DAR ES SALAAM INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER STUDIES

BACHELOR OF ENGINEERING IN COMPUTER ENGINEERING

NTA LEVEL 8

ACADEMIC YEAR - 2022/2023

SENIOR PROJECT I

PROJECT TITLE	:	**DESIGN AND IMPLEMENTATION OF IP TELEPHONY AND WEB PORTAL CONFIGURATION**
PROJECT TYPE	:	**PROBLEM SOLVING**
CASE STUDY	:	**DAR-ES-SALAAM INSTITUTE OF TECHNOLOGY**
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ABSTRACT

Many companies tend to use a lot of expenses to pay for telephone services plus maintaining the infrastructures that come with it. The expenses include the monthly bills and payments for obtaining extra call services from the providers. The current technology used is old and an analog way which hasn't evolved in years. Apart from the expenses, Traditional phone services are also not reliable and cannot offer extra services in today's digital world of communication. These all bring about loss of funds that are allocated into a technique that can be solved at a lower cost.

In the wake of solving the highlighted challenges above, this project aims at introducing the idea of Voice over IP for Telephone services in networked companies. A web portal will also be present, hosted by a web server, which will contain each employee's phone extension or address to be used for calls. Addresses will help any employee to make a call and simplify the process of obtaining them since it is not practical to remember each address before making a call.

Therefore, Voice over IP introduces a more modern way of communicating with fewer cables since it acts like a soft phone. A local server will be installed in the network that will have the capability of routing calls from one host to another in a more efficient and less cost manner. This means that a single network infrastructure will have the capabilities of handling both network and telephone functions rather than using two different infrastructures for performing two different functions those being a network and telephone infrastructure.

This approach will help companies save a lot of costs that could be allocated in performing other functions and raise their profits. Also calls in a digital manner simplifies its manipulation where employees will be able to save calls, send calls through emails, record calls and bring easy management to the network administrators over the operations. Others services like call forwarding are also free in this service.

During the project, a lot of new ideas have been acquired from my supervisor, lecturers and advice from friends. Apart from the new ideas achieved, there are also some challenges the emerged since no journey can be perfect. Time has been the big challenge together with financial obstacles.

other aspects such as paying wages or enhancing the existing infrastructure for providing better service and hence increase the company's output in terms of profit.

The costs discussed above are largely due to setup costs which covers the initial implementation of the infrastructure and also maintenance cost. Other costs include call costs where the company is required to pay monthly bills to telephone companies for enabling the call function per month. Calls in this technology are charged on the basis of distance. This implies that calls on a far distance or international calls are very far expensive to make and that makes it a disadvantage.

Apart from costs incurred in this technology, it also lacks important call features which can only be obtained by increase in cost. Such features include call waiting, call forwarding, blacklisting, call conferencing, blocking and caller id with few to mention. Also upgrading costs in this technology are very high since you need new dedicated lines and have to add new hardware which makes upgrading a pain.

When the network infrastructure alone is used to handle telephone and network functions, a lot of above-described costs will be reduced and can be allocated in other areas of the company's implementations.

1.3   OBJECTIVES

This project has the following objectives;

1.3.1   MAIN OBJECTIVE

The main objective of this project is to design and implement IP Telephony and web portal configuration.

1.3.2   SPECIFIC OBJECTIVES

The following are the specific objectives that the project will cover in my project.

i.   To design and configure a local area network for the company.
ii.   To configure IP telephony enabling server.
iii.   To create a web portal for the staffs in their respective departments.
iv.   To configure a Linux server (CLI) to host the web portal.
v.   To configure access control lists in the network.
vi.   To configure network protocols in the network.

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