

Table of content

1. Overview network design -----	
--- 3	
1.1 Planning and organization of project -----	
---- 3	
2. Infrastructure need for the project -----	
---- 4	
2.1 Hardware requirements -----	
---- 4	
2.2 Equipment's requirements -----	
--- 5	
2.3 Software requirements -----	
--- 5	
2.4 Internet connection -----	
---- 6	
2.5 Total price of all infrastructures -----	
---- 6	
3. Human resource -----	
--- 7	

4. Time duration	-----
--- 7	
5. Network design	-----
--- 8	

1. Overview network design

Textile company has 2 building in its compound. The average distance between the buildings is 65 meters. Each building has four floors. Assume that in average there are 8 users in each floor. The company has 10 Mbps of internet connection form

the service provider. textile planned to connect these 2 building through network. Textile is now wanted to implement new network infrastructure which include following requirement.

To share file and other resources from central location, To share email, schedule and task, To administrator users from central location, To store and share data from central database, To host and update compatibility website, To insured the security quality of service.

1.1 Planning and organization of project

N o	Status	Respo nsible person	Responsibility	No of need experts	Dura tion
1.	Planning	IT manag er	Observation, determine connectivity requirements across all locations, define essential performance metrics like uptime .	1	2 days
2.	Designin g	Netwo rk design ers	Draw up the network prepare for all things by diagram.	1	3 days
3.	Purchasi ng	Marke ting	Purchase all necessary Component to the project.	3	4 days
4.	Crimpin g	IT techni	Crimping RJ 45	2	1 days

		cal			
5.	Network implementation	Network experts and electrician	Start install hardware based on network design and planning:- connect ISP to router, install the network based on given topology and put computer and other device in to proper manner.	6 network experts and 4 electrician	8 days 8 hours per day
6.	Software installation	IT technical	Install OS, application software, drivers, anti virus.	4	5 days 8 hours per day
7.	Server install and configuration	Network experts	Install and configure both hardware and software servers.	6	4 days 8 hours per day
8.	Evaluation and testing	IT administrated	Evaluate the network work proper by testing all things.	2	2 days

2. Infrastructure need for the project

2.1 Hardware requirements

- Network firewall
- Router
- Distribution switch
- Access switch
- Hub
- UTP cable
- RJ 45

Hardware Servers

- File server
- Email server
- Database server
- Security server

No	Item	Specification	Quantity	Estimate Unit Price	Total Price
1.	Network firewall	HP(VPN Support, Standard Memory 8GB)	1	24,000 ETB	25,000 ETB
2.	File server	HP (Ram 128 GB,3.5GHz CPU,8 TB Hard Drive storage)	1	18,000 ETB	18,000 ETB
3.	Email server	HP (Ram 128 GB,3.5GHz CPU,8 TB Hard Drive storage)	1	19,000 ETB	19,000 ETB

4.	Web server	HP (Ram 128 GB,3.5GHz CPU,8 TB Hard Drive storage)	1	16,000 ETB	16,000 ETB
5.	Database server	HP (Ram 128 GB,3.5GHz CPU,8 TB Hard Drive storage)	1	21,000 ETB	21,000 ETB
6.	Security server	HP (Ram 128 GB,3.5GHz CPU,16 TB Hard Drive storage)	1	20,000 ETB	20,000 ETB
7.	Router	TP-link (Wired 5 GB frequency VPN router)	1	5500 ETB	5500 ETB
8.	Distribution Switch	10Gbps Switching Capacity	1	5080 ETB	5080 ETB
9.	Access Switch	D-Link Ethernet Switch	8	4800 ETB	38,400 ETB
10.	Hub	Standard	8	2000 ETB	16,000 ETB
11.	UTP Cable	Cat6 Cable, 1000 feet	3000 m	1380 ETB	4140 ETB
12.	RJ 45	Standard	8 pack	500 ETB	4500 ETB
Total price					192,620 ETB

