.119.200-10.10.119.209
Network Backbone	10.10.119.1-10.10.119.3
WAPs	10.10.119.4-10.10.119.5
Other	10.10.119.50-10.10.119.52

Node	Hardware Name	Static IP address
1	Marconi Computer	10.10.119.100
2	Jones Computer	10.10.119.101
3	Stark Computer	10.10.119.102
4	Drums Computer	10.10.119.103
5	Shoemaker Computer	10.10.119.104
6	Brooks Computer	10.10.119.105
7	Long Computer	10.10.119.106
8	Adams Computer	10.10.119.107
9	Smith Computer	10.10.119.108
10	Schultz Computer	10.10.119.109
11	Marconi VoIP Phone	10.10.119.200
12	Jones VoIP Phone	10.10.119.201
13	Stark VoIP Phone	10.10.119.202
14	Drums VoIP Phone	10.10.119.203
15	Shoemaker VoIP Phone	10.10.119.204
16	Brooks VoIP Phone	10.10.119.205
17	Long VoIP Phone	10.10.119.206
18	Adams VoIP Phone	10.10.119.207
19	Smith VoIP Phone	10.10.119.208
20	Schultz VoIP Phone	10.10.119.209
21	Router	10.10.119.1
22	Server	10.10.119.2
23	Switch	10.10.119.3
24	WAP 1	10.10.119.4
25	WAP 2	10.10.119.5
26	Printer	10.10.119.50

27	Smart TV	10.10.119.51
28	Conference Phone	10.10.119.52

Network Configuration Process

Milestone 3 – I want to see the exact steps you're taking to complete the setup and configuration process for users, groups, folders and permissions. I have provided you with the first three steps, below, but you should write out the other steps you need to take to accomplish the setup and configuration of your users, groups, folders, and permissions. **Be very detailed.**

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** Step 4 : Go to Tools Step 5 :Right-click on Users or desired OU → New → User Step 6 :Enter user details (Name, Username, Password) Etc…Repeat the above steps for each user
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:Go to Tools Next step: Right-click on → New → Group Next step: Name the group (_Attorneys, _Accounting, etc.) Next step : Add members to each group
Folders and Permissions	Setup and Configuration Process

Attorneys Accounting Administrative	Create Folders Step 1: Launch **File Manager** Step 2: Double-click on **Local C drive** Next step: Right-click → New Folder Next step: Name the folder (e.g., Attorneys, Accounting, Administrative). Next step:Repeat this step for each required folder. Set Sharing Permissions 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: Right-click on the folder → Properties → Sharing tab. Next step:Assign permissions (Read, Write, Modify) based on group requirements. Etc… Verify permissions by logging in as a user from each group.

User Logins and Passwords

Milestone 3 – This table will contain the login IDs and passwords for your users you create on your server. It is quite self-explanatory.

On your Windows Server, be sure to set your passwords to NOT expire on first time login. It'll save you headaches when you get to the testing phase.

Employee Name	Employee Title	Login ID	Password
Dan Marconi	President/Attorney	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!

