IT5010: ASSESSMENT 1

Practical Project – Case Study Report:

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Due Date:	04/04/2024
Subject:	IT Technical Support

1. Executive Summary

The focus of the assessment is to establish a new site in Auckland by connecting four computers into a network and ensuring all communication between sites is secured. The hardware components and software tools which are needed to set up the site and the additional tools required for monitoring call logs are listed. The discussion of how the support calls is prioritized by considering the complexity of each call and aligning it to the organizational objectives and its growth.

2. Network Diagram

In the drawn network diagram, four computers are connected in a star topology with the help of 16 port switches. This means that if one device fails or encounters a problem, it does not affect the operation of the other devices in the network. Other devices can continue to communicate without disruption. There is a centralized printer shared across the office network, connected through Wi-Fi and Bluetooth. It involves assigning a unique IP address within the network subnet.

For example-
I am using a class C address with around 30 hosts maximum.
2^5 hosts= 32-2 = 30 hosts and 2^3 = 8 subnets.

Subnet0: 205.11.2.1 to 205.11.2.31
Subnet1: 205.11.2.33 to 205.11.2.62
Subnet2: 205.11.2.65 to 205.11.2.94
Subnet3: 205.11.2.97 to 205.11.2.126
Till Subnet 7

Consider DHCP Reservation: For devices that do not require static IP addresses but need consistent addressing, consider configuring DHCP reservations on the DHCP server. This allows specific devices to receive the same IP address from the DHCP pool every time they connect to the network.

Verify Configuration:

- After assigning static IP addresses, verify that each device can communicate with other devices on the network.
- Use network diagnostic tools such as ping or traceroute to ensure connectivity and troubleshoot any connectivity issues if necessary.
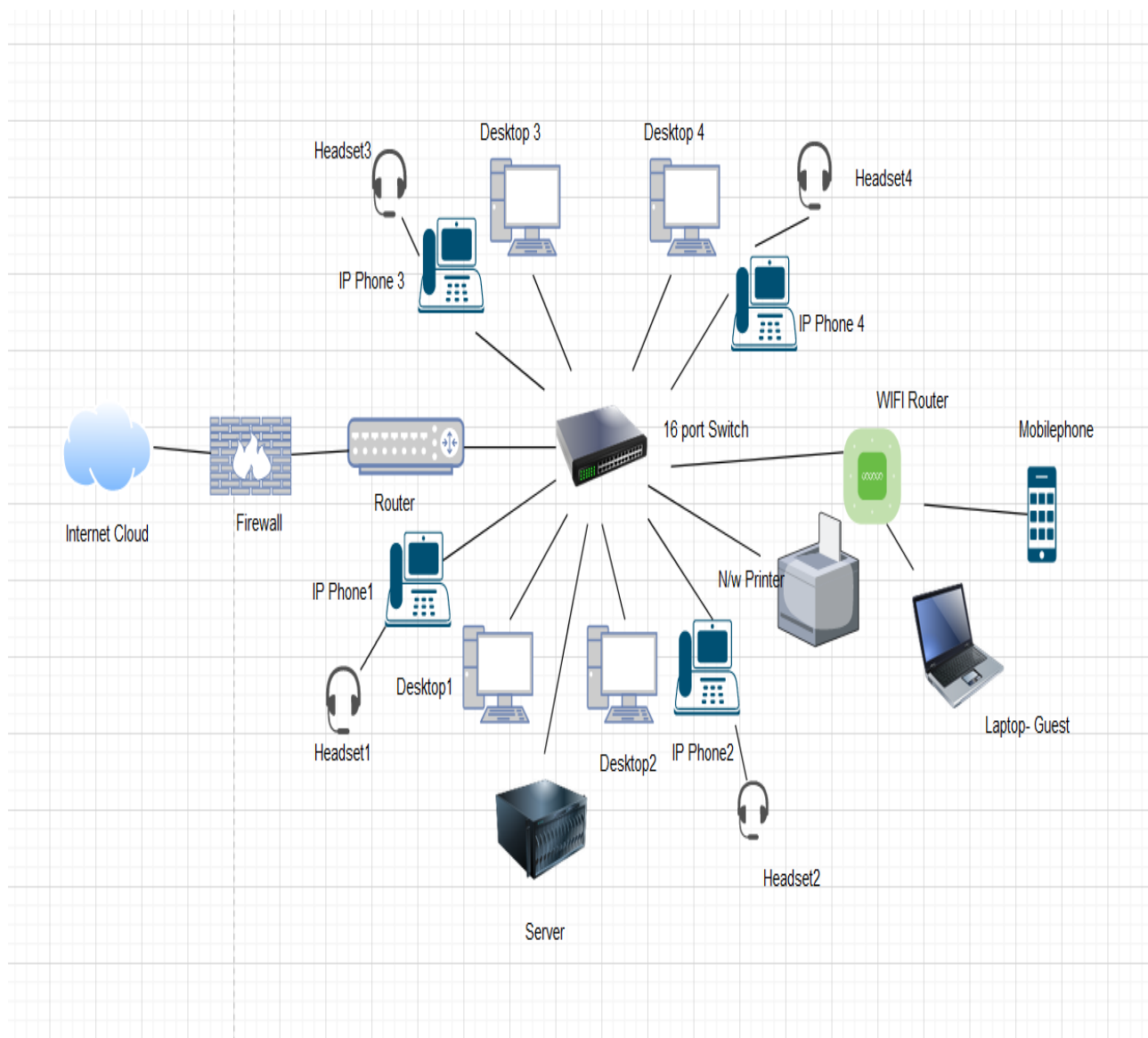
Assigning Static IP addresses to the server, printer, and access point for easier management. For example:

- Server: 205.11.2.10
- Printer: 205.11.2.20
- Wi-fi router: 205.11.2.30

3. Quotation

Items	Cost	C. Rationale and Justification for each component	Reference
A. All in one computer	$1796.99 * 4 =7187.96	**Lenovo ThinkCentre neo 50a 24 G3 23.8" FHD Business All in One PC - Raven Black** • It is an all-in-one computer for businesses with CPU model Intel Core i5-12500H and screen resolution 1920x1080 • Memory is 16 GB and storage is 512 SSD • Powered by 12th Gen Intel® Core™ processors • And with heaps of SDD storage, it handles heavy-duty tasks with ease. • It comes with Windows 11 PRO .	Pbtech/All in one Pcs
B. Monitor (Server)	$228.85	Samsung LS27C310E 27" FHD IPS Monitor- • Screen Resolution:1920x1080 • Refresh rate:75Hz • Ports: HDMI - VGA • Sync type: AMD Free	Pbtech/Monitors

		Sync • VESA Size:100x100	
C. Switches (16 port)	$379.50	Ubiquiti UniFi Switch Gen2 USW-Lite-16-POE 16-Port Gigabit Managed PoE+ Switch with 8 x PoE/PoE+ (Max 45W) • It is a fully managed Layer 2 switch with sixteen Gigabit Ethernet ports for your RJ45 Ethernet devices. • It is managed by UniFi Network Controller version: 5.13.5 or higher • Managed switches give the power to configure and manage the devices remotely for a better user experience. • Managed switches provide security settings that can be configured to protect the network and to help identify threats. Unmanaged switches do not offer security capabilities.	Pbtech/Switches
D. Server	$1298.99	Synology DiskStation DS923+	Pbtech/NAS Devices

		• 4-Bay NAS Server, AMD Ryzen Dual Core 4GB ECC DDR4 (32GB Max), 2xM.2 Slot, 2xGbE, 1xPCI, 2x USB 3.2, 3 Years Warranty • Versatile smart storage that helps you consolidate and store your growing digital data. • Flexibly store and organize 50 TB of data, then share with anyone. • Sync files and folders between sites - Site-to-site file syncing allows collaborators to sync individual files or folders between Synology devices	
E. IP Phones	$163.45*4= $653.80	**Yealink SIP-T31G Classical IP Phone – Black** • The T3 series is equipped with a strong chip and more upgraded functions, which ensures higher productivity and smoother office experience. • T3 series can extend more services for different business demands.	Pbtech/IPPhone handsets

