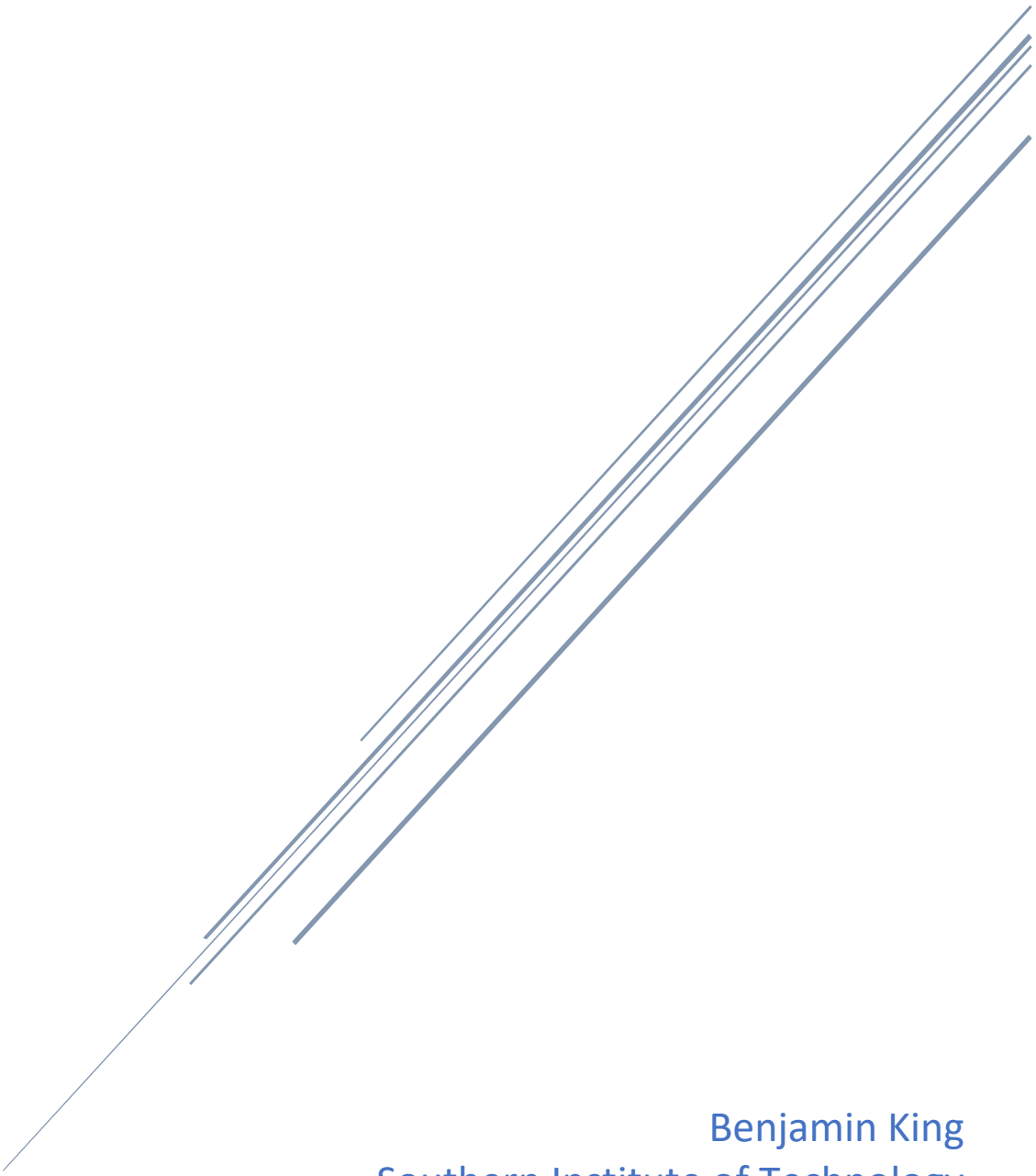
RUBBER TREE INSURANCE

ITC 501 – Assignment 2 | Business Office Design



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Contents

Introduction

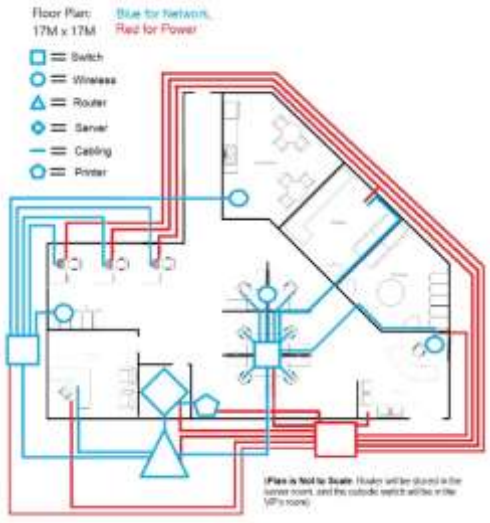
This document contains a Business Office Design for Rubber Tree Insurance, with a Network setup for 10 Employees at Rubber Tree Insurance with a Central Server to backup to. Throughout the Building I have installed Wi-Fi Access Points which will allow clients and employees to connect personal devices (such as Work Cell phones, Client Cell phones) to a free Wi-Fi Network that is Password Protected (however the Password should be displayed inside Rubber Tree Insurance's Office) and is isolated from their Central Server's Network.

Groups	Users
Sales (S Drive)	
	Sam Zaho
	Steve Jordan
Accounting (A Drive)	
	Ken Sutton
	Kobe Bryant
Consultant (E Drive)	
	Anita Murphy
	Anna Kendrick
Everyone *Default Group* (P Drive)	All Users

Workstations Setup

As part of our office setup, I have equipped each employee with a Dell Inspiron Small Desktop Computer (pre-installed with Windows 10 Pro), which comes with a Standard Mouse & Keyboard. The computers will be equipped with a LG 22MK430H-B 2.1" LED Monitor, as well as a Genius 1000X HD Webcam, and Verbatim 41646 Multimedia Headset, to allow employees to contact customers and clients through Skype.