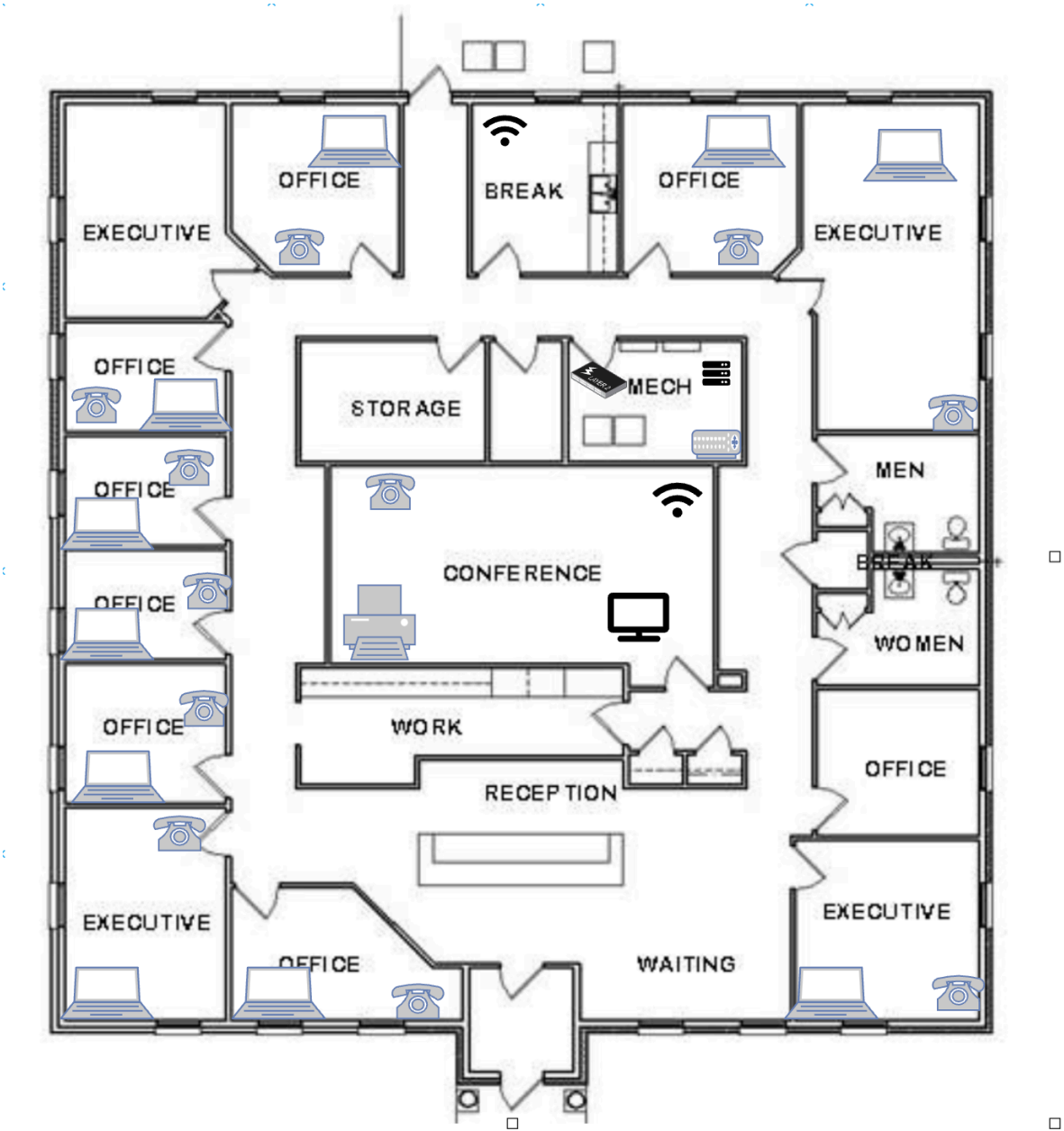
Brian Smith	Accountant	Bsmith	Fullsail1!

Network Topology Diagram with Employee Names and Node Numbers

Milestone 1 – You will use the diagram below as a foundation for visually creating your network. Save this image out and import it into ***Visual Paradigm (https://online.visual-paradigm.com/login.jsp)*** so you may edit it. Replace the blank diagram below with your updated diagram from ***Visual Paradigm*** for each week (milestone). **Do not try to edit this diagram directly here in Word.**

