

Network System Implementation for Law Firm, LLC.

Orlando, Florida

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Project Scope

Purpose

The goal of the ████████ Law project is to centralize the operations of the rapidly expanding Orlando-based patent law firm. The current organizational structure, which places three different offices on different floors of the same structure, has an impact on meetings, daily operations, and communication. The business recently finalized a lease for a new, larger office space that will house all the staff on the same floor together.

Key Objectives

The key objective of the project for ████████ Law, LLC is to provide a centralized computer network system for all 10 employees in a new and larger office space. The purpose of the objective is to improve the efficiency and effectiveness of communication, meetings, decision-making processes, and day-to-day operations. The project aims to support the company's strategic goal of continuous growth and profitability. The project takes advantage of new technologies and will provide a comprehensive project report including a network diagram, weekly timesheets, and status reports. The project will provide a fully functional local area network system that meets the company's requirements and needs.

Deliverables

The deliverables for this project are as follows: the installation of 1 router, 1 server, 1 switch, 10 Laptop Computers, 2 WAPs, 10 VoIP phones, 1 printer, 1 conference phone, 1 smart TV, server software (Microsoft Windows Server 2019), and client computer software (Microsoft Windows 10 Pro), 1 Network Diagram, and 1 Network design table.

Exclusions

The following items are outside the scope of this project and the responsibility of ████████ Law, LLC to purchase.

1. Keyboards and mice
2. Adapters, cables, dongles, etc.
3. Any hardware or software under \$50

Project Constraints

1. Time constraint: The Project must be completed within 5 weeks.
2. This project is expected to have a total cost of \$60,000


Key Success Factors

1. Effective and timely communication with [REDACTED] Law, LLC
2. Accomplishing project deadlines
3. Accurate recording and reporting
4. All staff must receive proper training.
5. Exceeding the expectations of [REDACTED] Law, LLC

Project Timeline and Cost

This Project is expected to have a total cost of \$50,000 and take 5 weeks to complete.

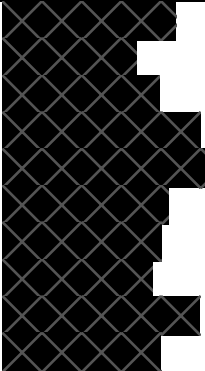
Network Objectives

- Improved Communication and collaboration – The new centralized office will make it easier for meetings, decision- making, and day to allow employees to collaborate more effectively under the same roof.
- Better Data Management – The new network will make is possible to store, handle, and retrieve valuable data efficiently, minimizing the chance of data loss or data breach.
- Scalability – The Infrastructure of the network will be scalable, allowing  to ad or remove devices and users as needed to suit the business growth.
- Increased Mobility – WIFI Connectivity will be available throughout the office so that Employee can access information and work from anywhere in the office. There will also be a separate guest network for client to connected to.

IP Network Design Table

Node	Hardware Name	Static IP address
1	Computer	192.168.123.101
2	Computer	192.168.123.102
3	Computer	192.168.123.103
4	Computer	192.168.123.104
5	Computer	192.168.123.105
6	Computer	192.168.123.106
7	Computer	192.168.123.107
8	Computer	192.168.123.108
9	Computer	192.168.123.109
10	Computer	192.168.123.110
11	VoIP Phone	192.168.123.201
12	VoIP Phone	192.168.123.202
13	VoIP Phone	192.168.123.203
14	VoIP Phone	192.168.123.204
15	VoIP Phone	192.168.123.205
16	VoIP Phone	192.168.123.206
17	VoIP Phone	192.168.123.207
18	VoIP Phone	192.168.123.208
19	VoIP Phone	192.168.123.209
20	VoIP Phone	192.168.123.210
21	Router	192.168.123.1
22	Server	192.168.123.3
23	Switch	192.168.123.7
24	WAP 1	192.168.123.20
25	WAP 2	192.168.123.21
26	Printer	192.168.123.50
27	Smart TV	192.168.123.60
28	Conference Phone	192.168.123.70

Network Configuration Process

User Accounts	Setup and Configuration Process
	<p>Step 1: Launch Windows Server 2019 VM</p> <p>Step 2: Log into server using admin password</p> <p>Step 3: Open Server Manager by going to Windows Start Menu and click on Server Manager</p> <p>Step 4: click on the Tools menu and chose Computer Management</p> <p>Step 5: Click on Local Users and Groups</p> <p>Step 6: Right click on white space and select new user.</p> <p>Step 7: Input User information, Username, full name, description</p> <p>Step 8: Input User password</p> <p>Step 9: uncheck “user must change password at next login”.</p> <p>Step 10: Click “Create.”</p>