These Computers have Windows 10 Pro Installed on them due to how Windows 10 Pro is needed to connect to a Windows Domain. Each computer has Apache OpenOffice installed on them, providing Rubber Tree Insurance with the essential word spreadsheet and presentation applications. The
Computers all have Skype installed on them, allowing the staff at Rubber Tree Insurance to video and call their customers and clients, with Anti-Virus Protection provided on the Workstations via Microsoft Windows Defender.

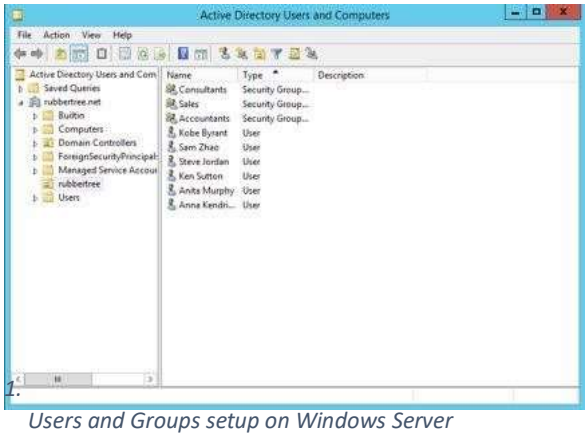


As seen in the floor plan to the right, each computer connected via Cat 6 RJ45 cables to the network, to have the most reliable and speediest internet and network connection for each computer. This is important for Rubber Tree Insurance with how their workstations will be connected to a Windows Domain, with all files backed up to it via Mapped Network Locations.

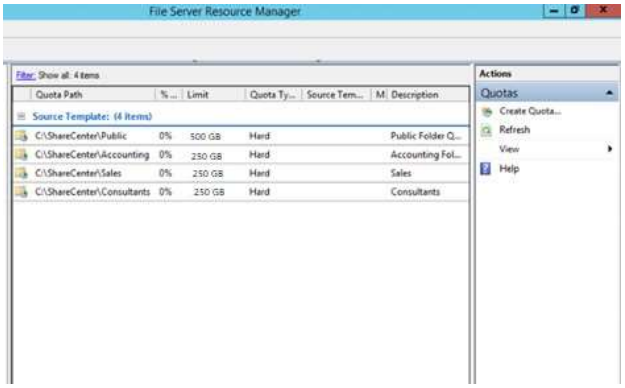
The Server (located in the Server Room) which is an HP ProLiant Micro Server Gen8 G1610 will be configured with 2x 2TB Seagate Iron Wolf Hard Disk Drives in a RAID 1 Mirroring Setup, with the latest version of Windows Server 2016 Essentials installed on it. By utilising a RAID 1 Setup, this ensures that there is enough data backup onsite for all their essential documents, with how the files are cloned onto both Hard Disk Drives. If one disk was to fail, the second disk would have the same files. In the long-term Rubber Tree Insurance might like to look