2.2 Equipment's requirements

- Server computers
- Desktop computers
- Printer
- Flash driver
- Crimper
- Cable tester
- Puncher

<u>N</u> <u>o</u>	Item	Specification	Quantit y	Estimat e Unit Price	Total Price
1.	Server Compute rs	HP Pro Liant ML30 (Gen10 Tower Server, Intel Xeon E- 2124 Quad- Core 3.3GHz 8MB, 32GB DDR4 RAM, 4TB SSD)	5	77,392 ETB	386,960 ETB
2.	Desktop computer	Dell OptiPlex 3000 SFF Professional PC (Intel Corei7 10th Generation, 16 RAM)	64	36,056 ETB	2,307,584 ETB
3.	Printer	HP Laser jet Printer(Standar	8	11,000 ETB	88,000 ETB

		d)			
4.	Flash driver	San disk(8GB storage)	10	200 ETB	2000 ETB
5.	Crimper	Standard	5	1533 ETB	7665 ETB
6.	Cable tester	Digital	4	2131 ETB	8524 ETB
7.	Puncher	Standard	6	780 ETB	4680 ETB
Total price					2,805,413ETB

2.3 Software requirements

- Window OS
- Window server
- Microsoft office
- Internet search browser
- Device driver
- Network driver
- Software firewall
- VLC video player
- Adobe

No	Software	Specification	Quantity	Estimate Unit	Total Price
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				Price	
1.	Window OS	Window 10 pro	64	9000 ETB	576,000 ETB
2.	Window server	Window server 2019	5	5779 ETB	28,895 ETB
3.	Microsoft Office	2010 Professionals	64	840 ETB	53,760 ETB
4.	Anti virus	A vast One for 30 devices (family plan)	3	4140 ETB	12,420 ETB
5.	Internet Search Browser	Last version popular like Firefox, Chrome, etc.	10	Free	Free
6.	Device driver	Pack solution	10	2000 ETB	2000 ETB
7.	Network driver	Standard	10	2400 ETB	2400 ETB
8.	Firewall	Comodo's as license	1	3000 ETB	3000 ETB
9.	Other software(VLC video player, Adobe)	Last version	10	Free	Free
Total price					1,406,680 ETB

4 Internet connection

The network use Broadband connection as price 1,359.20 ETB per month and 16,310.4 ETB per year and also ISP is Ethio-telecom.

Service name	Internet connection	Monthly Price	Yearly
Broadband	10 Mbps	1,359.20 ETB	16,310.4 ETB

2.5 Total price of all infrastructures

Total price = hardware + equipment's + software + internet

Total price = 192,620 ETB + 2,805,413 ETB + 1,406,680 ETB + 1,359.20 ETB

Finally the price = **4,406,072.2 ETB**

3. Human resource

As totally the human resource is 24 employees, such as;-

- 1 IT manger for planning the project.
- 1 Network designer for designing the network.
- 3 Marketer for purchasing necessary network items and paid salary for employees.
- 8 IT technical for crimping the RJ 45 and also install Software such as OS, application software, device drives, network drivers and anti virus.

