City University

Project

On

Network Design of BASIS office

Course Title: Computer Networks Laboratory

Course Code: CSE 318

Submitted To

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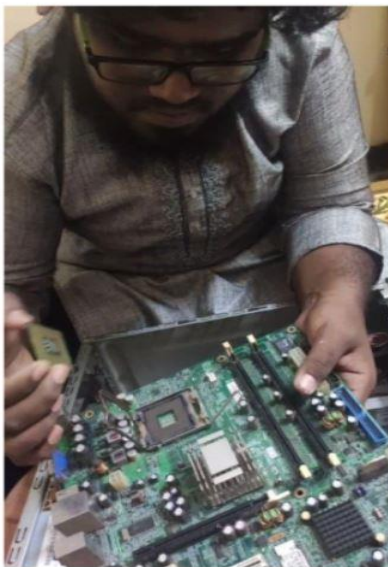
City University.

Submitted By

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47th Batch

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Screenshot and Photo:

Bangladesh Association of Software and Information Services
(BASIS)

Abstract:

The paper outlines the steps involved in structure network design and deployment for a small office need. It presents the steps of a structured network design and demon started a practical implementation of the steps using a real-life case study. The design is simulated using Cisco Packet Trace software and Wire Shark protocol analyzer.

Introduction:

Extensive planning should go into a network implementation. Just like any project, need is identified and then a plan outlines are process from beginning to end. A good project plan will help identify any strengths, weaknesses, opportunities, or threats. The plan should clearly define the tasks, and the order in which tasks are completed.

Project Plan:

It is important to have a formal planning procedure for any nontrivial project. It is sometimes argued that most projects involve modifications of existing systems, and therefore formal system planning is too time consuming and offers meager benefits. Before creating a project, we need to determine what we will use the project for. After that the components have to be determined according to the work. Every task from start to finish has to be completed step by step. All the PCs that we will use in this project will be able to communicate with each other. The PCs will be connected via CAT-6 UTP cable and switch. We will use 2 servers here. Web server and DNS server. I will use the web server to communicate between the client and the server using HTTP and the computers will have a DNS server to communicate with each other by translating the numeric IP addresses.