into increasing their Backup Plan to a RAID 10 Setup, which requires 4 HDD's that splits the backups between 2 drives, and then mirrors the 2 drives. However currently I believe a RAID 1 setup is enough for Rubber Tree Insurance's needs.

A Windows Domain will be setup for Rubber Tree Insurance with all Workstations connected to it, with the appropriate users & Groups as asked in the brief. Shared Department Drives for each Windows Group have been setup, with 250GB of Storage Allocated to each Department's Mapped Network Drive, while 500GB is allocated to the Public Mapped Network Drive as seen in the Quota Templates on the below (in the Virtualised Desktop the Limits have been sent to MB's instead of GB due to the Virtual Machine's Hard Drive Capacity). This allows there to be room for expansion with how the current fixed maximum size of usage is 1,25TB, while the Hard Drives are 2TB's.



1. Users and Groups setup on Windows Server



2. Quota Setup of Shared Drives

These Quotas are setup so that there is a notification is sent to the Users when the Folders reach 85% Capacity (212.5 GB for Departments and 425 GB for the Public Mapped Network Drive), as well as a message sent to the Event Log and a Notification sent to the Administrator.

Several Group Policy Management Templates have been enabled, as seen in the table to the right which limit the features that users can access on the Workstations.

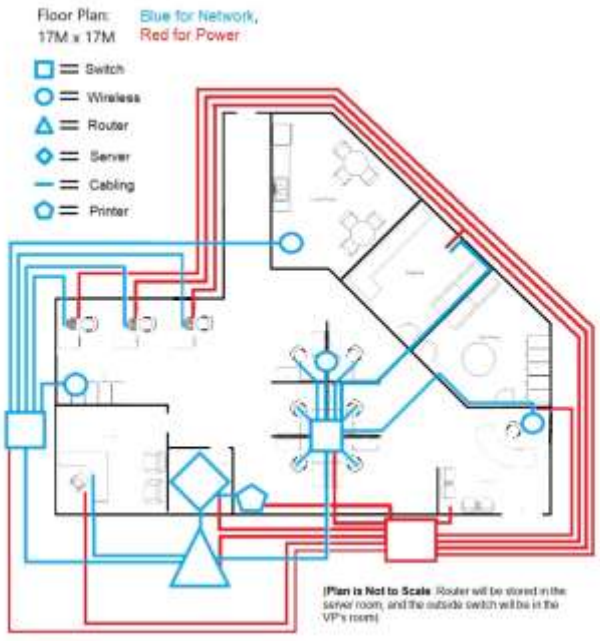
Group Policy Management Policies
Configured & Setup Default Desktop Wallpaper for Each User
Hiding of C Drive on each Workstation
Mapped Drives for Each User depending on their Assigned Group and a Global Public Drive. Only Map the Drive if the User is in the appropriate Group (does not show Drive they don't have permission to access
Disabled Ability to Change Desktop Wallpaper by Users

There is also a Shared Folder (called config) with only Read Only access that has been setup for All Users, which contains configuration files (such as the Desktop Wallpaper), that can be accessed by the Direct Network Path *//MAIN/config*.

Workstation & Accessories				
	WorkStation	**Monitor**	**Web Camera**	**Headset**
				
	Inspiron Small Desktop with Windows 10 Pro	LG 22MK430H-B 21.5" IPS LED Monitor	Genius FaceCam 1000X HD Webcam	Verbatim 41646 Multimedia Headset with Adjustable built-in microphone Wide frequency stereo headset
Unit	**$621.70 x 11**	**$159.85 x 11**	**$32.66 x 11**	**$13.22 x 11**
Total	**$6838.70**	**$1758.35**	**$359.26**	**$145.42**
Store	Dell NZ Store	PB Tech		

Network Setup

All Computers are connected to Rubber Tree Insurance's Network via Cat 6 Cable connected via 3x Switches as seen in the floor plan to the right.