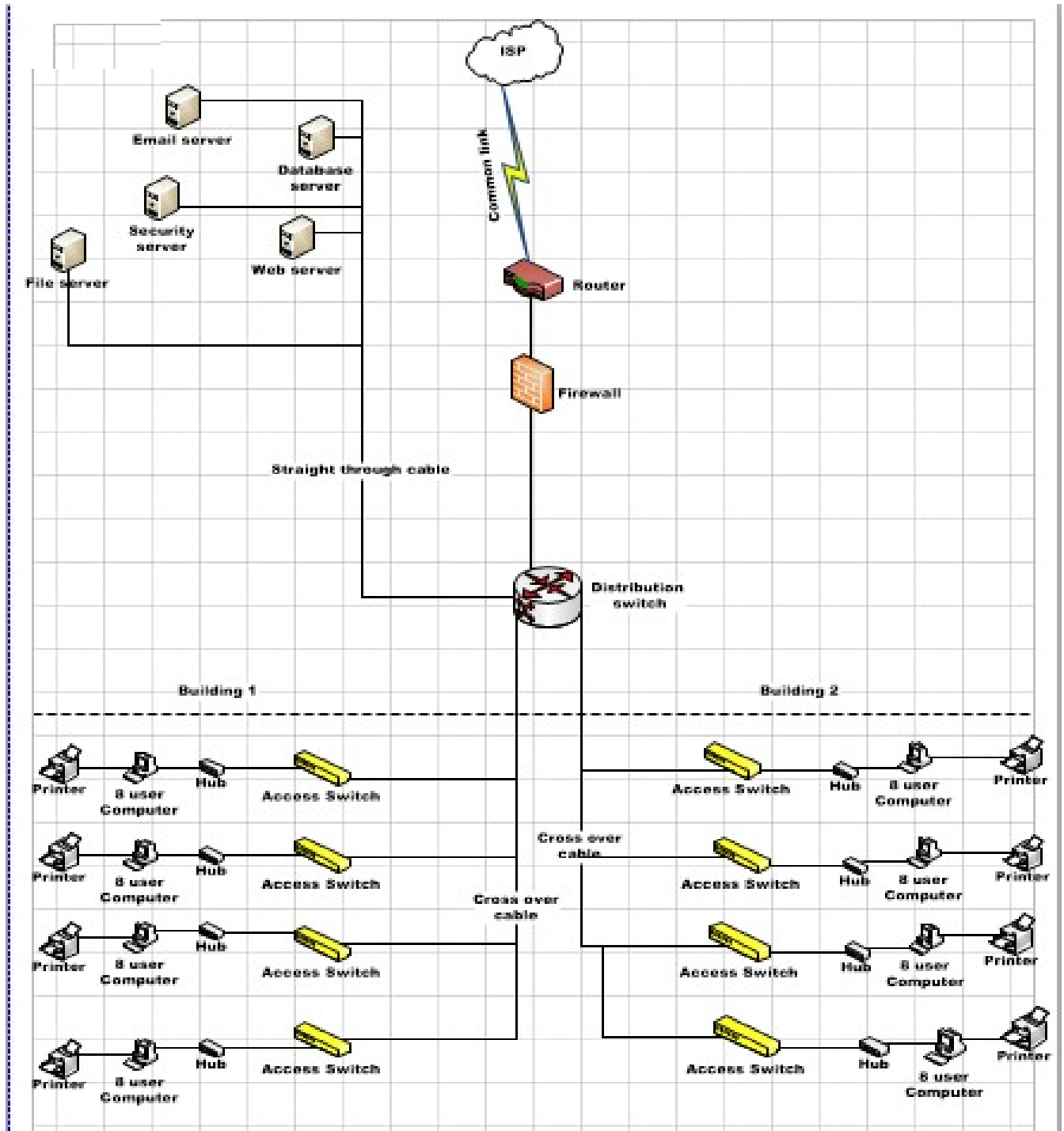
- 6 Network experts for install the network hardware oriented and also Server install and configuration both hardware and software.
- 4 Electrician for Continuation of the rope or the electrics.
- 2 IT administrator for Evaluate the network work proper by testing all things.

4. Time duration

As totally to finish all things taken 29 days, such as;-

- 2 days for planning the project.
- 3 days take for designing the network.
- 4 days for purchasing all necessary item.
- 1 day for crimping RJ 45 cables.
- 8 days for Network implementation 8 hours per day.
- 5 days for install software 8 hours per day.
- 4 days for Server installation and configuration both hardware and software 8 hours per day.
- 2 days for Evaluation and testing the network make sure work properly.

5. Network design



The ISP and router connect by fiber cable and all other communication end by UTP cat 6 cable and also distribution switch connect to servers by straight through cable and distribution switch communicate to similar device like access switch we use cross over cable.