ICT Ministry (ICT Tower) Network Design

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About the Authors

I am Ashiqur Rahman. And a student from City University.
I am completing my undergraduate program with bachelor of computer science and engineering.

EXECUTIVE SUMMARY

I've got a project from my university to create a network design for ICT Ministry is located in Agargaon, Dhaka. The client provides server fully depends on ICT. The building is a new build with interior walls which will be built to suit the needs of the center. This will allow for a greater range of flexibility for the installation of and design of a computer data network system. The client will be using software engineered specifically for daycare centers.

Scope Of Work

The work that will be include the design and installation of a fully switched star network.

This includes the installation and setup of all the network devices, cabling and interfaces which may include but may not be limited to workstations, multi-function devices, servers, switches, routers, cabling and all related software as mentioned in the Requirement.

Objectives

1. Scalability: The network design is scalable so that more network cable equipment can be added if needed and as funding becomes available without having to redo the installed network.
2. Integration and Update: This is a new installation in a new building with only exterior walls. The network and equipment being installed will be new state of the art equipment designed specifically for ICT Ministry
3. Secure Service: The primary objective of this network is to provide secure network communication. It is designed to be functionally and

physically isolated from access by unauthorized user.

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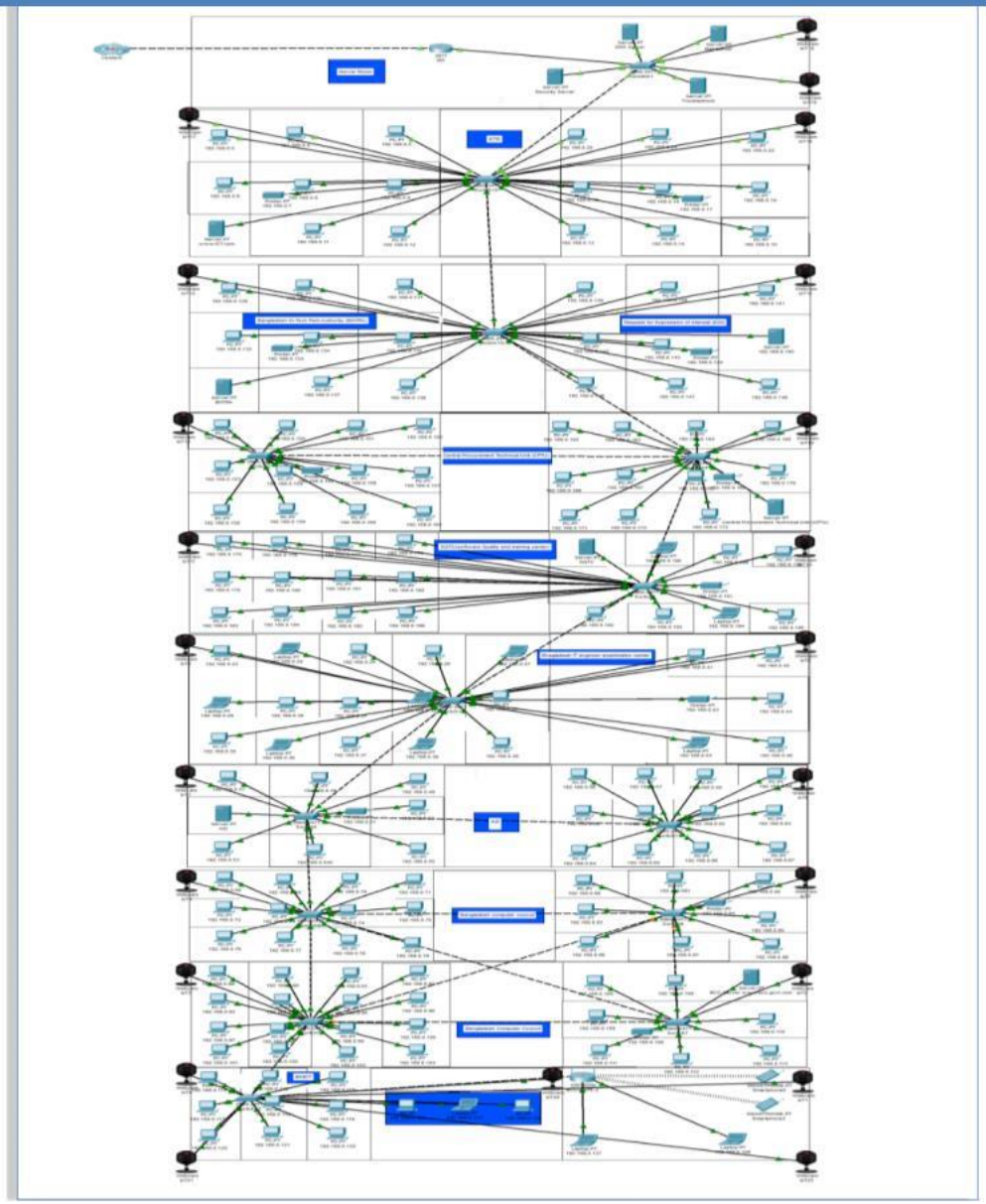
Logical Diagram