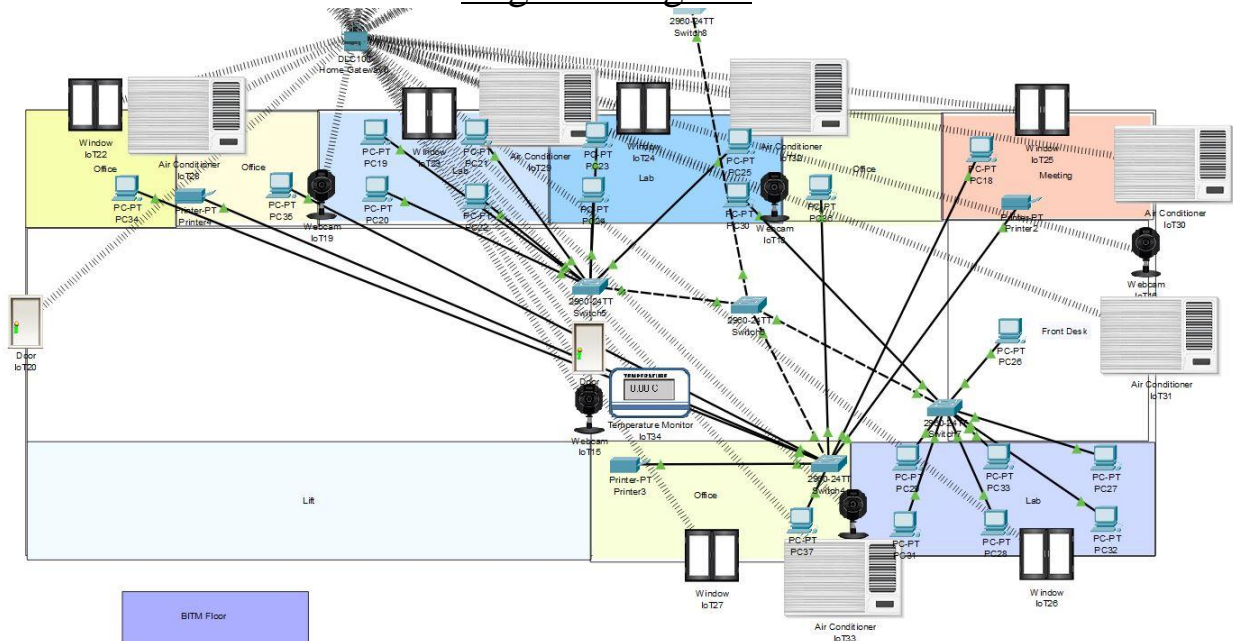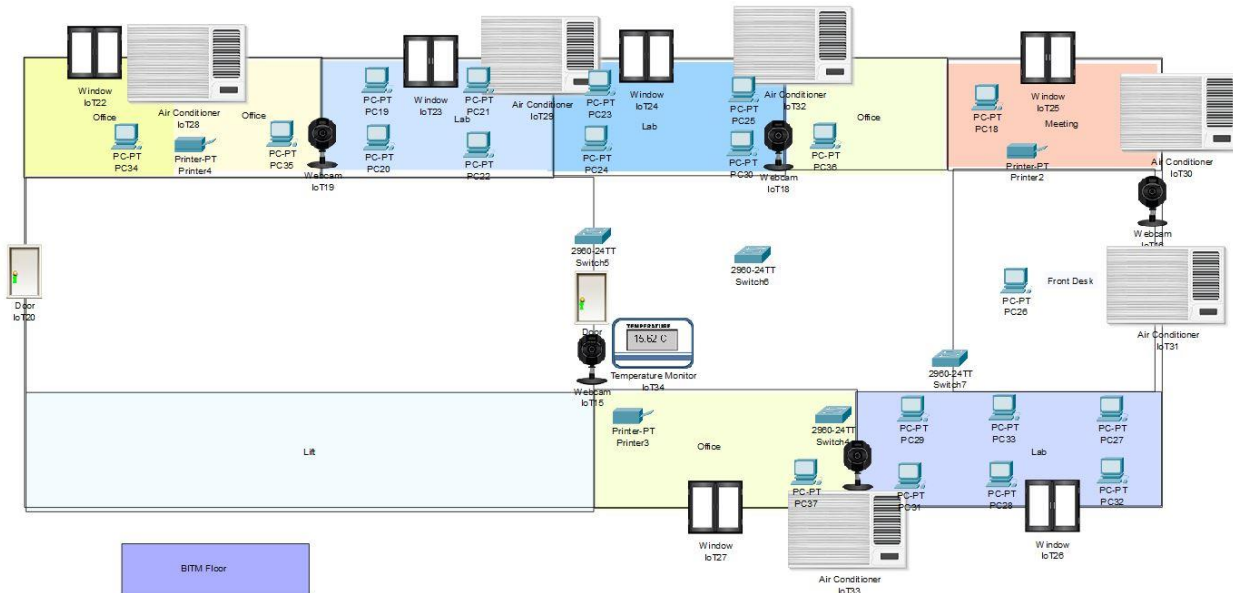# BASIS Floor - 01

