



A Computer Network PBL Project Report

On

HOSPITAL NETWORK DESIGN

Submitted by

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Under the Guidance of

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2021-2022

**Department of Computer Science & Engineering
KIT's College of Engineering (Autonomous) Kolhapur.
2021-2022**



CERTIFICATE

This is to certify that the Project Based Learning Report entitled, “Hospital Network Design” submitted by

A01 – Sarvesh Gawade

A04 – Irfan Mestri

A05 – Akib Maner

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to KIT's Institute of Technology, Kolhapur, India, is a record of bonafide project work carried out by them under my/our supervision and guidance and is worthy of consideration for the award of the CN PBL Project in SY Computer Science & Engineering.

CN PBL Co-Ordinator

HOD, CSE DEPARTMENT

Date:

Acknowledgement

We are highly grateful to the Dr Mamta.S.Kalas, HOD CSE, KIT's College of Engineering, Kolhapur, for providing this opportunity to carry out the Mega Project Part I at the CSE department. We would like to express our gratitude to other faculty members of the IT department for providing academic input, guidance and encouragement throughout this period. We would like to express a deep sense of gratitude and thank Dr Mamta.S.Kalas and Mr. Pradeep Khot without their permission, wise counsel and able guidance, it would have not been possible to carry out our project in this manner.

Finally, we express my indebtedness to all who have directly or indirectly contributed to the successful completion of our CN PBL.

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INTRODUCTION

The “HOSPITAL NETWORK DESIGN” concept has existed for many years. The network design is a major part of the infrastructure of a hospital. Internet speed is a major component of ensuring that healthcare providers and other professionals achieve timely access to pertinent information. The main aim of this paper is to design a hospital network which meets the requirements of a hospital network like electronic health records, on-call doctors via video communication, billing department records, keeping track of the research in progress, etc. The aim is to provide secured LAN and WLAN network. The network is designed by keeping in mind of upcoming technology in medical field. This will increase the quality of hospital service along with patient safety and clinical effectiveness.

PROBLEM STATEMENT

In our area many Hospital networks are not yet developed to handle critical situations like smoke and fire So our project is to design the networking of such Hospital in order to enhance the security of the hospital and also the safety of the people.

PROJECT PURPOSE :-

To design a reliable Hospital campus Network

User friendly and easy to handle

Low cost with low maintenance

Smoke detection and fire alarm

PROJECT SCOPE

The Hierarchical is also known as the progressive inter-networking model. This model improves the construction of a structure which is dependable, versatile, and more affordable various leveled internetwork in light of the fact that instead of concentrating on packet construction, it centers around the three functional area, or layers, of your system:

SYSTEM ANALYSIS

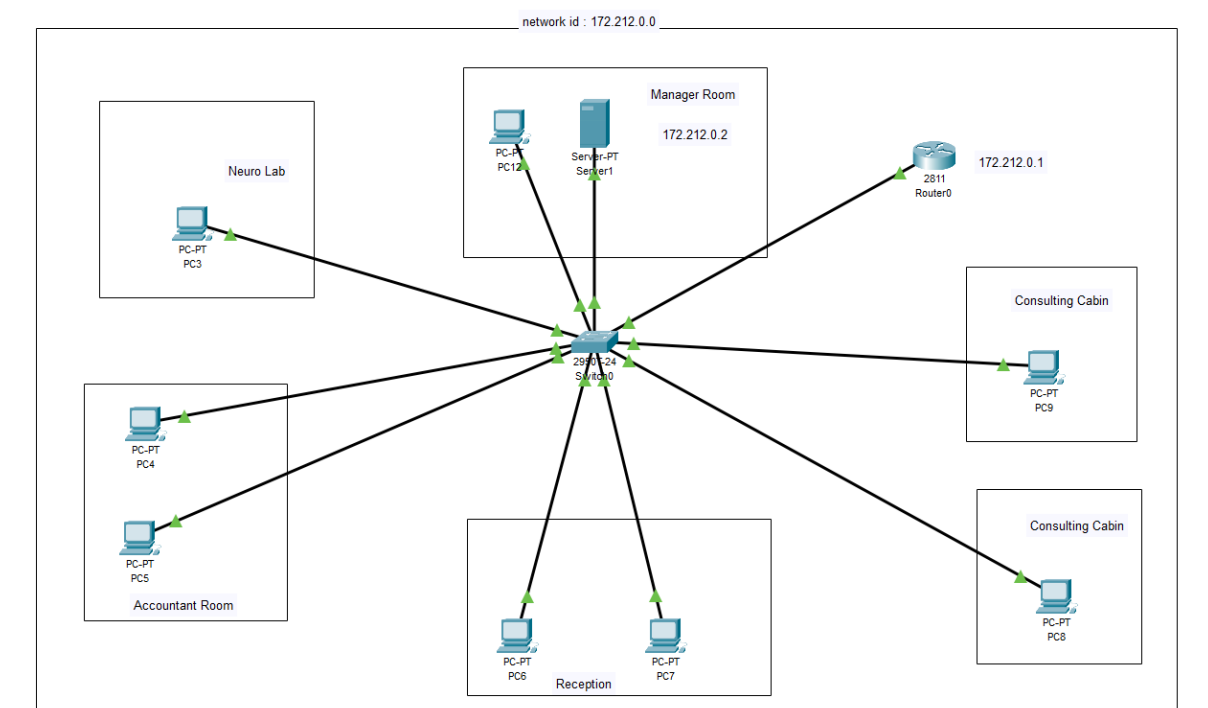
The proposal is to design a network for Metro Hospital located in Shahupuri Kolhapur its has own reception desk on the ground floor with two desktops, one central medical store and medical store room having two desktops. Each floor has three wings, and each wing has its own nurse stations containing one desktop. Apart from this there were medical instruments requiring both wired and wireless internet connectivity. Visitors of the hospitals would get limited wireless connectivity.

