Network System Implementation
for the Marconi Law Firm, LLC.

Orlando, Florida

Project: Network Nexus

Cyber-Ware Solutions LLC

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Chief Executive officer (CEO)

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Project Scope

The sole purpose of the Network Nexus project is to integrate new technological advancements to implement the Marconi Law Firm Business Network to an optimal functionality to increase productivity by creating a new Local Area Network. We have provided an efficient and reliable network structure design with the latest and top-notch hardware and software. Having thought about future needs, we have built a network with plenty of scalability to supply office necessities in the future. Focusing on having centralized operations in the new office that consists of 4,000 square feet of space to implement, having in thought the reception area, break room, eight cubicles with sufficient space for Computers and Telephones for current and future employees, the conference room, and two main offices are what the new office space consists of. Every inch will be covered with a high-speed and reliable internet connection from your Internet Service Provider. Initially, we were required to start designing a server room space to create the network backbone properly; I placed it strategically in the hallway next to the break room where it would be installed.

We must establish the key objectives or high-level work specifications for Mr. Marconi's Law Firm. This will ensure all members are on the same page and working towards a common goal that would increase productivity and scalability in the Network Nexus project. Once we understand our objectives and work specifications, we can build a robust and effective network that delivers client results. Providing a network design for a law firm means the network's high-

level specification needs to meet specific criteria to ensure the safety and security of the client's confidential information. The built network will handle all of Mr. Marconi's Law firm data simultaneously, providing redundancy and reliable and fast connectivity. This means one of the most important objectives is to ensure that our data is securely stored and accessible only to authorized personnel. That is why we will be segregating the network by departments.

Additionally, we need to implement measures to prevent unauthorized access or data breaches. Our network should also be regularly monitored and updated to ensure it is always up-to-date with the latest security protocols. Our network's high-level specification is critical to the project's success, and as a law firm, it is crucial to protect clients' information.

A few critical hardware and software deliverables should be considered for this Network Nexus Project to supply the Law Firm's needs when setting up a reliable and efficient network. First, the network's hardware components have been carefully selected to meet the law firm's specific needs. This may include servers, routers, switches, firewalls, necessary cabling, and other infrastructure. Regarding software, I have chosen a robust and secure operating system that can handle the demands of a law firm network, which is essential. This may include features such as user authentication, file sharing and collaboration, and remote access capabilities. Other software tools necessary for a law firm network include email and communication applications, document management systems, and legal research databases. Security software such as antivirus and anti-malware tools should also be implemented to protect the network from potential threats. Overall, a successful law firm network requires careful consideration of both hardware and software deliverables to ensure that it is reliable, secure, and able to meet the unique needs of the legal

profession, and the Cyber-Ware Solutions Team has thoroughly selected the best match possible for the Network Nexus project.

Regarding this network work design, many things need to be considered. We must remember the importance of training every team member for the new network systems. Not only does it ensure that your team is equipped with the necessary skills and knowledge to use the new system effectively, but it also helps to improve productivity and overall performance. Proper training can save time and money in the long run by preventing errors and reducing downtime. Ensuring your employees feel supported and confident in their abilities to use the new network system is essential, which can ultimately lead to a more prosperous and efficient business. From the layout of the physical infrastructure to the protocols and software that have been selected and will be used, every aspect of the network needs to be carefully planned out, which has been taken care of. However, a few things are typically not included in this network design project. To be precise, and there are no misunderstandings that could lead to damages and losses to the law firm, the initial planning stages should include employee training and ongoing maintenance. Security protocols and disaster recovery plans may also have been overlooked in favor of more immediate concerns. Despite these potential oversights, it is essential to remember that every aspect of a network design project should be carefully considered to ensure the success and longevity of this network.

Items not included:

- Internet Connection from an Internet Service Provider (ISP)
- Employee Training
- A virtual private network (VPN) is necessary to access critical legal files in the virtual server and cloud drive.
- Antivirus
- Firewall
- Backup System
- Security Software
- Security Cameras
- Real Integration with legal programs, enabling tasks such as (online legal research, form building, and legal case management and analysis)
- Client portal to share documents/drafts easily and securely with a client.
- Contacts database for sharing and collaborating with colleagues.
- A court calendar system that syncs with email.
- Legal document management repository
- Time and legal billing system
- Portable scanners

As a law firm, one of the most significant constraints to be aware of is ensuring the client's information security and confidentiality. The estimated cost to properly execute the Network Nexus project will require $59,601.64 of the total budget previously established to acquire the necessary Hardware and Software units, including the annual ongoing network maintenance, support, and labor costs have been added to provide this Grand Total cost—more information on Capital and Operation Cost table section.