Once of these, a TP-Link TL-SF1016D 16Port which is located underneath the main set of computers (to the right of the Server Room), that connects to all of the 6 Computers above it, as well as the main Wi-Fi Access Point (TP-Link Omada EAP225, MU-MIMO, Dual-Band AC1350) which relays the Wi-Fi Information to the other Access Points, with the port also connected to the Secondary Wi-Fi Access Point (a TP-Link Omada EAP115 N300 Wi-Fi Access Point – Mains Powered) which is located above the main Reception for Client Wi-Fi. I've also got a workstation setup in the meeting room (located between the break and file room), for business meetings that is connected to this Switch.

I have chosen to go with the TP-Link Omada EAO225, with how it is a Master Access Point for the other Access Points, meaning that if the Wi-Fi Network Configuration (such as Password or SSID Name) is changed, it then copies the configuration to the other Access Points automatically.

While a Wi-Fi Network might not be an essential aspect of Rubber Tree Insurance's network, I believe that it is a vital with how it will allow employees and clients at the office to connect to the internet. Because more and more people are storing their files with cloud providers, this can allow clients to easily access files from their phones (or tablet computers) at Rubber Tree, to provide any proof for Insurance Claims or to show their staff files. It will also allow employees (such as the VP) who might have a company phone to answer skype calls when they're away from their workstation, or to answer emails.

Another Switch, a TP-Link TL-SF1008P 8-Port is located beside the CEO's Office, which connects the remaining 3 Computers to the network. This Switch has 4 POE Ports, which 2 of these RJ45 Ports are utilised for 2 More Wi-Fi Access Points (TP-Link Omada EAP110 N400 Wi-Fi Access Points – POE Powered), to provide full coverage of Wi-Fi inside Rubber Tree's Building.

The CEO's Workstation and the Office Printer, a HP LaserJet Pro M426FDN, are connected directly to the main hub in the Server Room which is a TP-Link TL-SG1008D 8-Port Unmanaged Switch. This switch also directly feeds the connection to the Server, as well as the other 2 Switches and directly connects to the External Internet Connection which is provided by the Modem/Router provided by Shark's Internet Connection. DNS and a DHCP Server have been setup and configured on the Server.

Due to the extensive Network Wiring needed, a Cat 6A cable Roll should be purchased (Dynamix CC6AUTP-SLD 305m Cat6A Grey) as well as some RJ45 Connectors (Dynamix 100x RJ-45 8P8C Modular
RJ45 Plug). This should provide Rubber Tree Insurance with enough cabling for their Network Devices, as each computer will be connected to the internet via a wall mounted RJ45 Plug (with a short cable connecting from that to the Computer/Access-Point).

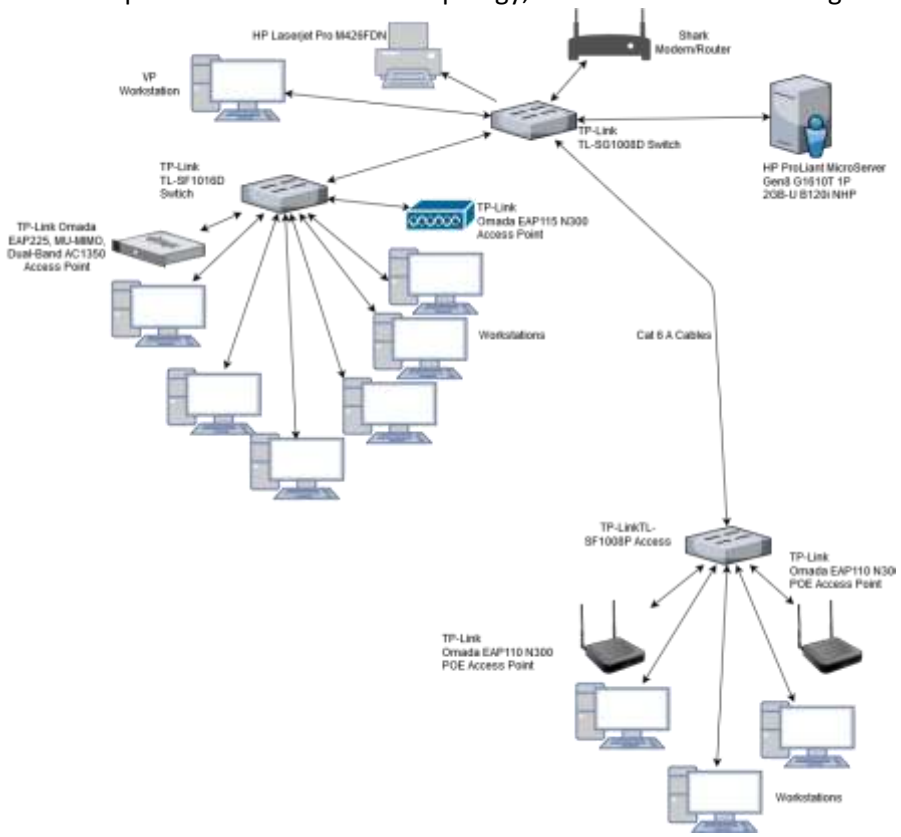
Networking				
	Main Wi-Fi Access Point (above Main Computers)	**Wi-Fi Access Point for Reception**	**Other Wi-Fi Access Points**	**Cable Roll**
				