		• It provides distraction-free communications with industry leading Smart Noise Filtering Technology, which delivers excellent sound quality without extraneous noises and allows fluent conversations.	
F. Wi-fi Router	$339.00	TP-Link Archer AX72 AX5400 Dual-Band Wi-Fi 6 Gigabit Router • Gigabit Wi-Fi for 8K Streaming - 5400 Mbps Wi-Fi for faster browsing, streaming, and downloading, all at the same time. • Fully Featured Wi-Fi 6 - Equips with the top structure of 4T4R and HE160 on the 5 GHz band to enable a 4.8 Gbps ultra-fast connection. • Transmission speed is 4804 Mbps	Pbtech/Routers
G. Ethernet cables	$3.77 * 6= $22.62	Cruxtec 1m Cat6 Ethernet Cable (Black Color)- • It has 99.99% Oxygen Free Copper Conductor. So, it is far less likely to	Pbtech/cables

		corrode	
Microsoft 365	$20.20 per month For 2 years $484.80	**Everything in Business Basic, plus:** - Desktop versions of Word, Excel, PowerPoint, and Outlook - Copilot for Microsoft 365	https://www.microsoft.com/en-nz/microsoft-365/business
Printer	$359.10	Brother Professional A3 Inkjet Wireless All-In-One Printer - MFC-J6540DW - It is a color printer and an automatic 2-sided A3 print, scan, copy and fax. It has up to 28ipm print speed and - The maximum paper size is A3. - Wired and wireless connectivity options are available - It is an efficient one-touch scanning to cloud and email.	Noel leeming/Printers and scanners

Router	$1591.00	Cisco ISR 1100 4 Ports Dual GE WAN Ethernet Router • It delivers Cisco IOS® XE Software, providing WAN, comprehensive security, wired and wireless access in a single, high-performance platform. • It is a 4 Ports Dual GE WAN Ethernet Router, delivering 1 WAN port and 4GE LAN ports.	Pbtech/Wired router
Antivirus	$204.00	Norton 360 Premium • It includes malware protection for up to 10 PCs, Mac®, Android™ or iOS devices • Browse anonymously and more securely with a no-log Virtual Private Network (VPN)	Pbtech/Anti-virus & Security
VPN	$4.59 * 24= $110.16 for 2 years	• It is the award-winning Surfshark VPN to secure your	https://surfshark.com/pricing

		company's connection, minimize internet throttling, and prevent tracking. • It protects the data by using industry-leading AES-256-GCM encryption. • Good security with private DNS on each server and leak protection when using IPv4 stack.	
Firewall	$1092.01	**Fortinet FortiGate FG-60F 10x GE RJ45 ports** • Protects against cyber threats with system-on-a-chip acceleration and industry-leading secure SDWAN in a simple, affordable, and easy to deploy solution	Pbtech/Firewalls
Headsets	311.95*4= $ 1247	**Jabra GN 930-25-509-103 PRO930 Wireless USB** • Jabra PC suite: Wireless headset users can answer, and end calls away from their desk and softphone.	Pbtech/headsets
Salesforce	$122.32 NZD per month (112 AUD)	**Professional for service-** • Case Swarming • Computer Telephony Integration (CTI)	(Salesforce/pricing)

	122.32*24 months= $2935.68	• Omni-Channel Case Routing	

Total amount= $18134.47

4. Communication Channel Security

To ensure secure and private communication between two sites, use **encryption** (AES), SSL/TLS certificates, and **VPNs** for secure connections. Implement strong authentication (e.g., multi-factor authentication) and access control.

Authentication and authorization are critical access control mechanisms that ensure the right users / parties have the appropriate privileges to information. When properly implemented, these twin elements jointly facilitate the confidentiality, integrity and availability (CIA) of information assets.

Use **firewalls** to monitor and control traffic, and use secure protocols (e.g., HTTPS, SFTP). Keep systems updated with patches and updates, minimize data transmitted, and configure systems securely. **Update and Patch** management tools such as WSUS, SCCM, and Ansible, to automate and schedule the update and patch processes for the systems can be used

Test and review communication

Create a controlled test environment that replicates the production environment as closely as possible. This includes setting up network configurations, deploying systems, and configuring security measures such as firewalls, intrusion detection systems, and encryption protocols. We can use testing and review tools, such as Wireshark, Nmap, and Metasploit, to analyze and simulate the communication scenarios and outcomes.

5. Support Call Prioritization:

Some of the steps to be followed when handling support calls are:

- **Spot the repeated issues** to save the team's time- For the sake of future problem-solving, it may be beneficial to collect information from each opened ticket. As your knowledge base grows, make sure that everyone in the department is aware of where to look for solutions to earlier problems – make good use of repetition! **Use Knowledge base regularly.**

- **Prioritize** the calls based on Urgency- **Develop a Priority Matrix-** Create a priority matrix that outlines different levels of urgency and corresponding response times. For example:
  - ❑ **Priority 1**: Critical/High: Requires immediate attention (e.g., system outage, security breach).
  - ❑ **Priority 2**: Medium: Moderate impact
  - ❑ **Priority 3**: Non-urgent issues that can be addressed during regular business hours.