Network Nexus could succeed by properly implementing strict access controls firewalls and ensuring that data is shared through encryption, transforming plain text into a coded message that unauthorized parties cannot easily read. Additionally, we must provide our network infrastructure is highly available and reliable by September 30, 2023. The project will require $59,600. Five weeks to meet the scope of the deliverable and adequately install and ensure that any downtime or disruption in the installation process is managed. This will ensure that we prevent severe consequences for sensitive information and client cases, which is one of the keys to ensuring the milestones are adequately met. Finally, we must ensure that our network is scalable and flexible enough to meet the firm’s and client’s changing needs. As the firm grows and evolves, the web will be available to increase productivity based on the firm's needs. By carefully managing these constraints, we can build a network that supports the firm’s mission and values while providing the best possible service.

Network Objectives/Benefits

- User Authentication – One of the critical benefits of user authentication on a network is enhanced security. Organizations can ensure that only authorized users can access sensitive information by requiring users to authenticate themselves before accessing network resources. This can help to prevent data breaches, theft, or other malicious activity that could harm the organization or its users. Additionally, user authentication can help improve network performance by reducing the load on network resources and ensuring that users can only access the resources they need. Overall, user authentication is an essential tool for maintaining the security and integrity of a network.

- File Sharing– File sharing in a network can offer numerous benefits for businesses. One of the key advantages is the ability to collaborate more effectively with others, meaning the collaboration on a Case could benefit from file sharing. By transferring files across a network, team members can work together on the same documents, presentations, and other types of files, making it easier to share ideas and complete projects promptly. Another benefit of file sharing is that it can reduce costs. Users can share files and collaborate using a single set of resources rather than purchasing multiple copies of the same software or other tools. This can save money on software licenses, hardware, and other expenses. In addition, file sharing can help to improve productivity and efficiency. With files readily available on a network, law firm team members can access the information they need quickly and easily without wasting time searching for files or

transferring them between devices. Whether you want to improve collaboration, reduce costs, or boost productivity, file sharing can effectively achieve the company goal.

- Collaboration- Collaborating on a network will bring numerous benefits. It allows team members to connect and share knowledge with others with similar interests and goals. This can lead to new ideas, solutions, and opportunities that may not have been possible otherwise. The Marconi Law firm will improve while collaborating on a network that can increase efficiency and productivity as tasks can be divided and conquered among multiple people, with faster completion times and higher-quality results. Lastly, network collaboration can also provide a sense of community and support among team members, which can be especially helpful for individuals who work remotely or in isolated environments. Collaborating on a network can be a valuable tool for achieving success and company goals, increasing professional growth.

- Remote Access Capabilities – Remote access in the Network Nexus design will bring numerous benefits to team members, including increased productivity, flexibility, and convenience. With remote access, we can access network resources, such as files and applications, from anywhere worldwide if we have a stable internet connection. This means employees can work from home or on the go without being tied to a physical office. It also means the Law Firm can save money on office space and equipment if they decide to. Additionally, remote access allows for faster and more efficient collaboration

between team members without the need to be physically in the same space. Remote access can help to reorganize workflow and increase overall efficiency.

- Security- Having security in a network provides several key essential benefits. The network will protect sensitive information from unauthorized individuals' access or theft. This includes personal data such as credit card details, medical records, and confidential business information. Network security helps prevent malicious attacks such as viruses, malware, and ransomware from infecting devices and causing damage. This helps protect the network and prevents downtime and costly repairs. Finally, security in a network can improve overall performance and efficiency by identifying and addressing potential vulnerabilities before they can be exploited. This allows for a smoother and more reliable network experience for all users.

- Storage Capabilities – When you store your files and data on a network, you can enjoy numerous benefits from this network nexus design. One of the most significant advantages is accessing your files from anywhere with an internet connection. This can be incredibly useful for people who work remotely or need to access their files while traveling. Storing the firm's data on the network can help save space on your local devices, like the limited workstation and computer storage. You won't need to keep as many files locally, slowing down performance on the computer. This can be especially helpful if you have limited storage space on your computer or mobile device. One key benefit I would like to emphasize is that storing your data on a network can help keep

your files safe and secure and is one of the most critical project deliverables to store client's confidential data securely. Many networks offer advanced security features, such as firewalls and encryption, to protect your data from unauthorized access. Storing your files on a network can significantly improve productivity, save space, and keep your data safe.

- Redundancy - In enterprise-level storage systems, as well as in personal computers and other devices, we use a technology that involves combining multiple physical disk drives into a single logical unit, bringing data redundancy and performance. The selected storage will have five storage disks providing a RAID Level 5 (Redundant Array of Independent Disks), which strips the data across five storage discs. This offers a range of benefits to users who require high levels of data protection. Level 5 provides excellent fault tolerance and data recovery capabilities with its advanced parity and distributed data protection techniques. This means that even during a drive failure, your data remains safe and accessible.

- Scalability - A vital benefit of a scalable network is the ability to handle growth and expansion efficiently. Whether adding new devices or increasing the number of users on your network, a scalable infrastructure allows smooth integration without sacrificing performance or security. Additionally, a scalable network will lead to Mr. Marconi's Law Firm's money, reducing the need for frequent upgrades and replacements regarding technology hardware and software. With the ability to quickly modify to changing demands, Network Nexus is designed for a scalable network and is an asset for any business or organization.