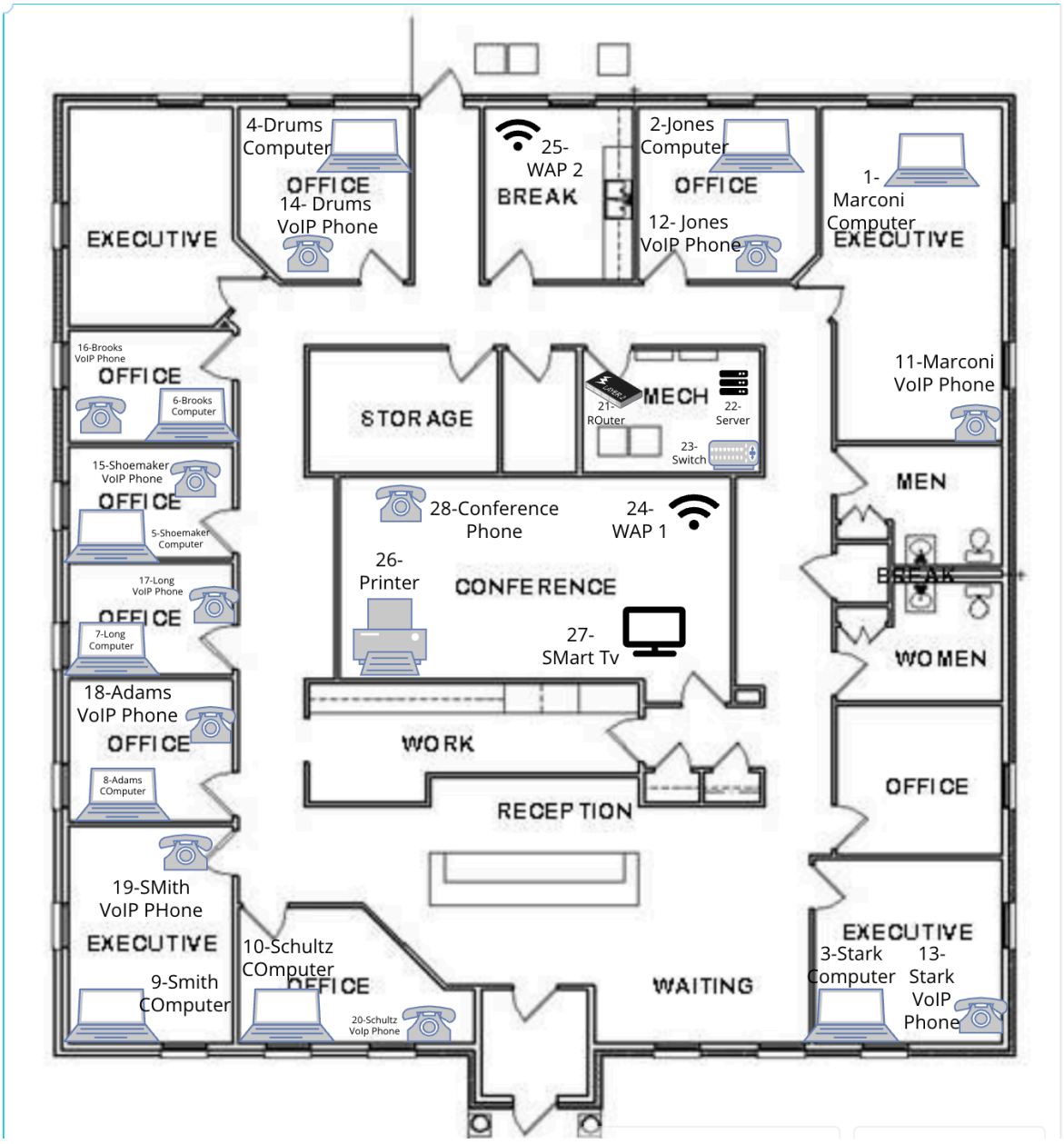
The LAN (Local Area Network) for this project will consist of the LAN backbone (your router, server, and switch) then all your hardware. The network backbone is the typical hardware you need for your network to operate properly in a business such as the Marconi Law Firm.

All



hardware must appear in your diagram. If you don't remember what all is needed, please see the business case study.

Place your network backbone (the items described directly above) in the mechanical closet.



Milestone 2 – using any feedback from week 1, update your network diagram to contain missing or incorrect items and improve on the diagram.