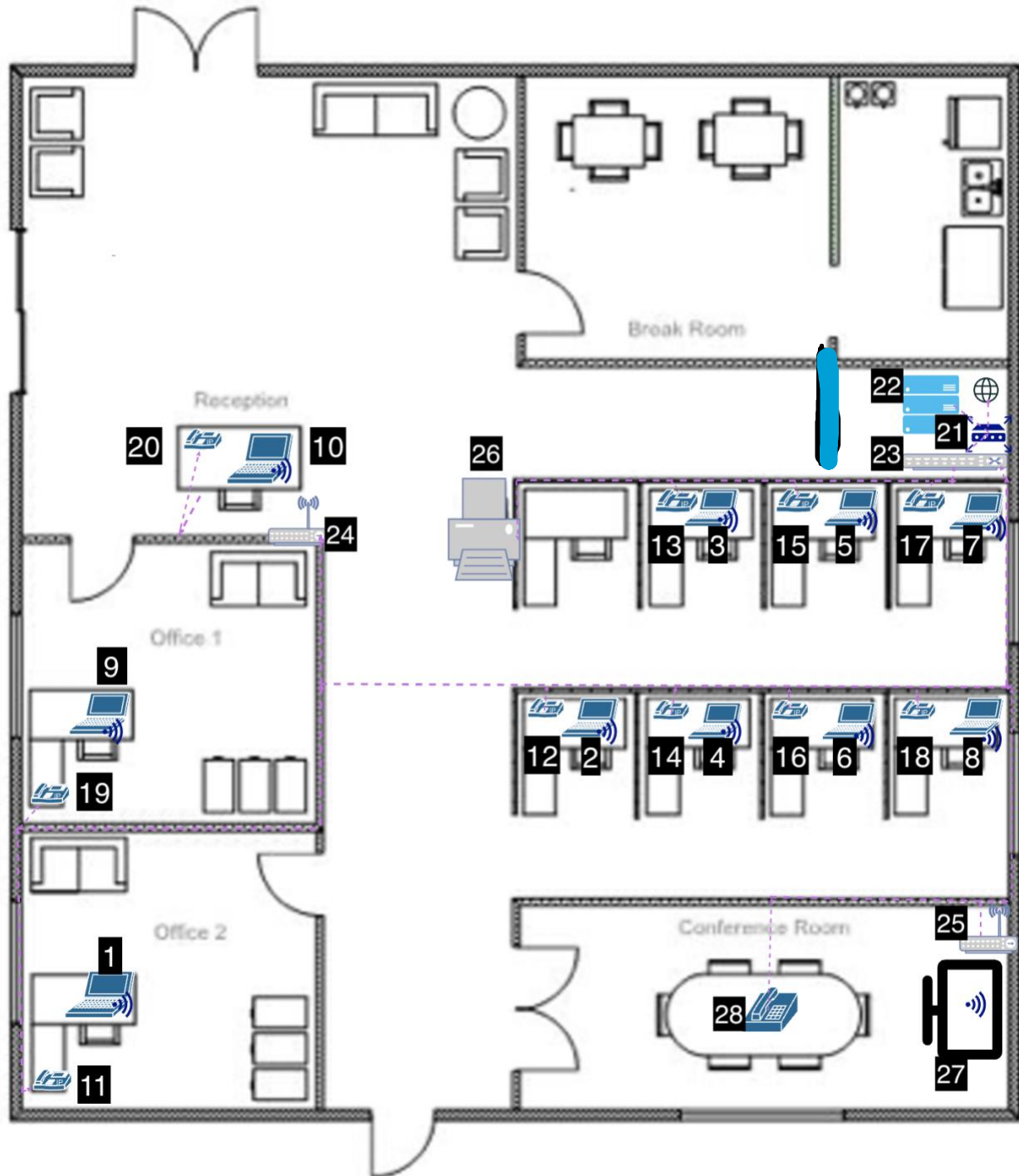
Groups	Setup and Configuration Process
_Attorneys _Accounting _Administrative	<p> Step 1: Launch Windows Server 2019 VM Step 2: Log into server using admin password Step 3: Open Server Manager by going to Windows Start Menu and click on Server Manager Step 4: Click Local Users and Groups. Step 5: Click Groups Step 6: Right click in white space Step 7: Click “New Group” Step 8: Input Group name and description Step 9: Click “add” Type the Username you wish to add to the group into the box under “Enter the object names to select” Step 10: Click “Check Names” Step 11: Click” OK” Step 12: Repeat steps 9 through 11 as needed. Step 12: Click “Create” </p>