IP Network Design Table

-	IP Address
Netmask	**255.255.255.0**
First IP	10.10.119.1
Last IP	10.10.119.254
Total Host	254
Network ID	10.10.119.0
Broadcast Address	10.10.119.255

Node	Hardware Name	Static IP address
1	Marconi Computer	10.10.119.20
2	Jones Computer	10.10.119.21
3	Stark Computer	10.10.119.22
4	Drums Computer	10.10.119.23
5	Shoemaker Computer	10.10.119.24
6	Brooks Computer	10.10.119.25
7	Long Computer	10.10.119.26
8	Adams Computer	10.10.119.27
9	Smith Computer	10.10.119.28
10	Schultz Computer	10.10.119.29
11	Marconi VoIP Phone	10.10.119.31
12	Jones VoIP Phone	10.10.119.32
13	Stark VoIP Phone	10.10.119.33
14	Drums VoIP Phone	10.10.119.34
15	Shoemaker VoIP Phone	10.10.119.35
16	Brooks VoIP Phone	10.10.119.36
17	Long VoIP Phone	10.10.119.37
18	Adams VoIP Phone	10.10.119.38
19	Smith VoIP Phone	10.10.119.39
20	Schultz VoIP Phone	10.10.119.40
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	10.10.119.10
27	Smart TV	10.10.119.11
28	Conference Phone	10.10.119.41

Network Configuration Process

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 Smiths	Step 1: Launch **Windows Server 2019** VM Step 2: Log into the server using the admin password. Step 3: Open **Server Manager** by going to **Windows Start Menu** and clicking on **Server Manager** Step 4: Navigate to the **Windows Server Manager** and click **Tools** in the upper right corner. Another option, windows, will appear. You will select the second option, **Computer Management**. Step 5: Click the left-hand menu's **Local Users and Groups** option, select "Users" from their right, and click, and a small window will appear with the option "New User…**"** Step 6: The final step is to enter the desired username and password and choose any additional settings, such as whether the user should be required to change their password upon the next login. Step 7: Finally, click "Create" to add the user to the system, and another window to add another will appear to help with the process.

Groups	Setup and Configuration Process
_Attorneys _Accounting _Administrative	Step 1: Launch **Windows Server 2019** VM Step 2: Log into the server using the admin password. Step 3: Open **Server Manager** by going to **Windows Start Menu** and clicking on **Server Manager** Step 4: Navigate to the **Windows Server Manager** and click **Tools** in the upper right corner. Another option, windows, will appear. You will select the second option, **Computer Management.** Step 5: Click the left-hand menu's **Local Users and Groups** option and select "Groups." from there, click, and a small window will appear with the option "New Group…" Step 6: The next step is to enter the desired **Group name** and **Description**. Step 7: Next, click **Add,** and a **Select Users** window will appear. Add any desired users we previously created to the group members by typing the usernames from the list of available Users. Step 8: Click "Create" to create the new group and repeat this process for all the necessary Groups.