- **Escalation Procedures**: Establish escalation procedures for urgent issues that require additional support or expertise. Define who should be contacted and under what circumstances.

A. Tickets

ID	Summary	Assignee	Creator	Organization	Priority	Category	Status	Created	Updated	Due
4	Hardware failure	Sudharshiya Ganesan	abivibin@spring.co.nz	Spring Computers	↑ High	Hardware	open	Mar 01, 2024	Mar 21, 2024	
3	Glitches in the software	Sudharshiya Ganesan	Sudharshiya Ganesan	Spring Computers	— Medium	Software	open	Feb 29, 2024	Mar 21, 2024	
6	Queue in the Email	Sudharshiya Ganesan	divesh@spring.co.nz	Spring Computers	— Medium	Email	open	Mar 01, 2024	Mar 21, 2024	
7	VLAN issue	Sudharshiya Ganesan	yohan@spring.co.nz	Spring Computers	↑ High	Network	open	Mar 01, 2024	Mar 21, 2024	
8	Planned Downtime	Sudharshiya Ganesan	rimeesha@spring.co.nz	Spring Computers	↓ Low	Maintenance	open	Mar 01, 2024	Mar 01, 2024	
2	Import tickets from your previous Spiceworks …	Sudharshiya Ganesan	Sudharshiya Ganesan	Spring Computers	— Medium		open	Feb 29, 2024	Mar 01, 2024	
5	Printer issue	Sudharshiya Ganesan	guru@spring.co.nz	Spring Computers	↓ Low	Printer	open	Mar 01, 2024	Mar 01, 2024	
1	Welcome to the Spiceworks Cloud Help Desk!	Accept	Sudharshiya Ganesan	Spring Computers	— Medium		open	Feb 29, 2024	Feb 29, 2024	

B. Rules

Ticket rules

Add ticket rule

Priority no 2, suspended jobs   Edit Delete

Priority 1, outlook queue   Edit Delete

Priority No.3, Planned downtime   Edit Delete

Priority No.1, hardware malfunction   Edit Delete

Priority no.2, Network Issue   Edit Delete

priority 1, outlook queue   ⬤   Edit   Delete

Rule label

Priority No.3, Planned downtime

Rules

Any			▾

Created By ▾	is ▾	User R rimeesha@spring.co.nz ▾	🗑
Description ▾	is ▾	Description Reg maintenance- non peaktime/midnight downtime	🗑

+ Add rule

Actions

Set category ▾	Maintenance ▾	🗑
Assign to ▾	Assign to S Sudharshiya Ganesan ▾	🗑
Set priority ▾	Low ▾	🗑

+ Add action

Rule label

Priority no.2, Network Issue

Rules

Any			▾

Created By ▾	is ▾	User Y yohan@spring.co.nz ▾	🗑
Summary ▾	contains ▾	Summary waiting to do tasks	🗑

+ Add rule

Actions

Set priority ▾	Medium ▾	🗑
Set due date ▾	Set due date 8 hours on the sameday	🗑
Set category ▾	Network ▾	🗑

+ Add action

Cancel   Save

Rule label
Priority no 2_ suspended jobs

Rules

All

| Category | ▼ | is | ▼ | Software | ▼ | 🗑 |
| Description | ▼ | is | ▼ | suspended jobs can be finished by this week | | 🗑 |

+ Add rule

Actions

| Set priority | ▼ | Medium | ▼ | 🗑 |
| Set due date | ▼ | 12 hours | | 🗑 |

+ Add action

Cancel   **Save**

Rule label
priority 1, outlook queue

Rules

All

Category	▼	is	▼	Email	▼	🗑
Summary	▼	is	▼	urgent** Need quick fix		🗑
Created By	▼	is	▼	divesh@spring.co.nz	▼	🗑

+ Add rule

Actions

Assign to	▼	Sudharshiya Ganesan	▼	🗑
Set category	▼	Email	▼	🗑
Set due date	▼	within 2 hours of the same day		🗑

+ Add action

Cancel   Save

Rule label
Priority No.1, hardware malfunction

Rules

All

Description	▼	contains	▼	urgent works are suspended		🗑
Organization	▼	is	▼	Spring Computers	▼	🗑
Category	▼	is	▼	Hardware	▼	🗑