Logical Diagram
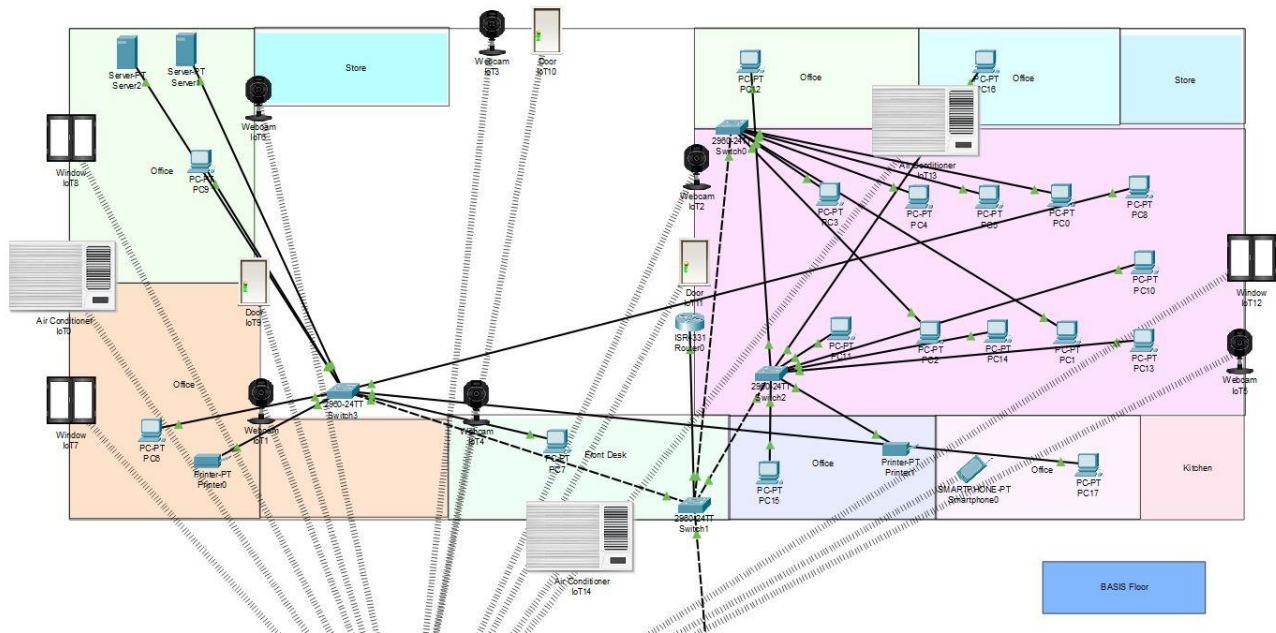