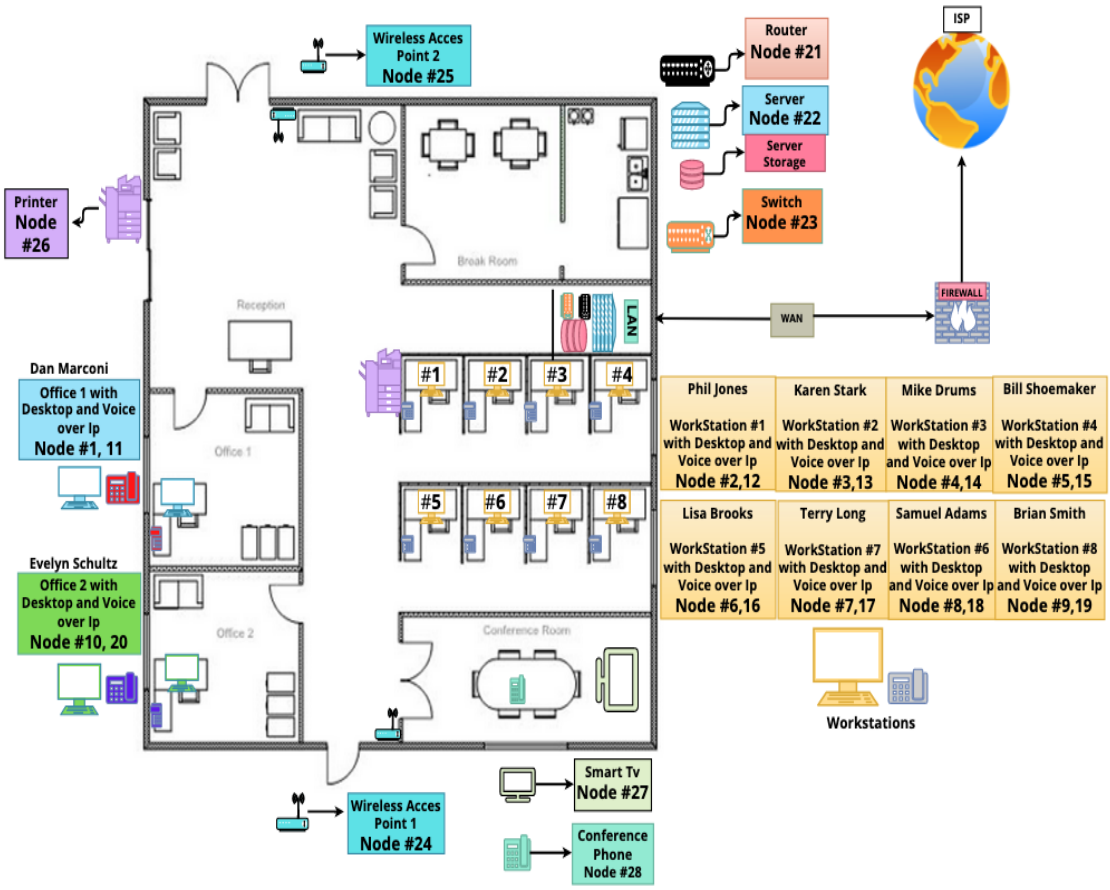
Folders and Permission	Setup and Configuration Process
Attorneys Accounting Administrative	<u>Create Folders</u> Step 1: Launch **File Manager** Step 2: Double-click on **Local C drive.** Step 3: Right-click in an empty space in the **Local Disk (C:) drive** window and select **"New"** from the context menu and click the **Folder** option. Step 4: Type in a name for the new folder and press Enter. Step 5: The created folder will now appear in the C drive window, and you can begin adding files to it. Repeat this process to create all the necessary folders. <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** Step 4: Navigate to the **Windows Server Manager** and click **Tools** in the upper right corner. Another option, windows, will appear. You will select the second option, **Computer Management.** Step 5: Click the left-hand menu's **Shared Folder> Shares** option. Step 6: Then, right-click in an empty space and choose the New Share option a **Create a Shared Folder Wizard** will appear to follow the prompts to create your new share click **Next >** to continue. Step 7: Then we will need to specify the location of the folder you wish to share by clicking the **Browse…** option a **Browse for Folder** will appear. We can scroll down and select the desired folder from the **Local Disk (C:)**

	Step 8: Then we click Next > on the **Create a Shared Folder Wizard** to be able to type the **Share name**, and **Description** desired. Step 9: One more type we click **Next >** on the **Create a Shared Folder Wizard** to get the permissions and other options windows. Select the last option bubble **Customize permissions** and press **Custom**. Step 10: Remove the Share Permissions on Everyone by selecting it making sure is blue and pressing the **Remove** Tab underneath. Step 10: Click **Add…** a **Select Users** or **Groups** windows will appear to select the desired usernames or group names to share the folder with press Check Names to verify that the typed matches the ones we have on system. When finished select ok to add them. Step 11: To finalize this process, we need to uncheck and check the corresponding boxes underneath where the options appear as, **Full Control, Change, Read.** We need to make sure Full Control is both unchecked and we need to check the boxed on Allow for the Change and Read option for the created shared folder Permissions. Step 12: Press **OK** to finish this process and repeat the same to create a New One.

User Logins and Passwords

Employee Name	Employee Title	Login ID	Password
Dan Marconi	President/Attorney	dmarconi	MarconiLawFirm1!
Phil Jones	Attorney	pjones	MarconiLawFirm1!
Karen Stark	Attorney	kstark	MarconiLawFirm1!
Evelyn Schultz	Administrative Assistant	eschultz	MarconiLawFirm1!
Bill Shoemaker	Attorney	bshoemaker	MarconiLawFirm1!
Mike Drums	Attorney	mdrums	MarconiLawFirm1!
Lisa Brooks	Attorney	lbrooks	MarconiLawFirm1!
Terry Long	Attorney	tlong	MarconiLawFirm1!
Samuel Adams	Attorney	sadams	MarconiLawFirm1!
Brian Smith	Accountant	bsmith	MarconiLawFirm1!

Network Topology Diagram with Employee Names and Node Numbers



Capital and Operating Costs Hardware and Software Specification Tables

Desktops

Brand/Manufacturer	**Dell / Dell Smart Select Desktops**
Product Line	Dell OptiPlex
Model	7410 All in One
Processor/Clock Speed	Intel Core i5 - 14-core / 1.6 GHZ
Memory/Speed	DDR4 SDRAM RAM Installed - 8 GB RAM Supported - 64 GB 3200 megahertz
Hard Drive/Capacity	**Hard Drive Interface Type - SSD Class 35, NVM Express (NVMe)** Hard Drive Capacity - 256 GB
Embedded Security	Trusted Platform Module (TPM 2.0) Security Chip
Display/Size/Resolution	LED / Full HD 23.81-inch Screen Size (metric) 60.47 centimeter 1920 x 1080
Networking	Compliant Standards IEEE 802.11a, IEEE 802.11ac, IEEE 802.11ax, IEEE 802.11b, IEEE 802.11g, IEEE 802.11n Data Link Protocols Bluetooth, Ethernet, Fast Ethernet, Gigabit Ethernet, IEEE 802.11a, IEEE 802.11ac, IEEE 802.11ax (Wi-Fi 6E), IEEE 802.11b, IEEE 802.11g, IEEE 802.11n Ethernet Controllers Intel I219-LM Features Dual stream (2x2) Wireless LAN 802.11a/b/g/n/ac/ax (Wi-Fi 6E), Wireless LAN Supported