Folders and Permissions	Setup and Configuration Process
Attorneys Accounting Administrative	<p><u>Create Folders</u></p> <p>Step 1: Launch File Explorer</p> <p>Step 2: click the dropdown arrow next to This PC</p> <p>Step 3: Double-click on Local Disk (C :)</p> <p>Step 4: Right click in the white space</p> <p>Step 5: Click New</p> <p>Step 6: click Folder</p> <p>Step 7: Right Click the New folder</p> <p>Step 8: Click Rename</p> <p>Step 9: Input new name for the folder</p> <p>Step 10: Press the “Enter” or “return key” on your keyboard</p> <p><u>Set Sharing Permissions</u></p> <p>Step 1: Launch Windows Server 2019 VM</p> <p>Step 2: Log into server using admin password</p> <p>Step 3: Open Server Manager by going to Windows Start Menu</p> <p>Step 4: Click on Server Manager</p> <p>Step 5: click Computer Management</p> <p>Step 6: Click on Shared Folders</p> <p>Step 7: Click Shares</p> <p>Step 8: Right click in white space. Click New Share, Click NEXT</p> <p>Step 9: Click “Browse” next to folder path,</p> <p>Step 10: Locate the Folder you want</p> <p>Step 11: Click “OK”</p> <p>Step 12: Click “next”</p> <p>Step 13: Select “customize permissions”</p> <p>Step 14: Click “custom”</p> <p>Step 15: Select “Everyone”</p> <p>Step 16: Click “Remove”</p> <p>Step 17: Click “add”</p> <p>Step 18: type the name of the group or user you wish to add</p> <p>Step 19: Click “Check names”</p> <p>Step 20: Click “OK”</p> <p>Step 21: make appropriate Permissions for the Share selections in the check boxes for “Full Control, read, change”</p> <p>Step 22: Click “Ok”</p> <p>Step 23: Repeat steps 17 through 22 as needed.</p> <p>Step 24: Click “Finish”</p> <p>Step 25: Click “Finish”</p>

Logins and Passwords

Employee Name	Employee Title	Login ID	Password
[REDACTED]	Owner	[REDACTED]	[REDACTED]
[REDACTED]	Attorney	[REDACTED]	[REDACTED]
[REDACTED]	Attorney	[REDACTED]	[REDACTED]
[REDACTED]	Administrative Assistant	[REDACTED]	[REDACTED]
[REDACTED]	Attorney	[REDACTED]	[REDACTED]
[REDACTED]	Attorney	[REDACTED]	[REDACTED]
[REDACTED]	Attorney	[REDACTED]	[REDACTED]
[REDACTED]	Attorney	[REDACTED]	[REDACTED]
[REDACTED]	Attorney	[REDACTED]	[REDACTED]
[REDACTED]	Accountant	[REDACTED]	[REDACTED]

Network Topology Diagram with Node Numbers



Capital and Operating Costs

Hardware and Software	Per Unit Cost	Quantity	Total Cost
Laptops	1,426.33	10	14263.3
Server rack	258.39	1	258.39
Router	550.99	1	550.99
Server	1,811.64	1	1,811.64
Switch	168.14	1	1602.64
Server Hard Drives	902.49	4	3609.96
VoIP Phones	71.25	10	712.50
Conference Phone	606.09	1	606.09
WAPs	151.04	2	302.08
Printer	1310.05	1	1310.05
Smart TV	664.99	1	664.99
Windows Server 2019	764.79	1	763.79
Windows 10 Pro	Free	10	Free
Labor (@ \$75/hour)	\$75	40 hrs	\$3,000
Annual ongoing network maintenance and support	\$12,000	1 yr	\$12,000
GRAND TOTAL	-	-	41456.42

Hardware and Software Specification Tables

Laptops

Brand/Manufacturer	HP
Product Line	HP ELITEBOOK
Model	860 G9 NOTEBOOK
Processor/Clock Speed	1.2 GHZ
Memory/Speed	4800 MEGAHERTZ
Hard Drive/Capacity	512 GB
Embedded Security	Trusted Platform Module (TPM 2.0) Security Chip
Display/Size/Resolution	1920 x 1200
Networking	WIFI 6, Bluetooth
Operating System	Microsoft
Cache	12Mb
OS	Windows 11 Pro / 10 Pro option