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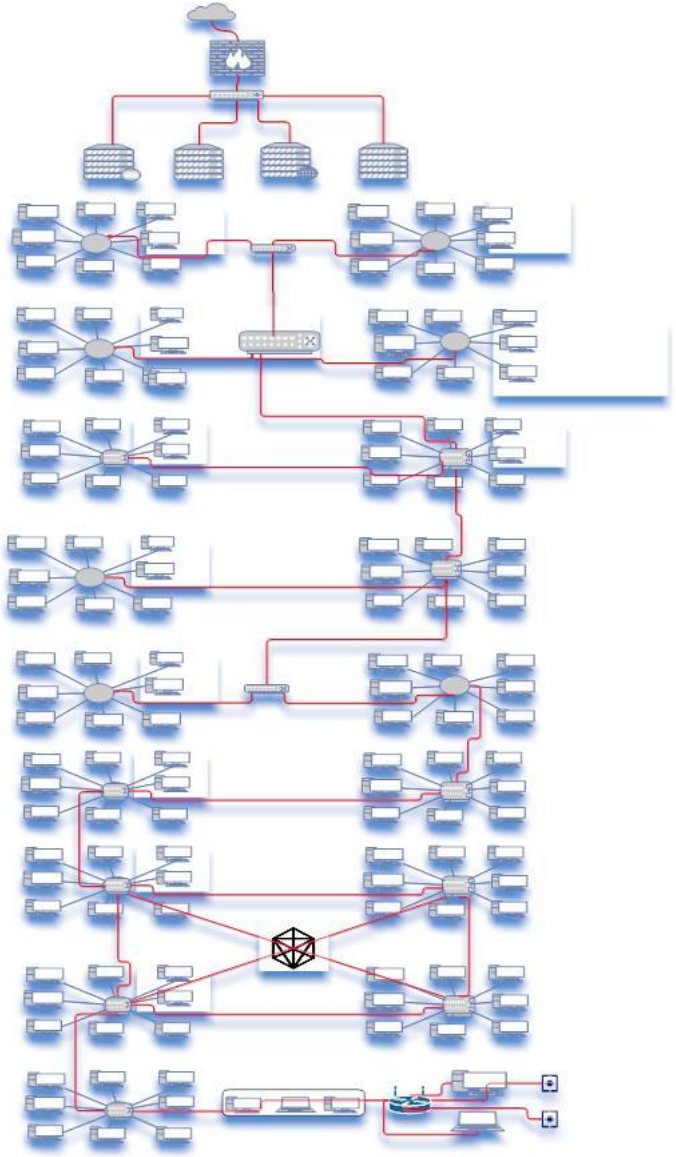
Physical Diagram



Project Objective

The major objective of this project is to Implement the network of ICT Ministry in order to:

- Design a network system that will be more efficient and more affective for the ICT ministry.
- Provide increased network capacity
- Provide future expansion capability.
- Implement the network's fault tolerance, security, and high speed connection,
- Identify the critical points of failure in the existing network and propose on how to eliminate them.
- Recommend which network points error. So that should be fix without any hesitation.

Project Benefit

Improved network reliability, security, and fault tolerance. Critical points of failure will be identified and redundancy will be implemented to provide fault tolerance. This will save JWD a great deal of money lost from a network failure-- a single failure would likely cost JWD at least $10,000. Additionally, a breach in security could potentially cost millions in lawsuits.

Design & Feature

- Link to the connection to the internet

- Modem
- Firewall
- Switches
- 2 – 24 port switches will allow for providing security and speed
- Cable Management system to keep cables neat and organized.
- Cat 6 cabling

Computer LAB

In the ICT Ministry most of the department has there LAB. For those LAB or training center's computer are connected to the server with cat-6 network cable.

Reliability Requirement

In keeping with user expectations and industry standards, the LAN is expected to operate at 99.9% uptime and an undiscovered error rate of .001%.