	Wireless NIC Intel Wi-Fi 6E AX 211
Operating System	Windows 11 Pro
Cache	**24 megabytes**
OS	Windows 11 Pro
Page URL	https://www.cdw.com/product/dell-optiplex-7410-all-in-one-all-in-one-core-i5-13500t-1.6-ghz-vpro/7411501?pfm=srh

Server

Brand/Manufacturer	**HPE / Hewlett-Packard**
Product Line	HPE ProLiant
Model	DL380 Gen11 Network Choice
Hard Drive/Capacity	**No HDD / Channel Quantity** **8**
Processor	**PCI Express 4.0 x8** **Clock Speed - 2.1 GHZ** **Cores - 32-core** **Max Turbo Speed - 3.4 GHZ** **Intel Turbo Boost Technology** **Processor Number - 6430** **Processor Type - Xeon Gold**
Memory/Speed	Max Memory Supported - 8 TB Memory Slots - 32 Memory Speed – 4400 megahertz Memory Technology -DDR5 SDRAM RAM Installed - 64 GB Rated Memory Speed - 4800 megahertz
Storage Controller	**HPE Smart Array MR408i-o** **RAID Type**
Monitor	None
Ethernet	**Ethernet, Fast Ethernet, Gigabit Ethernet - 2 x Gigabit Ethernet**
Operating System	No operating system OS Certified (Canonical Ubuntu, Citrix, Microsoft Windows Server, Oracle Linux, Red Hat Enterprise Linux, VMware ESXi) Software Type - HPE Server UEFI
Networking	2 x Gigabit Ethernet

Expansion Bays	**1 (total) / 1 (free) x external Universal Media Bay, 8 (total) / 8 (free) x hot-swap 2.5" SFF**
Expansion Slots	1 (total) / 1 (free) x PCIe 5.0 x16 - full-length, full-height, 1 (total) / 1 (free) x PCIe 5.0 x16 - full-length, full-height (x8 mode), 1 (total) / 1 (free) x PCIe 5.0 x16 - half-length, full-height (x8 mode), 2 (total) / 2 (free) x FlexibleLOM
Page URL	https://www.cdw.com/product/hpe-proliant-dl380-gen11-network-choice-rack-mountable-xeon-gold-6430-2/7439518?pfm=srh#TS

Server Hard Drives

Brand/Manufacturer	**HPE / Avnet**
Product Line	**HPE**
Storage Type	Solid state drive **NAND Flash Memory Type** - Triple level cell (TLC)
Hard Drive Type	Hot-swap hard drive HD Interface Serial Attached SCSI 3
Form Factor	**Form Factor (Short) - 2.5"** **Form Factor (Short) (metric) - 6.4 cm**
Interface	Interface - 1 x SAS 12 Gb/
Capacity	**1.92 TB**
Data Transfer Rate (DTR)	**810 MBps**
Page URL	https://www.cdw.com/product/hpe-ssd-read-intensive-1.92-tb-sas-12gb-s/6856682?pfm=srh#TS

Router

Brand/Manufacturer	Cisco / CISCO DS HARDWARE DIRECTCISCO DS HARDWARE DIRECT
Product Line	Cisco Catalyst
Model	**8200L-1N-4T8200L-1N-4T**
RAM	RAM Installed - 4 GB / Max Memory Supported - 32 GB
Flash Memory	Flash Memory Installed - 8 GB
WAN Ports Qty	WAN: 2 x Ethernet 1000 - RJ-45, WAN: 2 x Ethernet 1000 - SFP (mini-GBIC)
Integrated Switch	Rack-mountable
Data Link Protocol	Gigabit Ethernet
Network/Transfer Protocol	DHCP, DNS, IPSec, L2TPv3, NTP, PPPoE, RSVP, RTCP BGP, Bidirectional Forwarding Detection (BFD), DVMRP, EIGRP, GRE, HSRP, IGMPv3, IS-IS, MPLS, OSPF, OSPFv3, Policy-based routing (PBR), RIP, RIP-2, VRRP) IEEE 802.1ag, IEEE 802.1Q, IEEE 802.3ah
Page URL	https://www.cdw.com/product/cisco-catalyst-8200l-1n-4t-router-rack-mountable/6532782?pfm=srh

