REQUEST FOR PROPOSAL (RFP)

Network & Server Upgrade Proposal for Win Financial Group (WFG)

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Client: Win Financial Group (WFG)

Project Description: A proposal to design and implement a network and server infrastructure upgrade for Win Financial Group, a growing financial consulting firm. The proposal aims to support WFG's expansion from 30 to 200 employees, provide scalable and secure network solutions, and implement server infrastructure with cloud integration for fault tolerance.

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Submitted To: WFG representative Dave Norwood

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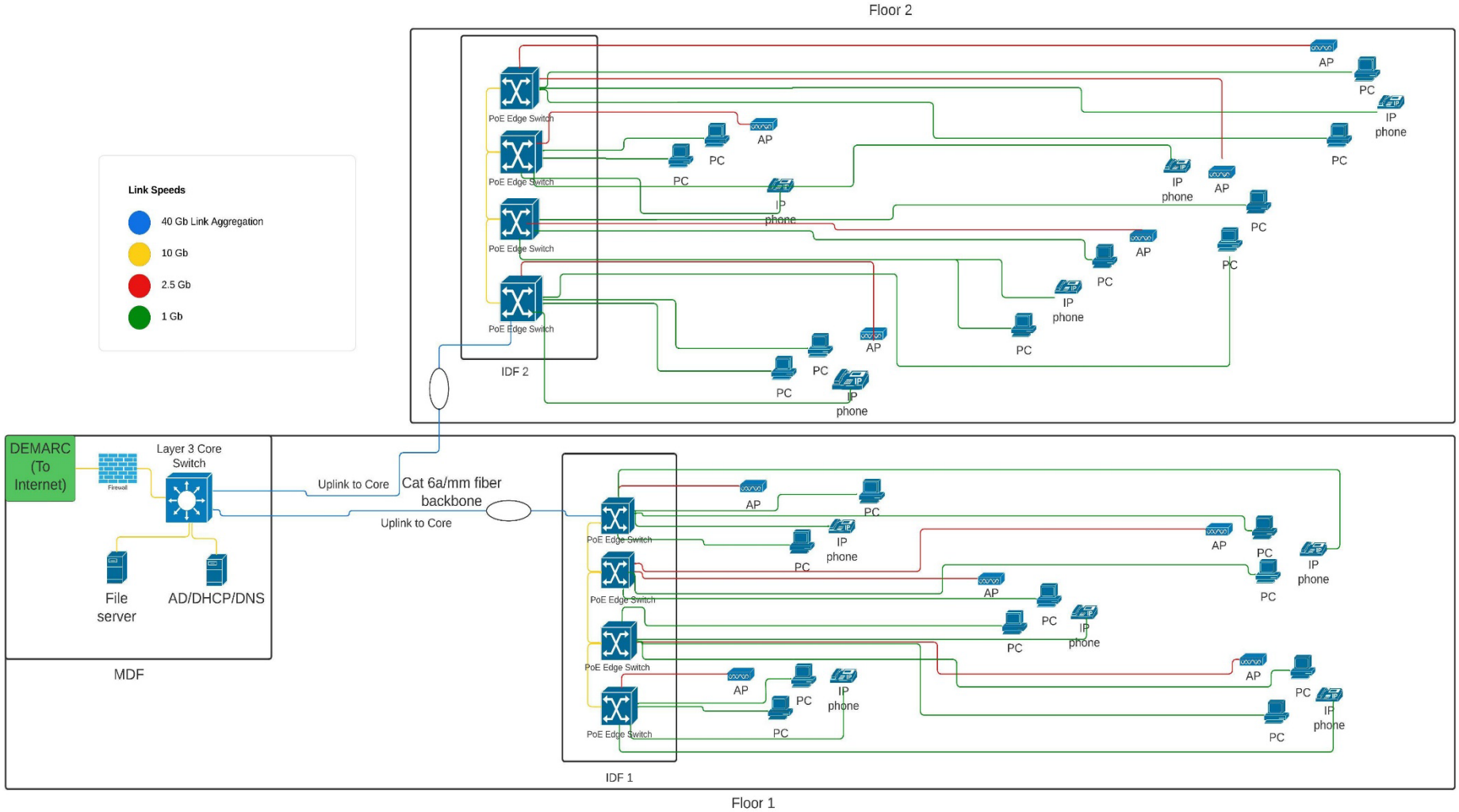
I. LAYER 1 MAP