+ Add rule

Actions

| Set category | ▼ | Hardware | ▼ | 🗑 |
| Set priority | ▼ | High | ▼ | 🗑 |

+ Add action

Cancel   **Save**

- ## **Summary**

   (Reflect on your learning and the challenges of designing a network solution)

1. Network Security is the critical concern due to the increase of cyber threats and stealing customer's data.

   When remote accessing clients' system using VPN, client data should be secured. I select the budget friendly VPN recommended by cybernews

Top 5 best New Zealand VPNs in 2024

1	**NordVPN** – best overall New Zealand VPN
2	**Surfshark** – budget-friendly New Zealand VPN with unlimited connections
3	**IPVanish** – fast New Zealand VPN service
4	ExpressVPN – great New Zealand VPN for streaming
5	Proton VPN – free New Zealand VPN

What to look for in a VPN for NZ

Although it may seem as if there are many VPN providers to choose from, not all of them have **servers in New Zealand**. Moreover, not all have the **security and performance features** you should be looking for.

All in all, if you want a good New Zealand VPN, these are the non-negotiable features you should be after:

Security:	AES-256 encryption
Privacy:	No-logs policy, a reliable kill switch, obfuscated servers
Servers:	Servers in New Zealand
Performance:	Split tunneling, WireGuard tunneling protocol

2. **Future Proofing**: Technology is constantly evolving, and network solutions must be designed to adapt to future changes and emerging trends. Sometimes it involves very basic errors.

For example: **petrol station leap day glitch**

https://www.rnz.co.nz/news/business/510557/finding-issue-behind-petrol-station-leap-day-glitch-took-some-head-scratching

3. **Expansion of business**: If the number of computers, staffs has increased, we should buy additional switches to connect the devices in an organized manner

- ## **References**

Security:
https://www.linkedin.com/advice/3/how-can-you-ensure-secure-private-communication-inhnc
VPN: https://cybernews.com/best-vpn/vpn-for-new-zealand/
Workstations:
https://www.pbtech.co.nz/product/WKALEN5024301/Lenovo-ThinkCentre-neo-50a-24-G3-238-FHD-Business

Monitor:
https://www.pbtech.co.nz/product/MONSAM123270/Samsung-LS27C310E-27-FHD-75Hz-IPS-Monitor-1920x108

Switches:
https://www.pbtech.co.nz/product/SWHUBI816045/Ubiquiti-UniFi-Switch-Gen2-USW-Lite-16-POE-16-Port

NAS Server:
https://www.pbtech.co.nz/product/NASSYN09230/Synology-DiskStation-DS923-4-Bay-NAS-Server-AMD-Ry?qr=popular_related_products

Ip Phone:
https://www.pbtech.co.nz/product/IPHYLK4954026/Yealink-SIP-T31G-Classical-IP-Phone---Black

Wifi Router:
https://www.pbtech.co.nz/product/NETTPL6541/TP-Link-Archer-AX72-AX5400-Dual-Band-Wi-Fi-6-Gigab

Ethernet cable:
https://www.pbtech.co.nz/product/CABCXT820100/Cruxtec-1m-Cat6-Ethernet-Cable---Black-Color

Printer:
https://www.noelleeming.co.nz/p/brother-professional-a3-inkjet-wireless-all-in-one-printer---mfc-j6540dw/N211082.html?gad_source=1&gclid=CjwKCAjw_LOwBhBFEiwAmSEQAUI3lBuAZcmDybgjOT1A2cLPa2qsUrgSF1xSfB27LgzuO5WYmKpYfhoCmf0QAvD_BwE&gclsrc=aw.ds

Router:
https://www.pbtech.co.nz/product/NETCIS11214/Cisco-ISR-1100-4-Ports-Dual-GE-WAN-Ethernet-Router

Antivirus:
https://www.pbtech.co.nz/product/WEBNLL5613060/NortonLifeLock-Norton-360-Premium-1-User-10-Device

Firewall:

https://www.pbtech.co.nz/product/NETFTG4640963/Fortinet-FortiGate-FG-60F-10x-GE-RJ45-ports-includ

Headset:
https://www.pbtech.co.nz/product/HSTJAB0930/Jabra-GN-930-25-509-103-PRO930-Wireless-USBSoftpho

Salesforce:
https://www.salesforce.com/au/products/service-pricing/