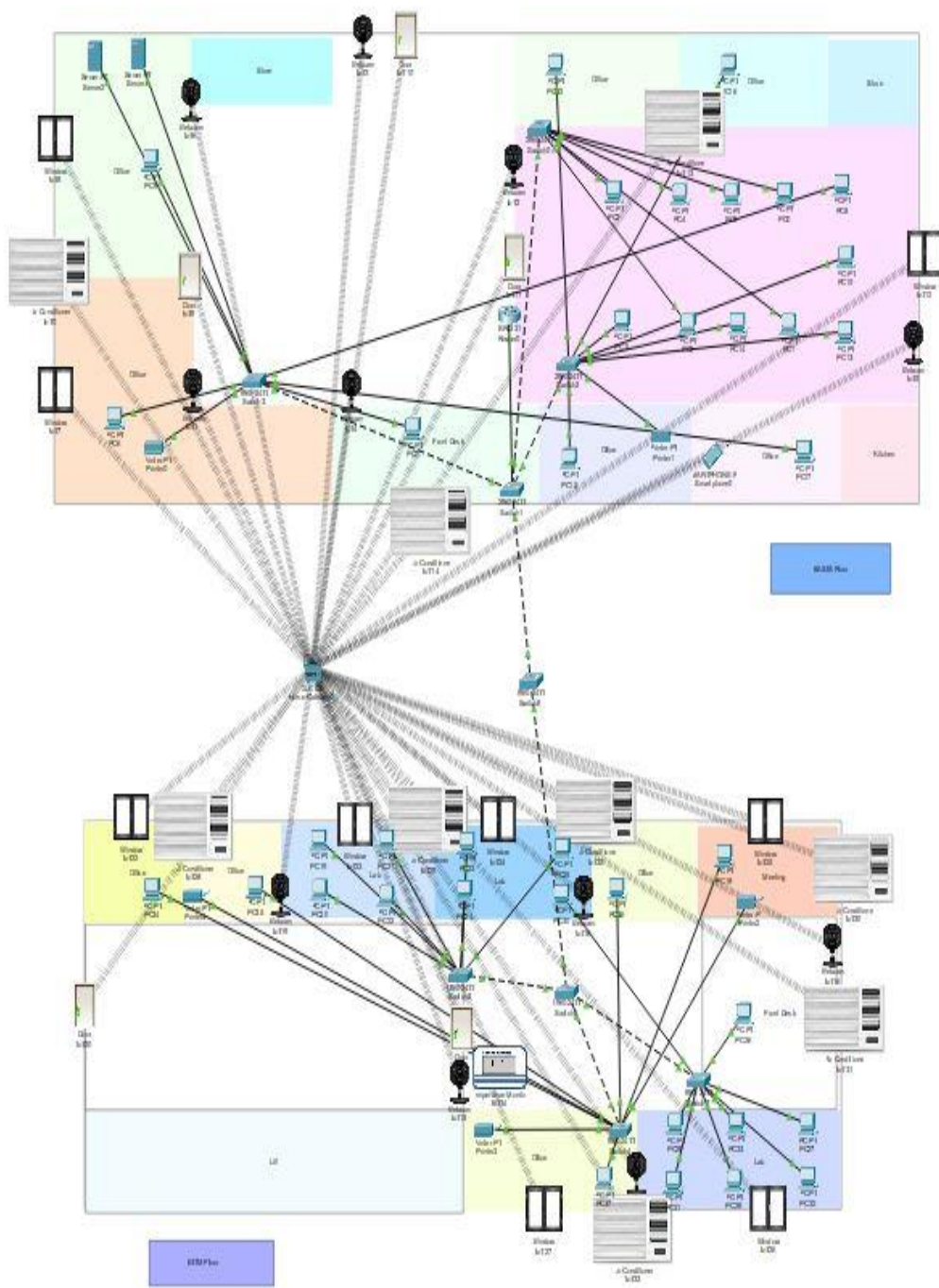