We have chosen to use link aggregation for our connection between the core and edge switches. This is represented on the map with a higher uplink speed and circles around the connections to represent the link aggregation. We have also implemented server stacking. This is represented with the daisy chains between edge switches. Each edge switch comes with 48 standard 1 Gb PoE ports and we have installed modules to the switches to increase the amount of ports and their available speeds. We have also installed add-ons to the cables to increase the uplink speeds through them. (See Map Below)



Example Layout shows half APs needed and 1/10 PCs/IP Phones

II. LAYER 3 ADDRESSES

The chart below is a list of the logical networks (VLANS) and the IP network assigned to each. This works off the criteria of the following: Server network = 12 IP addresses, Floor 1 PCs = 100 IP addresses, Floor 2 PCs = 100 IP addresses, IP phone network = 100 IP addresses, WiFi network = 900 IP addresses. The PCs are divided by floors and this division is noted in the 3rd octet to ease future troubleshooting. All other devices do not follow this convention. Lastly the IP phones and servers VLANs use the 10.10.10.0/24 network via VLSM as requested. All VLANs were created to limit the number of addresses used but there are minimal additional addresses for future growth needs.

Subnet	Number of Hosts Required	Actual # of Hosts Available	CIDR Notation	Subnet Mask	IP Range	Usable IPs
floor 1 PCs	100	126	192.168.1.0/25	255.255.255.128	192.168.1.0 - 192.168.1.127	192.168.1.1 - 192.168.1.126
floor 2 PCs	100	126	192.168.2.0/25	255.255.255.128	192.168.2.0 - 192.168.2.127	192.168.2.1 - 192.168.2.126
WIFI	900	1022	192.168.3.0/22	255.255.252.0	192.168.3.0 - 192.168.6.255	192.168.3.1 - 192.168.6.254
IP phones	100	126	10.10.10.0/25	255.255.255.128	10.10.10.0 - 10.10.10.127	10.10.10.1 - 10.10.10.126
Servers	12	14	10.10.10.128/28	255.255.255.240	10.10.10.128 - 10.10.10.143	10.10.10.129 - 10.10.10.142

III. WIRED NETWORK BOM

There are 4 edge switches per floor. The switches on each floor are stacked together to form one logical switch using stack ports. The availability of at least 2 stack ports on the Cisco C9300-48P-E will help achieve this setup. The C9300-48P-E switch meets the requirement of 150 PCs and 50 phones per floor, all connected via 1Gb PoE ports.

To satisfy the requirement of 10 multi-gig ports for access points (APs), 2 C9300-NM-8X modules are added to two of the edge switches on each floor. The remaining multi-gig ports will be available for future scaling. The entire assembly of stacked switches per floor will be uplinked to the core switch, which consists of the C9500-24Y4C, using the 4 SFP+ ports available on one of the edge switches per floor. This will be done using the SFP-10G-SR 10GBASE uplink module (4 units). The total 40Gbps uplink speed will be connected to the core switch's 10Gbps ports using LACP, allowing it to act as a single logical connection with increased bandwidth and redundancy.

Additionally, the Active Directory (AD)/DHCP and File servers will be connected to core switch using 10 gig ports.

Make	Model	Description	Quantity	Unit Price	Total Price
Cisco	C9300-48P-E	- 48 1GB PoE ports (Cat 6a connections) - 2 stackports (Stackwise upto 480 Gbps) - 30W per port (PoE+) - 4 SFP+ ports available for uplinks	8	$5,989.00	$47,912.00
Cisco	C9300-NM-8X	- Module for C9300-48P-E - 8 additional multigigabit ports (1G, 2.5G, 5G, and 10G)	4	$652.00	$2,608.00
Cisco	SFP-10G-SR 10GBASE	- 10GBASE SFP+ uplink module for multi-mode fiber - Multi-mode fiber with 10G speed - Max. length 100 meters (Short Range)	8	$165.00	$1,320.00
Cisco	C9500-24Y4C-E	- Core switch - 24 1Gb Ethernet ports - 4 40Gb QSFP+ uplink ports - Full Layer 3 capabilities (OSPF, BGP, etc.)	1	$6,325.00	$6,325.00

One-time total Wired Network BOM Costs: $58,165
Ongoing Wired Network BOM Costs: N/A

IV. WIRELESS NETWORK BOM

Twenty access points are needed for the wireless network. 10 access points per floor. The model itself is CW9162I. To activate and manage your Cisco Meraki Access Point, a purchase of a **Cisco Meraki license** is mandatory. We include the 1 year subscription.