Switch

Brand/Manufacturer	**Aruba**
Product Line	HPE Aruba
Model	2930F 48G PoE+ 4SFP
RAM	Memory Technology - DDR3 SDRAM RAM Installed - 1 GB
Flash Memory	Flash Memory Installed - 4 GB
Performance	Latency (1 Gbps): 3.8 µs, Switching capacity: 104 Gbps, Throughput: 77.4 Mpps
Capacity	IPv4 routing table entries: 10000, IPv6 routing table entries: 5000, Jumbo frame size: 9220
Ports Qty*	48

Page URL	https://www.cdw.com/product/hpe-aruba-2930f-48g-poe-4sfp-switch-48-ports-managed-rack-mountabl/4937423

Printer

Brand/Manufacturer	**Brother / Brother International**
Product Line	Brother
Model	Model MFC-L9610CDN
Duty Capacity	**Document Feeder Capacity - 100 Sheets** **Max Media Capacity - 1620 Sheets** **Output Trays Capacity - 250 Sheets** **Standard Media Capacity - 520 Sheets**
Printing Output Type	Color
Processor	CPU (Processor) Speed 800 (MHz)
RAM	2 GBs
Hard Drive	N/A 2GB / 2GB; USB memory stick (optional)
Printing System	Distinctive Ring Ready, Document memory backup, Duplex Fax, External TAD interface, Internet fax, out of paper reception Print Technology – Electrophotographic Laser Office Machine Type - Fax / copier / printer / scanner Printer Functions - Copier, Fax, Printer, Scanner
Networking	Printing, Secure Function Lock, Secure Printing (IPv4) - Web Services, APIPA (Auto IP), ARP, BOOTP, CIFS Client, Custom Raw Port/Port 9100, DHCP, DNS Resolver, FTP Server, HTTP/HTTPS Server, ICMP, IPP/IPPS, LDAP, LLMNR Responder, LPR/LPD, mDNS, RARP, SMTP Client, SNMPv1/v2c/v3, SNTP Client, TELNET Server, TFTP Client and Server, WINS/NetBIOS Name Resolution (IPv6) - Web Services, NDP, RA, DNS Resolver, mDNS, LLMNR Responder, LPR/LPD, Custom Raw Port/Port 9100, IPP/IPPS, SMTP Client, FTP Server, CIFS Client, TELNET Server, SNMPv1/v2c/v3, HTTP/HTTPS Server, TFTP Client and Server, ICMPv6, SNTP Client, LDAP
Connectivity	Interface - Gigabit LAN, NFC, USB 2.0, USB host

	Interface Required - 1 x Gigabit LAN - RJ-45, 1 x USB 2.0 - 4 pin USB Type B, 1 x USB host - 4 pin USB Type A
Page URL	https://www.cdw.com/product/brother-mfc-l9610cdn-multifunction-printer-color/7419170?pfm=srh

Wireless Access Points (WAPs)

Brand/Manufacturer	Cisco Meraki / CISCO DS HARDWARE DIRECT
Product Line	Cisco Meraki
Model	MR28
Antenna	**Internal Antenna (5.4 dBi gain at 2.4 GHz, 6 dBi gain at 5 GHz)**
Capacity	DL-OFDMA**, UL-OFDMA**, TWT support**, BSS Coloring** 2 x 2 multiple input, multiple output (MIMO) with two spatial streams SU-MIMO, UL MU-MIMO** and DL MU-MIMO support Maximal ratio combining (MRC) & beamforming. 20 and 40 MHz channels (802.11n); 20, 40, and 80 MHz channels (802.11ac Wave 2); 20, 40 and 80 MHz channels (802.11ax) Up to 1024-QAM on both 2.4 GHz & 5 GHz bands Packet aggregation
Networking	Maximum data rate (2.4 GHz): 286 Mbps, Maximum data rate (5 GHz): 1201 Mbps
Interface	1 x 1000Base-T (PoE) - RJ-45
Power	Power over Ethernet: 37 - 57 V (802.3af compatible) Power consumption: 15W max (802.3af). Note: actual power consumption may vary depending on the AP usage.
Page URL	https://www.cdw.com/product/cisco-meraki-mr28-wireless-access-point-entry-level-wi-fi-6-bluetoot/7174676?pfm=srh

Smart TV

Brand/Manufacturer	**Samsung**
Model	Model - UN55TU8300F
Series	Series - TU8300
Video Interface	**Composite, HDMI**
HDMI Ports Qty	3
Diagonal Size	55" Diagonal Class
Resolution	3840 x 2160
Display Format	4K UHD (2160p)
Viewing Angle	54.6" viewable
Digital Audio Format	Dolby Digital Plus output
Output Power	20 watts
Speaker System	2 channels
USB Ports Qty	2
Wi-Fi Protocol	802.11ac
Page URL	https://www.cdw.com/product/samsung-un55tu8300f-tu8300-series-55-class-54.6-viewable-led-backlit/6292176?pfm=srh