Server

Brand/Manufacturer	HPE
Product Line	HPE ProLiant
Model	DL20 Gen 10 Plus Performance
Hard Drive/Capacity	none
Chassis	Rack mount
Processor	Intel Xeon E-2314
Memory/Speed	3200 megahertz
Storage Controller	RAID
Monitor	None
Ethernet	2x LAN Gigabit
Operating System	None
Networking	2 x Gigabit Ethernet
Expansion Bays	(4) 2.5" Hot-swap bays
Expansion Slots	1 (total) / 1 (free) x PCIe 4.0 x16 - half-length, full-height (x8 mode), 1 (total) / 1 (free) x PCIe 4.0 x8 (low-profile)

Server Hard Drives

Brand/Manufacturer	HPE
Product Line	HPE
Storage Type	SSD
Hard Drive Type	Hot-swap
Form Factor	2.5"
Interface	Serial Attached SCSI 3
Capacity	1.8 TB
Data Transfer Rate (DTR)	1.2 GBps

Router

Brand/Manufacturer	ADTRAN
Product Line	ADTRAN NetVanta
Model	3140 RM
RAM	Not specified
Flash Memory	Not Specified
WAN Ports Qty	3
Integrated Switch	N/A
Data Link Protocol	Ethernet, Fast Ethernet, Gigabit Ethernet
Network/Transfer Protocol	ICMP/IP, PPPoE

Switch

Brand/Manufacturer	D-Link
Product Line	D-Link DGS
Model	1510-52XMP
RAM	Not-specified
Flash Memory	Not-specified
Performance	Forwarding performance: 130.95 Mpps, Switching capacity: 178 Gbps
Capacity	Static ARP entries: 256, VLAN groups: 4094
Ports Qty*	48

Printer

Brand/Manufacturer	Xerox
Product Line	Xerox VersaLink
Model	C600/YDN
Duty Capacity	120,000 pages / month
Printing Output Type	Color
Chassis	Workgroup Printer
Processor	1.05 GHz
RAM	2Gb
Hard Drive	320 GB HDD
Printing System	LED
Networking	Gigabit LAN, NFC, WIFI
Connectivity	Gigabit LAN, NFC, USB 3.0, USB host

Wireless Access Points (WAPs)

Brand/Manufacturer	Netgear
Product Line	Netgear insight
Model	WAX610
Antenna	Internal
Chassis	External
Capacity	1.8 Bps
Networking	2.4 GHz , 5 GHz
Interface	Ethernet/ RJ-45
Power	PoE+

Smart TV

Brand/Manufacturer	Samsung
Model	Samsung
Series	UHD 7 series
Video Interface	HDMI
HDMI Ports Qty	2
Diagonal Size	70 inch
Resolution	3840 x 2160
Display Format	LED
Viewing Angle	boundless
Digital Audio Format	Dolby Digital Plus output
Output Power	20 watt
Speaker System	(2) 10 watt speakers
USB Ports Qty	1
Wi-Fi Protocol	802.11ac

Conference Phone

Brand/Manufacturer	Poly
Product Line	Ploy RealPresence Trio
Model	880
Type	Conference VoIP phone
Dialer Locations	Base
Call Services	Call Forwarding, Call Hold, Call Transfer, Call Waiting
Speakerphone	yes
Features	Acoustic Clarity Technology, Echo cancellation, Bluetooth / NFC,
Phone connections	USB / 4 pin USB Type A, USB / 5 pin Micro-USB Type B

Server Software

Brand/Manufacturer	Microsoft
Product Line	Windows
Version	Server 2019 Standard
Licensing	16 Cores / Retail

Client Software

Brand/Manufacturer	Microsoft
Product Line	Windows
Version	Microsoft
Licensing	Free downgrade from 11 Pro