Make	Model	Description	Qty	Unit Price	Total Price
Cisco	CW9162I	1) WiFi 6E (2.4GHz, 5GHz, and 6GHz)	20	$1,251.23	$25,024.60
		2) MU-MIMO (2x 2:2) (2 antennas for transmission, 2 antennas for receiving, and 2 spatial streams)			
		3) 2.5G Ethernet Port			
		4) Cloud Management with Meraki			
		5) 802.3at/bt PoE+ and UPoE compliant or DC power adapter (data and power can be transmitted in a single cable or separate DC power adapter)			
Cisco	CW9162I	Subscription per year	0	$150	$150

One-time total Wireless Network BOM Costs: $25,024.60
Ongoing Wireless Network Costs: $150 /yr

V. SERVER(S) BOM

The initial purchase price of the PowerEdge R760 servers includes all hardware components such as processors, memory, hard drives, and network cards. The Windows Server 2022 Standard license and Client Access Licenses (CALs) are also one-time costs, unless additional CALs are needed later as the number of users grows.

One-time Server Costs:	
PowerEdge R760 Rack Server (AD, DNS, DHCP)	$7,566.13
PowerEdge R760 Rack Server (File Server)	$11,629.57
Licenses:	
2 X Windows Server 2022 Standard,16CORE,FI,No Med,No CAL, Multi Language Dell Price:	$431.76 ea. (total $863.52)
4 X 50pk CALs purchased through Dell with the Local AD server Dell Price:	$1024.20ea (total: $4,096.8)
Total License Costs:	$4,960.32
Total Servers Package:	$24,156.02
Ongoing Server(s) Costs:	None

Local AD Server (PowerEdge R760):
Configured for Active Directory, DNS, and DHCP, this server uses an Intel Xeon Silver 4510 (12C/24T) with 64GB RAM, ensuring adequate performance for directory services. Storage redundancy is achieved through RAID 5 with (4) 480GB SSDs, providing a maximum volume size of approximately 1.44TB, ensuring reliability for system-critical data. Equipped with dual-port 10/25GbE NICs for high-speed networking, the setup also includes Windows Server 2022 Standard with 200 CALs, offering sufficient licensing for network clients.

PowerEdge R760 Rack Server
Price: $7,566.13

Base PowerEdge R760 Server
SHIPPING PowerEdge R760 Shipping
Trusted Platform Module Trusted Platform Module 2.0 V3
Chassis Configuration 3.5" Chassis with up to 12 SAS/SATA Drives, LP Adapter PERC 11, 1 or 2 CPU
Processor Intel® Xeon® Silver 4510 2.4G, 12C/24T, 16GT/s, 30M Cache, Turbo, HT (150W) DDR5-4400
Memory Capacity (4) 16GB RDIMM, 5600MT/s, Single Rank
RAID Configuration C4, RAID 5 for 3 or more HDDs or SSDs (Matching Type/Speed/Capacity)
RAID/Internal Storage Controllers PERC H755 Adapter LP
Hard Drives (4) 480GB SSD SATA Mixed Use 6Gbps 512 2.5in Hot-plug AG Drive,3.5in HYB CARR, 3 DWPD
Power Supply Dual, Hot-Plug, Fully Redundant Power Supply (1+1), 800W, Mixed Mode
OCP 3.0 Network Adapters Broadcom 57414 Dual Port 10/25GbE SFP28, OCP NIC 3.0
Operating System Windows Server 2022 Standard,16CORE,FI,No Med,No CAL, Multi Language
Client Access Licenses (4) 50-pack of Windows Server 2022/2019 User CALs (Standard or Datacenter)
Service Basic Next Business Day 36 Months, 36 Month(s)

Local File Share Server (PowerEdge R760):
Designed for file storage, this server features dual Intel Xeon Silver 4509Y processors (8C/16T each), 128GB RAM, and 25TB RAID 5 storage with (5) 8TB SAS drives, providing a maximum volume size of approximately 32TB, ensuring both capacity and fault tolerance for user data. High-speed connectivity is achieved with dual 10/25GbE NICs, and RAID 1 with dual 960GB SSDs are used for system drives for increased reliability. The server runs Windows Server 2022 Standard, providing robust support for large-scale file sharing and sufficient user access through licensing CALs which were purchased with the Local AD Server.

