NETWORK DESIGN PROPOSAL FOR A UNIVERSITY

BACHELOR OF ENGINEERING
IN
COMPUTER SCIENCE & ENGINEERING

Submitted to:
Prabhjot Kaur

Submitted By:
(Prashant Sharma, Sagar Singh 19bcs2340)

NAME: Prashant Sharma
UID: 19BCS2333

Mentor Signature

(Name & E-code)

Dr. Sumedha Arora & 9941

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Chandigarh University, Gharuan

Introduction

The purpose of this project is to design a suitable network system for the universities. The main aim is to design a network with high-quality security and low cost, in such a way that network devices of universities in developing countries, will meet the standards associated with universities. This project enhances the education in networking world.

There are many devices that is used in designing the network, such as routers, switches, servers, pcs etc. All devices are connected to each other to make integrated network system and configured by putting IP addresses to all devices. The budget for this design network was low, it needed to have a high level of security.

All devices in the network are secured by passwords and these passwords are encrypted to be more secure. The server used for this network design are DHCP server and DNS servers. This presentation and design included additional components such as a web server, mail server, etc.

A computer network represents a component, especially on how it enhances the functional performance in different fields and organizations, such ad connecting students with the university, faculty, and the library. So, Computer network plays a vital role in the education area by providing efficient communications for the university environment.

Feasibility Study

We know that technology has reached peak of development in making life smart and easier for the people. Technology is very important part or our life. So the computer network represents a component, especially on how it enhance the functional performance in different fields and organizations, such as companies and universities.

A universities network performs many functions, such as connecting students with the university, faculty, and the library.
Most universities today use network to provide online education by connecting widely dispersed students with their faculty members directly.

Installing networks in a university relies on the university's budget, which differ by institution and from country to country.
Especially this design will be focus on factors that will enhance computer network for universities in developing countries.

The main goal of this project to design a Local Area Network Design suitable for universities. This project will help these universities to design a network that employs low-cost solutions with unacceptable compromises in security or quality.

The main significance of the project is to face the intense pressure form utilization. This network is design for more user population and if user access the network, it will be able to scale. It is properly scalable Network.

Methodology/Planning of work

This is fully based on computer software application in which we used topologies, routers, Switches, Pc's etc. This is the diagram and all departments which we used in the project and design a LAN for university scalable and affordable.

In this we work on CISCO certified application that is cisco packet tracer application and design a whole network of the university we design step wise and start from Recaption to Guest House included many departments in the universities and there is one Internet service provider.

In this we design a secure network which will have login passwords, firewall, routers and switches and then we configure all by IP address and connect all by on wired and wireless network.

Cisco Packet tracer application is very intelligent and useful software which also used on large scale network. We design our network after the study of all configurations of devices and we will try to design a network more secure and scalable for the university.

In this we will do the Encryption of passwords, and also use DNS, Work on Firewall and also back-up and recovery, each have individual hosts and separate server room and also work on TCP/IP models and DHCP etc by the help of these technologies we design a more secure network for university.

Module & Team Member wise distribution

We have two members in our team so we will divide our work.
Our project is fully based on cisco packet tracer application software.
So, we will divide our project in three phases:

1. Design a flaw chart of our network proposal.
2. Learn the configuration of the Devices.
3. Implement the Proposal on Cisco Packet Tracer.

So, we also divide our work on this project one will complete the documentation and one will complete the configuration on cisco packet tracer after the whole concept is clear about networking.

According to first phase we will both design a flow chart that how will design and how we include the departments, hostels, reception, Guest room etc. we use topologies to connect the departments and all in topologies concept.

And now coming to second phase we configure the devices which we will use in this project er required better knowledge in this and we will be clear that what and how we can configure securely our devices such as routers, switches, pc, ISP, DHCP, server etc. Finally, at the end of this phase we will be able to implement our project.

Now coming to final Phase in this after clearing all concept we implement on software named as Cisco packet tracer in this we configured our network proposal for the university in this phase we complete our project Network design proposal for the university.

Innovation in Project

Innovation in this project is that how we design a network flexible means afford a very efficient computer network in low budget also with the help of new devices.

In this project factors include such as adaptability, integration, resilience, security, and the most important factor cost.

Installing networks in a university relies on the university's budget, which differs by institution and from country to country.

There are many countries whose universities do not have financial capability for designing the perfect and ideal network.

In this Project we will use the new network technologies come in market and also use wireless network which will be the best network technology who help in more secure and fast network.

So, we will try to design that type of computer network which will help who need to have good quality and more secure network at less cost.

One of the main feature of our project that it is scalable and affordable for any universities at a normal cost and also for security reasons it is very efficient so this is all things which we include in the prat of innovation.

Software and Hardware Requirements

In this project we used many devices and this project based on application software.

So, Software and hardware which we used in these projects are:

1. **Cisco Packet Tracer:**

   This is application software effective, interactive environment for learning networking concepts and protocols. It helps to create their own virtual "network worlds" for exploration, experimentation, and explanation of networking concepts and technologies.

2. **Routers:**

   It is used to transfer data packets between networks.

3. **Switches:**

   A switch is a device in a computer network that connects other devices together.

And also many devices which is used in this project some as pc's, ethernet cable, wired and wired-less devices , VLAN, Servers, Access point IP address Firewall, Cables etc.

By the help of these devices, we design a scalable and secure network for the university. So, this is all about the devices which we will used in this project.

Bibliography

1. **Basics of Networking**
   (https://www.geeksforgeeks.org/basics-computer-networking/

2. **Network Information Related Websites**
   (https://blogs.cisco.com/networking)

3. **Concept of Cisco Packet tracer**
   (https://www.netacad.com/courses/packet-tracer)