Label (legibly) your network diagram with the following:

- Hardware Type
- Employee Name
- Corresponding Node Numbers from IP table

Capital and Operating Costs

Milestone 1

This table will contain the costs for this project. You should leave the labor per unit cost at $125 and your maintenance and support per unit cost at $15,000. I provided these costs to you. Please be sure that you account for a RAID 5 when purchasing your hard drives.

Hardware and Software	Per Unit Cost	Quantity	Total Cost
Laptops	$1,286	10	$12,869.90
Router	$447.99	1	$447.99
Server	**$7469.99**	1	**$7,469**
Switch	**$1039.99**	1	**$1039.99**
Server Hard Drives (Consider a RAID 5)	$852.99	3	$2,558.97
VoIP Phones	**$189**	10	**$1899.90**
Conference Phone	**$799**	1	**$799**
WAPs	**$304.99**	2	**$609.98**

Printer	**$2859**	1	**$2859**
Smart TV	$999.99	1	**$999.99**
Windows Server 2019	$1069.99	1	$1069.99
Windows 10 Pro	Included w/ laptops	10	$0.00
Labor	$125	40 hrs	$5,000
Annual ongoing network maintenance and support	$15,000	1 yr	$15,000
GRAND TOTAL	**-**	**-**	**$51,620.70**

Hardware and Software Specification Tables

Milestone 1 – Please complete the hardware and software specification tables below. Remember that you may only use one vendor (https://www.cdw.com/) as is stated in the assignment instructions. Please do not use Google or another search engine. If necessary, you may use the manufacturer's website to locate additional information as necessary. ***Remember to size your switch based on the number of nodes (ports) that you need. Review the Marconi Business Case Study document to know your hardware and quantities.***

Laptops

Brand/Manufacturer	Dell
Product Line	Latitude
Model	5550
Processor/Clock Speed	Intel Core Ultra 5 135U
Memory/Speed	16 Gb ddr5
Hard Drive/Capacity	256GB SSD
Embedded Security	Trusted Platform Module (TPM 2.0)
Display/Size/Resolution	15.6-inch Full Hd (1920 x 1080) Anti Glare
Networking	Wi-Fi 6E, Gigabit Ethernet
Operating System	Windows 11 pro

Cache	12MB Intel Smart Cache
Page URL	https://www.cdw.com/product/dell-latitude-5550-ai-ready-15.6-intel-core-ultra-7-155u-16-gb-r/7883082

Server

Brand/Manufacturer	Dell
Product Line	Power Edge
Model	R450
Hard Drive/Capacity	300 GB Per drive
Processor	Intel Xeon Silver 4310 2.1 Ghz
Memory/Speed	32 GB DDR4
Storage Controller	480 GB SSD
Monitor	None
Ethernet	4 x 1GbE ports
Operating System	Windows servire 2019
Networking	IPv4/Pv6
Expansion Bays	8 x 2.5 inch hot swappable drives
Expansion Slots	4 PCle slots
Page URL	https://www.cdw.com/product/dell-poweredge-r450-rack-mountable-xeon-silver-4310-2.1-ghz-32-gb/6835487

Server Hard Drives

Brand/Manufacturer	Total Micro
Product Line	Total Micro
Storage Type	Enterprise Storage
Hard Drive Type	SAS Hard Drive
Form Factor	2.5-inch
Interface	SAS 12 Gbps
Capacity	300 GB
Data Transfer Rate (DTR)	Up to 12 Gbps
Page URL	https://www.cdw.com/product/total-micro-hard-drive-dell-poweredge-r730-r830-t640-300gb-2.5-sas/7653172

Router

Brand/Manufacturer	Ubiquiti
Product Line	UniFi
Model	Dream Machine Pro
RAM	3 GB
Flash Memory	16 GB
WAN Ports Qty	1 x 1GbE
Integrated Switch	8 x 1GbE LAN ports
Data Link Protocol	Ethernet, Fast Ethernet, GiGabit
Network/Transfer Protocol	IPv$, IPv6, VLAN, VPN, DHCP, DNS, NAT
Page URL	https://www.cdw.com/product/ubiquiti-unifi-dream-machine-pro-network-management-device/5937491