Physical Diagram
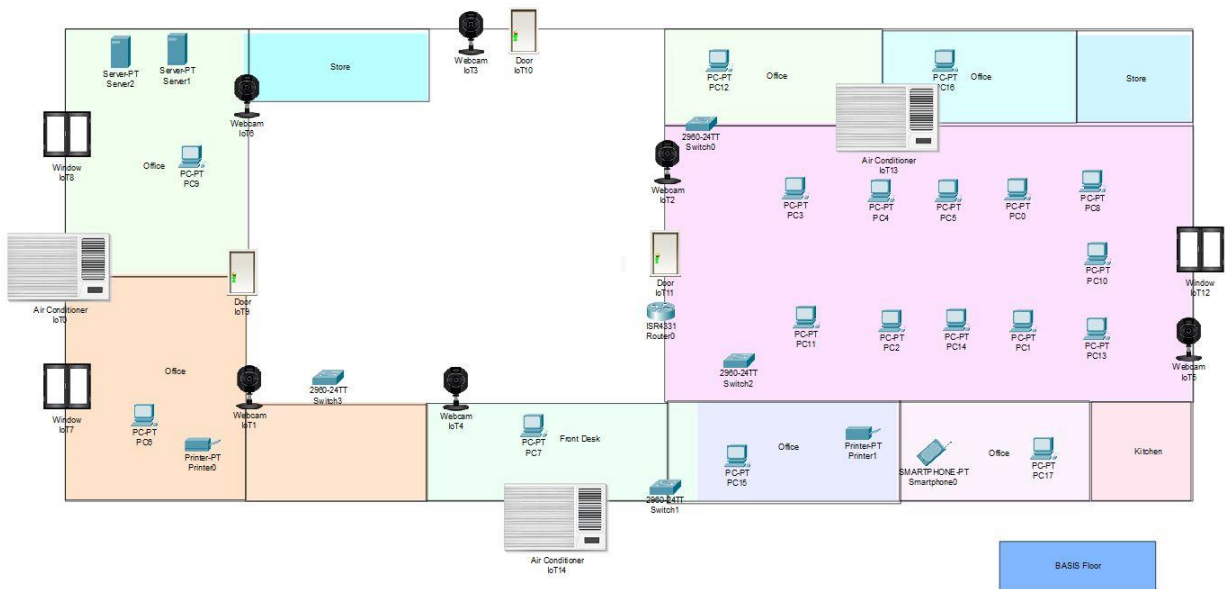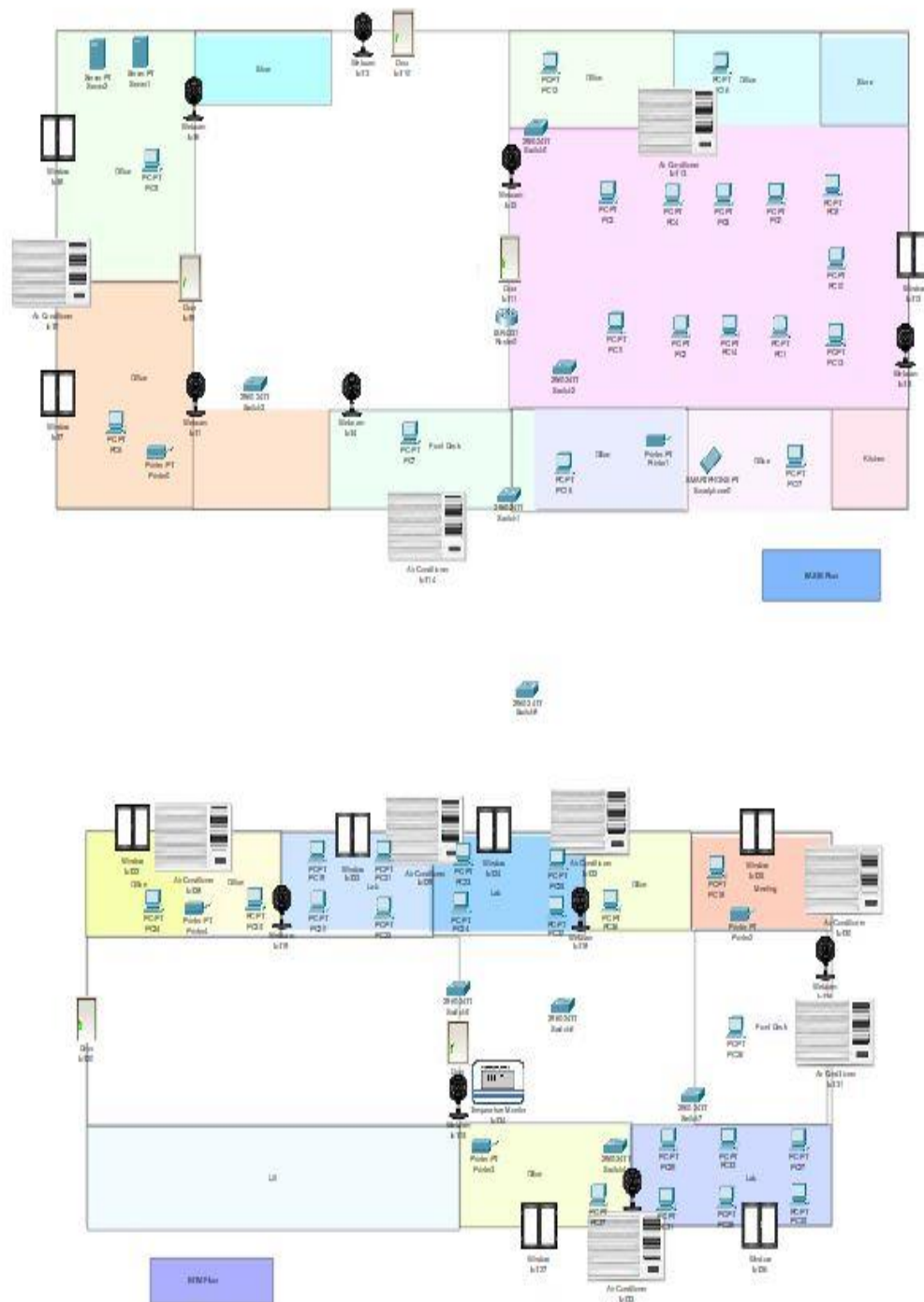
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Logical Diagram