Conference Phone

Brand/Manufacturer	Cisco / Cisco Systems
Product Line	**Cisco IP Conference Phone**
Model	**7832**
Type	**Conference VoIP phone**
Dialer Locations	**Base**
Call Services	**Call Forwarding, Call Hold, Call Transfer, Call Waiting, Caller ID, Message Waiting Capability, Voice Mail**
Speakerphone	Yes
Features	Multiple VoIP protocol support
Phone connections	1 x Ethernet 10Base-T/100Base-TX
Page URL	https://www.cdw.com/product/cisco-ip-conference-phone-7832-conference-voip-phone-6-way-call-capabil/4503075?pfm=srh

Server Software

Brand/Manufacturer	Microsoft / Microsoft OEM Software
Product Line	**Microsoft Windows**
Version	**Microsoft Version 2019**
Licensing	License Quantity - 16 cores License Type - License Licensing Details - 64-bit (Retail / Licensing)
Page URL	https://www.cdw.com/product/microsoft-windows-server-2019-standard-license-16-cores/5406068

Client Software

Brand/Manufacturer	Microsoft / Microsoft OEM Software
Product Line	**Microsoft Get Genuine Kit**
Version	10
Licensing	License Quantity - 1 PC License Type - License Licensing Details - 32-bit (Retail / Licensing)
Page URL	https://www.cdw.com/product/microsoft-get-genuine-kit-for-windows-10-pro-license-1-pc/4631232?pfm=srh

VoIP Phones

Brand/Manufacturer	Cisco / Cisco DS HARDWARE DIRECT
Product Line	**Cisco IP Phone**
Model	**7821**
Type	**VoIP phone**
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
Features	Integrated Ethernet switch, Multiple VoIP protocol support
VoIP Protocols	SIP, SRTP
IP Address Assignment	DHCP, Static
Voice Codecs	G.711a, G.711u, G.722, G.729ab, iLBC
Quality of Service	IEEE 802.1p, IEEE 802.1Q (VLAN)
IP Address Assignment	
Network Protocols	Cisco Discovery Protocol (CDP), SRTP
PoE Support	Yes
Voice Features	The Cisco IP Phones 7821, deliver easy-to-use, highly-secure voice communications. Screen Greyscale, with backlight Lines - 2 Fixed feature keys - 9
Page URL	https://www.cdw.com/product/cisco-ip-phone-7821-voip-phone/3440517?pfm=srh

Timesheets

Milestone	Activity Description (be descriptive)	Start Time	End Time	Total Activity Time	Activity Date
Milestone 1 (Ensure that my name and fictitious company name are on the cover page.)	In this milestone I had to read the requirements and create a fictitious company that would be the one taking the Marconi Law firm contract. I ensure that the cover page contained all the requirements.	11:00 AM	11:30 AM	30 Minutes	09/01/23
Milestone 1 (The LAN - Local Area Network for this project will consist of the LAN backbone (your router, server, and switch then all your hardware.)	I research and locate the components and the specific requirements to build the network back bone consisting in the Server, Router and Switch. After that I created a visual network diagram using visual paradigm website to allocate all needed hardware before beginning the researching of all other need components. I used the provided store to begin researching the www.cdw.com domain and locating the appropriate hardware such as the network backbone, Desktops, Printer, Wireless access points up to Voice over IP phones to fulfill Marconi Law, Network System Design project needs.	1:00 PM	6:32 PM	5 Hours and 32 Minutes	09/04/23
Milestone 1 (Complete the hardware and software specification tables)	This milestone required me to research the selected hardware and software components. In the previous milestone I selected all the necessary components to be	7:30 Pm	11:30 Pm	4 Hours	09/03/23

	able to find and write the hardware and software specifications for Marconi Law Network System Design.				
Milestone 2	One of this week's milestones consisted of reviewing the Business Case to be able to properly create the Scope Statement and the benefits that Mr. Marconi's Law firm will receive when Network Nexus projects concludes.	5:20 Pm	9:50 Pm	5 Hours and 10 min.	09/9/23
Milestone 2	I created a static Ipv4 Address table using the provided private class A Ipv4 address to determine the first usable Ip the last usable and host id and broadcast, to be able to assign each device a static address to all the devices that are going to be consisting in the Network Nexus Project.	6:40 Pm	7:30 Pm	50 Min.	09/10/23
Milestone 2	The last milestone was to update my network diagram to identify and assign each device on the office and properly assign the node number to each member of the Marconi's Law firm.	9:00 Pm	11:00 Pm	2 Hours	09/10/23
Milestone 3	This week the first milestone was to create all the User accounts the Law Firm will be using on the Local Area Network.	7:30 Pm	8:30 Pm	1 Hours	09/16/23
Milestone 3	Allowing to achieve another milestone by properly creating groups with the right users to establish permissions on the groups containing the users and not have to individually assign	9:00 Pm	10:00 Pm	1 Hour	09/16/23