	TP-Link Omada EAP225, MU-MIMO, DualBand AC1350 Access Point	TP-Link Omada EAP115 N300 Wi-Fi Access Point	TP-Link Omada EAP110 N300 Wi-Fi Access Point	Dynamix C-C6AUTPSLD 305m Cat6A Grey 10G UTP SOLID Cable
Unit **Total**	**$118.99**	**$82.24**	**$53.79 x 2** **$107.58**	**$166.00**
Store	PB Tech			

Networking				
	Server Room Switch	**Beside VP Office Switch**	**Main Computer Switch**	**RJ 45 Connectors**
				
	TP-Link TL-SG1008D 8-Port Gigabit Unmanaged Switch	TP-Link TL-SF1008P 8-Port 10/100M Unmanaged PoE Switch, 4-Port PoE (Max 57W)	TP-Link TL-SF1016D 16-Port 10/100M Unmanaged Switch, Rackmount Kit Included	Dynamix 100x RJ-45 8P8C Modular RJ45 Plug (Flat, Stranded) - 50micron (Packaged in Jars of 100 pieces)
Unit **Total**	**$37.89**	**$82.24**	**$56.00**	**$22.53**
Store	PB Tech			

Networking				
	Keystone Wall Plates	**RJ-45 Cat 6 Keystone**	**Server Hard Disk Drives**	**Server Operating System**
				
	Dynamix UTP KEYSTONE JACK TYPE110 Single Port Face Plate for 110/Keystone Jacks.	Dynamix FP-C6-008 Cat6 Keystone RJ45 Jack for 110 Face Plate. T568A/T568B Wiring.	Seagate IronWolf 2TB 64MB Cache SATA 6.0Gb/s NAS Internal Hard Drive	Microsoft OEM Windows Server 2016 Essentials 1-2 CPU
Unit **Total**	**$2.24 x 11** **$38.08**	**$4.13 x 17** **$70.21**	**$132.25 x 2** **$164.50**	**$565.00**
Store	PB Tech			

Network Topology

I have setup the Network in a Tree Topology, as shown in the Tree Diagram below:



Conclusion

This all comes to a cost of $10,612.99, which is $612.99 above the $10,000 budget. However, while this is over budget, I believe that it is worth it because of how I have decided that to improve productivity and security it is important that Rubber Tree Insurance uses the most-up-to-date stable version of Windows Server (which is currently Windows Server 2016), and to have a Wi-Fi Network which will provide numerous benefits to their staff and clients. I have also chosen to purchase HD Web Cameras for all the Staff Computers, to allow them to communicate with clients as VGA Web Cameras could have been purchased for a lower price but the Video Quality would be severely degraded and more pixilated.

Component	Cost
Desktop Computers	$6838.70
Monitors	$1,758.35
Web Cameras	$359.26
Headsets	$145.42
Wi-Fi Access Points	$308.81
Cable Roll	$166.00
RJ45 Connectors	$22.53
Switches	$176.13
Wall Plates	$38.08
RJ45 Keystone	$70.21
Server HDD's	$164.50
Server Operating System	$565.00
Total Cost	**$10,612.99**