**BACKGROUND**

Blue Nile College is one of the private college located in Gondar town .it is mainly founded to provide educational service to the society. The campus has four floor building located around electric power organizations at Piasa. The college provides education in different department .some of them are information communication technology (ICT) has four building health as in nursing .the college building as stated before has four floor the network installation was made in accordingly .the first floor has mainly administration office ,registrar office and library. The nursing department office and some classes are located at the third floor. At second floor the ICT department and other office are allocated. At the last floor three ICT labs with 90 computers, cafretia and some classes are allocated.

**PROJECT GOAL**

Our project goal is to design manageable network for Blue Nile College which gives high speed of internet access and delivers secured network system by using several security devices and system.

The main goal of this project is

* To give manageable network infrastructure
* To give fast internet access
* To replace manual activities with network technology
* To communicate with other foreign organization.
* To make the network scalable for the future technologies.
* To use several security mechanism for preventing organizations privacy or data from external or an authorized hackers

**PROJECT SCOPE**

The scope shall be documenting the design of the Blue Nile College Network Infrastructure, associated access, services and configurations.

Ethernet is the Primary Access technologies used.

Services will be:

* Intranet Services: - This is a network that is not available to the world outside of the Intranet. If the Intranet network is connected to the Internet, the Intranet will reside behind a firewall and, if it allows access from the Internet, will be an Extranet. The firewall helps to control access between the Intranet and Internet to permit access to the Intranet only to people who are members of the same company or organization. Like file sharing, device sharing.
* Internet Services: - This is *the world-wide network* of computers accessible to anyone who knows their Internet Protocol (**IP**) address in this organization.
* Security Services: - Design the best technical architecture and implement the right security solutions for your business. We help you accelerate your adoption of the latest security technologies with minimal impact to operations, and optimize existing security technologies to increase effectiveness.
* Network Management Services: - Through Network Managed Services, we can take full responsibility for the BNC network, including planning, design and implementation, day-to-day operations and maintenances. The Network Managed Services offerings include all activities we would typically perform running a telecom network,

**DESIGNE REQUREMENT**

For design the Blue Nile College network there are some hardware and software devices are required that are

|  |  |
| --- | --- |
| **Hardware Requirement** | **Software Requirement** |
| * UTP cable * Switch * 48 port * 24 port * Trucking * Fiber Cable * Server * Firewall * RJ 45 Outlet socket * AC * Dell Server (2280 to 530 and its hard disk) * Wireless router(access point) | * Windows 7 OS with activation key * Windows Server 2012 OS with activation key * Kaspersky antivirus with activation key * Microsoft office 2013 * Visio 2007 |

Table 1.1 Hardware and Software design requirement

**Current state of the Blue Nile College Network**

The BNC Local Area Network is an IP based campus wide network infrastructure, with Ethernet access technology, interconnecting nodes across a total of four floors of the main building. Unshielded Twisted Pair (UTP) based LAN networks nodes in each floor of the building. BNC get the network from the telecommunication in two bandwidth by using UTP RJ45 cable. The network is distributed through the building using A DSL modem as distributed switch. In addition they use two switch that are found on second floor and third floor that accept network from the ADSL and distribute the network to the end devices. BNC does not have domain name. All activities in the BNC are done manually. There is no server and firewall in the organization. The security of the network is not maintained. The network cables are not managed.

**Problems of the current system**

The main problem of the BNC network infrastructure is

* Is not installed properly this cause the cable to be damaged.
* There is no server for taking backup for lost data.
* There is no firewall for security.
* The current network is inefficient and effective.
* The bandwidth is insufficient for delivering service

**Enhanced network infrastructure**

**Benefits of enhanced network**

* The new network design provides security system by using security devices for security purpose like firewall and other security mechanism.
* The new network design to prevent data lost by using backup system development by using server
* The new network design provide efficient network installation to the organization
* The new network design provides appropriate and protective installation of cables.
* The new network design use wireless network to this campus.
* The new network design uses DNS for the purpose of storing the college website, and to communication purpose.