Switch

Brand/Manufacturer	Cisco

Product Line	Catalyst 1000 Series
Model	1000-24P-4g-L
RAM	512 mb
Flash Memory	256 mb
Performance	Forwarding bandwidth: 56 Gbps
Capacity	Up to 16,000 MAC addresses
Ports Qty*	24 x 10/100/1000 (PoE+) + 4 x Gigabit SFP (uplink)
Page URL	https://www.cdw.com/product/cisco-catalyst-1000-24p-4g-l-switch-24-ports-managed-rack-mountable/6030480

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

Printer

Brand/Manufacturer	Hp
Product Line	Laser Jet Enterprise Flow
Model	M528c
Duty Capacity	**150,000 pages per month**
Printing Output Type	Monochrome
Processor	1.2 Ghz
RAM	2 GB DDR3
Networking	Gigabit Ethernet,USB 2.0, DUAL- BAND WIFI
Page URL	https://www.cdw.com/product/hp-laserjet-enterprise-flow-m528c-multifunction-printer/5545413

Wireless Access Points (WAPs)

Brand/Manufacturer	Ubiquiti
Product Line	UniFi

Model	U6 Enterprise
Antenna	**Integrated**
Capacity	600 concurrent clients
Networking	wi-Fi 6E with 2.4 Ghz, 5 Ghz, and 6 GHz
Interface	1 x 2.5 Gigabit Ethernet
Power	Power over Ethernet(PoE+), 802.3at standard
Page URL	https://www.cdw.com/product/ubiquiti-unifi6-enterprise-wi-fi-6e-access-point/7193804

Smart TV

Brand/Manufacturer	Samsung
Model	UN65DU7200F
Series	DU7200 Series
Video Interface	**HDMI**
HDMI Ports Qty	3
Diagonal Size	65 inches
Resolution	4k ultra Hd
Display Format	LED-Backlit LCD
Viewing Angle	178/178
Digital Audio Format	Dolby Digital Plus
USB Ports Qty	2
Wi-Fi Protocol	Wi-Fi 802.11ac
Page URL	https://www.cdw.com/product/samsung-un65du7200f-du7200-series-65-class-64.5-viewable-led-backlit/7849356?pfm=srh

Conference Phone

Brand/Manufacturer	Yealink
Product Line	**Cp Series**
Model	**CP965**
Type	**Business IP Phone**
Call Services	**VoIP, SIP support**
Speakerphone	Full- duplex speakerphone with HD voice quality
Features	5 inch color display,On screen caller id, Built in Ethernet switch
Phone connections	2 x RJ-45 Ethernet ports
Page URL	https://www.cdw.com/product/yealink-cp965-optima-hd-ip-conference-phone-for-microsoft-teams/6978434

Server Software

Brand/Manufacturer	License Included with Laptop
Product Line	
Version	
Licensing	
Page URL	

Client Software

Brand/Manufacturer	Included with laptop
Product Line	**Microsoft**
Version	**Microsoft Office**
Licensing	
Page URL	

VoIP Phones

Brand/Manufacturer	Cisco

Product Line	**Desk Phone**
Model	**9841**
Type	**VoIP Phone**
Conference Call Capability	**Yes**
Call Services	**Call Forwarding, Call Hold, Call Transfer, Call Waiting, Caller ID, Message Waiting Indicator, Voicemail**
Speakerphone	Full-duplex speakerphone with HD voice quality
Additional Functions	Integrated Ethernet switch
Features	3.5-inch backlit grayscale LCD display, multiple VoIP protocol support, support for multiple languages
VoIP Protocols	SIP, SDP, RTCP, RTP, SRTP
IP Address Assignment	DHCP, Static
Network Protocols	IPv4, IPv6, Cisco Discovery Protocol (CDP), Link Layer Discovery Protocol - Media Endpoint Discovery (LLDP-MED)
PoE Support	Yes
Voice Features	HD audio, wideband audio support
Page URL	https://www.cdw.com/product/cisco-desk-phone-9841-voip-phone-with-trusted-platform-module-tpm-2.0/7947544

Timesheets

Milestones 1, 2, 3, and 4 – Each week, you should enter **at least three activities per milestone**. Be sure to total up your hours at the end of week 4. Add in more lines to the table as needed.