Security Requirement

For a Ministry there should have great security system. Like A firewall will be used so unauthorized use will be restricted. Part of the security will be user accounts and passwords that will give limited access. There will be different access capabilities for network managers and users.
secure devices, password protected, and monitoring system,

Requirement's

- **Software**
  - Microsoft Windows 10 Professional on all computer workstations
  - Microsoft Server 2019 on the server (network operating system)
  - AVAST Anti-virus software on all servers administrative and also for LAB
  - Microsoft Office 2020
  - All updates and service packs installed
- Multi-function devices (print, copy, fax, scan)
- Switches
- Wireless access points
- Cabling and connectors(RJ-45)
- All connections as needed
- Workstations
- Server
- Router
- Firewall
- CCTV

Equipment price

Hardware	Per Unit Cost	Quantity	Total Cost
Cisco Catalyst 6509-E Switch	36,500৳	14	511000
Cisco 2811 Integrated Services Router	42394	1	42394
CISCO IOT WEBCAM	3500	20	70000
Copper Straight Through Cat6 Utp Network Cable Price	5500/roll	10	55000
D-link Cat-6 RJ45 Cable Connector	13.75	250	3437
Scalable T612V3 2TB Tower Server	110000	10	1100000
linksys wrt300N router	4000	1	4000

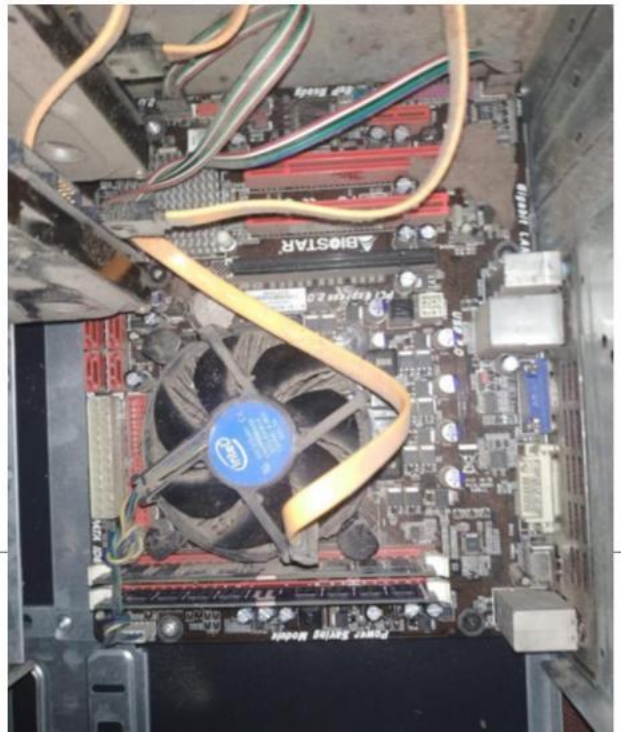
Connectivity

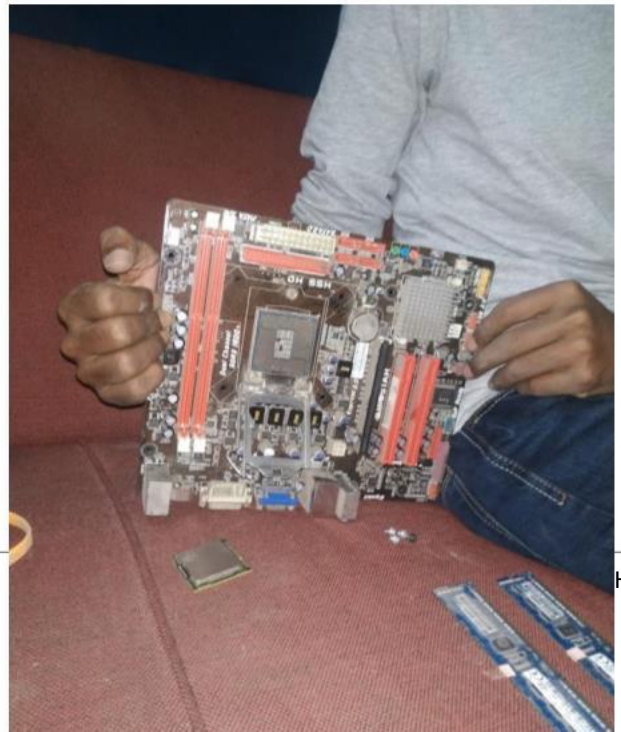
• SMTP mail servers: Act as a relay between the Internet and the intranet mail servers.

• DNS servers: Serve as the authoritative external DNS server for the enterprise and relay internal DNS requests to the Internet.

• Firewalls: Provide network-level protection of resources, provide stateful filtering of traffic, and forward VPN traffic from remote sites and users for termination

Computer assemble and Disassemble





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