	each and one user accounts permissions.				
Milestone 3	Create the right folders for the Local Area Network to be able to provide proper access privilege and allowing them to write and read files depending on the department I have assign the groups created to each of the corresponding folders created.	11:40 Pm	12:00 Pm	20 Minutes	09/17/23
Milestone 4	This week's first milestone was to finish a professionally organized completed Network Nexus project report to achieve the delivery of Mr. Marconi Law Firm's bid.	5:00 Pm	8:00 Pm	3 Hours	09/20/23
Milestone 4	This week's milestone was ensuring the return of a fully functional Local Area Network that Mr. Marconi's Law Firm can perform more efficiently, leading to client satisfaction to reflect in his business.	7:00 Pm	9:00 Pm	2 Hours	09/21/23
Milestone 4	The last milestone was to build a strong pitch demonstrating my knowledge and skills and what I have learned that adds value to the network promoting my project for success.	6:00 Pm	9:00 Pm	3 Hours	09/24/23
TOTAL HOURS				**28.36 Hours**	

Status Reports

Accomplished this week.

Milestone 1: Fully Review the Business Case Marconi Law, LLC. Network System Design and Implementation
Milestone 1: Create a Network Diagram Using Office Blueprint containing all the Hardware and Software for the needed network system design.
Milestone 1: Research to select and get all the Hardware and Software requested for the project not exceeding the budget amount. After that I completed the hardware and software specification tables below.
Milestone 2: Create a Scope Statement that fits the needs of the Mr. Marconi's Law Firm including the Network Nexus important key benefits from the completion of the project.
Milestone 2: Created an Ipv4 Address table using the provided private class A Ipv4 subnet to be able to assign each member the corresponding static IP after determining the first Usable Ipv4 addresses and the last one.
Milestone 2: Update the Network Nexus diagram to include the name that will help identify each device and the correspondent node number that will be matched to every team member to the machine and space they will be using.
Milestone 3: The purpose of this week's milestone was to successfully set up our user accounts and folders on your server Local Area Network.
Milestone 3: Add the previously created accounts to the appropriate groups based on their job title. This means a Group for the Law firm Attorneys, one for the accountant, and the other one for the Administrative Assistant.
Milestone 3: Created specific share permissions in Computer Management using the Windows Server Manager, allowing to assign the previously created folders to the appropriate users and granting them appropriate permissions. This means that since Mr. Marconi is the president and an attorney, he would have privileges for all the folders created. Still, the attorneys would only have the attorney's folder to write and read benefits, and the accountant only the accountant's folder. The administrative assistant, Ms. Schultz, will only have permission for the admin assistant folder.
Milestone 4: This week's first milestone was to finish a professionally organized completed Network Nexus project report to achieve the delivery of Mr. Marconi Law Firm's bid.

Milestone 4: I ensured the return of a fully functional Local Area Network that Mr. Marconi's Law Firm can perform more efficiently, leading to client satisfaction to reflect in his business.
Milestone 4: The last milestone was to build a strong pitch demonstrating my knowledge and skills and what I have learned that adds value to the network promoting my project for success.

Planned for next week.

Coming up for milestone 2: Find Mr. Marconi's benefits after running the network. Create the Project Scope Statement.
Coming up for milestone 2: Go to the Network Diagram and add a Label to each specific item. Items to add includes employee's name and corresponding node numbers from the IP Network Design Table.
Coming up for milestone 2: Create a Network subnet using the Provided Ip address with CIDR notation, to assign Netmask, First Useable Ip, Last Usable Ip, Total Hosts, Network Id, and Broadcast Address.
Coming up for milestone 3: I will start to create each of the team members a user account setup, stablish all configuration to perform the appropriate testing of the user accounts to ensure there fully functional and up to date.
Coming up for milestone 3: Starting the creation of user's groups, to assign each user depending on what department they work on that will help creating specific directories to establish read/write and execute permissions accordingly.
Coming up for milestone 3: Finish Network Nexus report by documenting without the use of technical jargon the entire setup process.
Coming up for milestone 4: Next week I will professionally organize my completed project Network Nexus report to achieve the delivery of Mr. Marconi Law Firm's bid. This means making sure no grammar errors and choosing a readable and professional font for this project design.
Coming up for milestone 4: This week, I will make sure I can return a fully functional Local Area Network that Mr. Marconi's Law Firm can perform more efficiently, leading to client satisfaction to reflect in his business.
Coming up for milestone 4: I will create a pitch demonstration to show the knowledge and skills I have learned that value and find the right strategy to promote your project for success.

Comments for each milestone

Milestone 1: What problems did you run into? While completing the hardware and software specification tables below, I encountered an issue with some items. I couldn't find the required specifications on the cdw.com website to place on the tables. How did you fix them? I fixed the problem by accessing the official brand and searching the model to verify the specifications not found on www.cdw.com. Is there anything you did not complete that you must push off into the next milestone? None Any other comments? None
Milestone 2: What problems did you run into? None How did you fix them? None Is there anything that you did not complete that you now have to push off into the next milestone? None Any other comments?
Milestone 3: What problems did you run into? None How did you fix them? None 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? None

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