Milestone	Activity Description (be descriptive)	Start Time	End Time	Total Activity Time	Activity Date
Milestone 1	Review the case study	11:00 AM	11:30 AM	30 M	DEC 3
Milestone 1	Edit network diagram	12:00 PM	12:25 PM	25 M	DEC 4
Milestone 1	Select the hardware/ Software needed	1 PM	4 PM	3 HR	DEC 4
Milestone 2	Created the IP addresses	9 pm	10 pm	1 hr	DEC 8
Milestone 2	Updated the network diagram	2 pm	230 pm	30 M	Dec 9
Milestone 2	Research	4 PM	5 PM	1 hr	Dec 9
Milestone 3					
Milestone 3					
Milestone 3					
Milestone 4					
Milestone 4					
Milestone 4					
TOTAL HOURS					

Status Reports

Milestones 1, 2, 3, and 4

Note that there are **THREE** **tables** in this "Status Reports" section of the project report, one entitled, "**Accomplished this week**," one entitled, "**Planned for Next Week**," and one entitled, "**Comments**."

Each week, you should enter **at least three activities** that you completed for each milestone you worked on, **at least three activities** that you are planning for the upcoming week, and **answer all questions** in the comments section.

Accomplished this week

Milestone 1: Researched and priced hardware components for the network design.
Milestone 1: Created the initial network topology diagram using Visual Paradigm
Milestone 1: Updated the project report with hardware specifications and cost details.
Milestone 2: Created the static IP address table for all devices, including computers, VoIP phones, and network backbone.
Milestone 2: Updated the network diagram with labeled hardware and employee names.
Milestone 2: Researched best practices for secure folder and permission setups.
Milestone 3:
Milestone 3:
Milestone 3:
Milestone 4:
Milestone 4:
Milestone 4:

Milestones 1, 2, and 3
Enter **at least three activities** that you are planning for next week. Add in more lines to the table as needed. See the "Planned for next week" sections in the milestone activities for information on what we are planning to do for each milestone.

Planned for next week

Coming up for milestone 2: Finalize the network diagram with labeled hardware and employee names.

Coming up for milestone 2: Verify compatibility of all selected hardware components.
Coming up for milestone 2: Review and submit the completed milestone report.
Coming up for milestone 3:Finalize user account permissions and test them with real-world scenarios.
Coming up for milestone 3: Configure WAPs to ensure seamless wireless connectivity across the office.
Coming up for milestone 3: Set up initial network security protocols, including firewalls and access controls.
Coming up for milestone 4: *fill these lines in for milestone 3*
Coming up for milestone 4:
Coming up for milestone 4:

Milestones 1, 2, 3, and 4
Ensure that you complete the questions in the *Comments* table so I know what issues, problems, concerns, etc. you may have run into. I use this information to provide feedback and to help you learn. If you did not run into problems, then tell me so. Otherwise, this section is considered incomplete.

Comments for each milestone

Milestone 1: What problems did you run into? No issues How did you fix them? Is there anything that you did not complete that you now have to push off into the next milestone? Any other comments?
Milestone 2: What problems did you run into?Assigning IP ranges to all devices took longer than expected. How did you fix them? Broke the task into smaller chunks Is there anything that you did not complete that you now have to push off into the next milestone? No, progress is steady. Any other comments? N/A

Milestone 3: What problems did you run into? How did you fix them? Is there anything that you did not complete that you now have to push off into the next milestone? Any other comments?
Milestone 4: What problems did you run into? How did you fix them? Is there anything that you did not complete that you now have to push off into the next milestone? Any other comments?