VoIP Phones

Brand/Manufacturer	Grandstream
Product Line	Grandstream
Model	GRP2612
Type	VoIP
Conference Call Capability	4 lines
Call Services	Call Forwarding, Call Hold, Call Transfer, Call Waiting, Caller ID, Voice Mail
Speakerphone	Yes
Additional Functions	Built-in clock, Intercom, RSS feeds, Web browser
Features	Multiple VoIP protocol support
VoIP Protocols	RTCP, RTP, SIP, SRTP
IP Address Assignment	RTCP, RTP, SIP, SRTP
Voice Codecs	G.711μ/a, G.722, G.723, G.726, G.729ab, iLBC, Opus
Quality of Service	Differentiated Services (DiffServ), IEEE 802.1p, IEEE 802.1Q (VLAN), Multiprotocol Label Switching (MPLS), Type of Service (ToS)
IP Address Assignment	RTCP, RTP, SIP, SRTP
Network Protocols	ARP, DNS, HTTP, HTTPS, ICMP, IP, Link Layer Discovery Protocol (LLDP), NTP, RTP, SRTP, TCP, TFTP, TR-069, UDP
PoE Support	No
Voice Features	Acoustic echo cancellation (AEC), Adaptive jitter buffer (AJB), Automatic gain control (AGC), Comfort noise generation (CNG), HD Voice, Packet loss concealment (PLC), Voice activity detection (VAD)

Timesheets

Milestone	Activity Description (be descriptive)	Start Time	End Time	Total Activity Time	Activity Date
Milestone 1	Market research and purchasing	11:00am	3:00pm	4.0 hrs	2/6/2023
Milestone 1	Office Networking Diagram	3:00pm	4:30pm	1.5 hrs	2/6/2023
Milestone 1	Project analysis and report	7:30pm	10:00pm	2.5 hrs	2/6/2023
Milestone 2	Network design table	1pm	2pm	1hr	2/9/2023
Milestone 2	Writing project scope	6:30pm	11pm	4.5hrs	2/10/2023
Milestone 2	Network objectives and updated network diagram	7pm	10:30pm	3.5hrs	2/13/2023
Milestone 3	Created User Accounts and groups in server 2019	1pm	2pm	1hr	2/19/2023
Milestone 3	Created folders, shares, and configured permissions in server 2019	3pm	5pm	2hrs	2/19/2023
Milestone 3	Connected user accounts Windows 10 accounts to Shares on Server 2019	3pm	5pm	2hrs	2/20/2023
Milestone 3	Network testing and network demo video	7:30pm	10pm	1.5	2/20/2023
Milestone 4	Final network test	7pm	7:30pm	.5hr	2/22/2023
Milestone 4	Preparing finalized project plan and report	8pm	8:30pm	.5hr	2/22/2023
Milestone 4	Project presentation	8:30pm	11pm	3.5hrs	2/22/2023
TOTAL HOURS				28hrs	

Status Reports

Accomplished this week

Milestone 1: Item purchase order
Milestone 1: Office Network Diagram
Milestone 1: Week 1 report
Milestone 2: Modified network diagram
Milestone 2: completed IP network design Table with assigned static Ip addresses
Milestone 2: Finalized Project scope and network objectives.
Milestone 3: Completed User account Setup
Milestone 3: Created Groups, Folders and Shares
Milestone 3: Configured Permissions
Milestone 3: Tested and confirmed Local Area Network Functionality
Milestone 4: Finalized project plan
Milestone 4: Finalized project report
Milestone 4: Retested the Local Area Network and system configuration

Planned for next week

Coming up for milestone 2: create static IP addresses
Coming up for milestone 2: make any needed updates to network diagram
Coming up for milestone 3: creating and testing user accounts, groups, folders and establish permissions
Coming up for milestone 3: Finalizing project report
Coming up for milestone 4: Finalize project report
Coming up for milestone 4: Create. Pitch Presentation

Comments for each milestone

Milestone 1:

What problems did you run into? Items were out of stock or delayed

How did you fix them? I found items that were compatible with the components and in stock / ready to ship

Is there anything that you did not complete that you now have to push off into the next milestone? Will install hardware when it arrives.

Any other comments? Customer may want to consider cooling system for the server closet to protect hardware from overheating.

Milestone 2:

What problems did you run into? The original switch did not have enough ports to include the VoIP phones.


How did you fix them? Selected a 48-port switch instead of the 24-port switch originally selected.

Is there anything that you did not complete that you now have to push off into the next milestone? N/A

Any other comments? none

Milestone 3:

What problems did you run into? Initially couldn't map to the server from Window 10.

How did you fix them? Enabled Network discovery on both Windows Server 2019 and Windows 

Is there anything that you did not complete that you now have to push off into the next milestone? None

Any other comments? None

Milestone 4:

What problems did you run into? none

How did you fix them? N/A

Is there anything that you did not complete that you now have to push off into the next milestone? none

Any other comments? none