PowerEdge R760 Rack Server
Price: $11,629.57

Base PowerEdge R760 Server
Trusted Platform Module Trusted Platform Module 2.0 V3
Chassis Configuration 3.5" Chassis with up to 12 SAS/SATA Drives, LP Adapter PERC 11, 1 or 2 CPU
Processor Intel® Xeon® Silver 4509Y 2.6G, 8C/16T, 16GT/s, 22.5M Cache, Turbo, HT (125W) DDR5-4400
Additional Processor Intel® Xeon® Silver 4509Y 2.6G, 8C/16T, 16GT/s, 22.5M Cache, Turbo, HT (125W) DDR5-4400
Memory Capacity (4) 32GB RDIMM, 5600MT/s, Dual Rank
RAID Configuration C4, RAID 5 for 3 or more HDDs or SSDs (Matching Type/Speed/Capacity)
RAID/Internal Storage Controllers PERC H755 Adapter LP
System Drives: RAID 1 (2) 960GB SSD SATA Read Intensive 6Gbps 512 2.5in Hot-plug AG Drive,3.5in HYB CARR, 1 DWPD
File Share Hard Drives: RAID 5 (5) 8TB Hard Drive SAS ISE 12Gbps 7.2K 512e 3.5in Hot-Plug, AG Drive
Power Supply Dual,Fully Redundant(1+1),Hot-Plug Power Supply,1400W MM, Titanium
OCP 3.0 Network Adapters Broadcom 57414 Dual Port 10/25GbE SFP28, OCP NIC 3.0
Operating System Windows Server 2022 Standard,16CORE,FI,No Med,No CAL, Multi Language
Service Basic Next Business Day 36 Months, 36 Month(s)

VI. CLOUD BOM

The Cloud BOM for Microsoft Azure includes a one-time cost of $568.99 for the Windows Server 2022 License. The ongoing monthly costs consist of a VM Instance (Standard_D16dsv5) priced at $258 per month and Premium SSD Storage P30 at $135.17 per month, totaling $383.17 per month.

The Cloud Active Directory Server is designed with a 16 vCPU processor (equivalent to Intel Xeon), 64GB of RAM, and 1TB Premium SSD P30 storage configured with RAID 5 equivalent for redundancy. Networking is supported with 10Gb bandwidth, and high availability is ensured through use of Availability Zones for fault tolerance.
Windows Server 2022, Standard Edition, with a 16-core license, is required for running Active Directory services in the cloud under IAAS implementation.

One-time Costs:
Windows Server 2022 License: $568.99(one-time cost) -Trusted Tech Team

Ongoing Monthly Costs:

VM Instance (Standard_D16dsv5):	$258 / month	$3,096 / year
Premium SSD Storage P30:	$135.17 / month	$1,622.04 / year
Total Ongoing Costs:	$383.17 / month	$4,598.04 / year

Service	Model	Description	Quantity	Unit Price	Total Price	Notes
Microsoft Azure	Standard_D16ds v5	16 vCPUs, 64GB RAM, Premium SSD Storage, Accelerated Networking	1	$258/month	$258/month	- 3 years contract - IaaS VM for cloud-based Active Directory with high performance
Microsoft Azure	Premium SSD P30	1TB SSD with redundancy, similar to RAID 5 setup	1	$135.17/month	$135.17/month	- Redundant high-speed storage for Active Directory services
Microsoft Azure	Windows Server 2022 License	Standard Edition OS Licensing for 16 cores	1	$568.99 (one-time)	$568.99 (one-time)	- Requires minimum of a 16-core license - Includes Hyper-V and activates one physical server and two virtual machines
Microsoft Azure	Availability zones	High availability and fault tolerance for critical workloads	1	Included	Included	- Ensures Business continuity even during failures

VII. Summary

Total One Time Cost:	$112,874.93
Ongoing Annual Costs:	$4,748.04

Our proposal for Win Financial Group offers a cutting-edge, scalable network and server infrastructure designed to power the company's rapid growth from 30 to 200 employees. We leverage the latest technologies to create a solution that is both future-proof and cost-effective. With link aggregation, we provide significantly increased bandwidth to ensure seamless data flow, while server stacking enhances redundancy, delivering uninterrupted service even during peak usage. We also include switch modules and uplink modules to make the selected edge switches compatible with the core switch and selected APs. The integration of WiFi 6E offers enhanced wireless connectivity, ensuring faster, more reliable internet access for all users.

Our high-performance edge and core switches guarantee robust connectivity across the entire infrastructure, delivering the speed and stability needed for business-critical operations. The PowerEdge R760 servers provide powerful on-site computing and data storage capabilities, equipped with ample redundancy utilizing RAID 1 and 5 for both storage and system drives to keep critical services running smoothly. This ensures that WFG’s IT infrastructure can handle the demands of today while being ready for tomorrow's growth.

Furthermore, our cloud-based Active Directory solution, hosted on Microsoft Azure, adds an extra layer of resilience with fault tolerance and disaster recovery capabilities. This guarantees that essential services remain operational even in the face of unexpected disruptions. Our proposal not only meets but exceeds WFG's requirements, providing a reliable, scalable, and secure foundation that will support the company's ambitions with confidence and efficiency.