Physical Diagram

Overall Logical Daigram View

Overall Physical Diagram View

Importance of Network Design:

When start-ups or expanding businesses map out a network for their business, it's common to have the tendency to take a shortcut or skip the planning phase in the attempt to get it online immediately. It's best to note that all networks with impressive security come from impressive network design plans, and not just an after-thought. We can easily make out a well-thought-out network design from that of being pieced together in sections over time. Good networks work fast and smooth. Our business' network should have a good platform for our business or office applications. Good network design plans consider possible changes that may occur in our business without the need for a total redesign. Our team is only as effective as the IT resources and network they're using every day. To get the most out of the work performance, we need to invest in a properly laid out network infrastructure.

Device Cost

Device	Price (BDT)	Number of Devices	Total Price (BDT)
HP Pro One 400 G6 Core i5 10th Gen All in One PC	69,500	37	2,57,1500
TP-Link Archer AX50 AX3000 3000 Mbps Gigabit Dual-Band Wi-Fi 6 Router	12,250	1	12,250
Cisco SG350-28P 28-Port Gigabit oE Managed Switch	37,500	9	337,500
Logitech C920E Pro Full HD Webcam	10,000	12	120,000
Transtec INVERTER Split Air Conditioner	51,000	9	459,000
Smart Window & Door	40,000	14	560,000
Server setup (4h)	2,100	2	16,800

x 4hr each)			
HP Laser Jet Pro MFP M227fdn Multifunction Printer	31,500	5	157,500
D-Link Cat-6 UTP cabling Used for the majority of the network	4500	4	18,000
Cable lock: Kensington K64615US Pick-resistant lock; cut-resistant 8ft cable	5800	4	23,200
Xiaomi Smart Phone	28,000	1	28,000
Xiaomi Smart Home Gateway	7,500	1	7,500
			Total Cost=4333250

Physical Security:

The first level of security in any computer network is physical security. Physical security is important for workstations but vital for servers. Any hacker worth his or her salt can quickly defeat all but the most paranoid security measures if he or she can gain physical access to a server. We have to take some step to make security strong. They are -

- Lock the computer room.
- Give the keys only to people you trust.
- Keep track of who has the keys.
- Mount the servers on cases or racks that have locks.
- Disable the floppy drive on the server.

Advantage of Network design:

1. Efficient Network Performance.
2. Allows Resilience.
3. Makes Room for Scalability.
4. Work Collaboration Made Easier.
5. Speed Increase.

Disadvantage of Network design:

The approach may not take all necessary applications and services into consideration, leading to a design that ultimately may not meet the needs of an organization, and may need to be redesigned in the future.

Conclusion:

A secure network diagram needs to be created for network design. Because the success of an organization depends on its network security. It has been used to logically group clients on the network, and with the aid of a router and switch configurations, data packets routed from one device to another. It is also noteworthy that, the configuration and specifications are for the initial prototype and can further be developed and additional functionality can be added to increase support and overage. The procedures provide a veritable approach for the design of LANs for end-to-end IP network connectivity.