HARDWARE

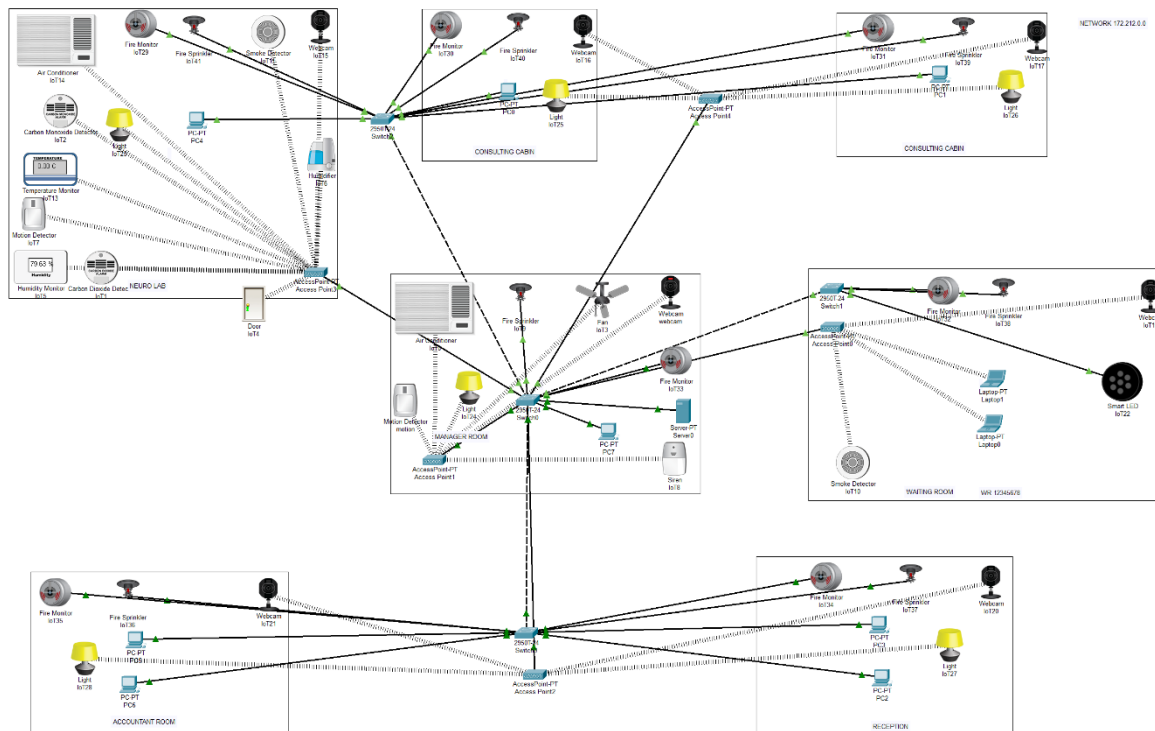
- Smoke detector
- Sprinkler
- Wireless webcam
- Siren
- Motion detective sensor
- Carbon monoxide and dioxide detector
- Humidity detector and humidifier
- Switch
- Accesspoint
- Smart led
- Smart light bulb
- Automatic AC2
- Temperature monitor

EXISTING SYSTEM

The existing system at visited hospital does not consist of any automation system. A single system is used in order to note the records of arrival, accommodation, etc



The proposal is to design a network for Metro Hospital located in Shahupuri Kolhapur our design uses many of the IOT devices for wireless connection and automation it will make day to day life in hospital much easier for patients and staff as well. We have enhanced security by adding security cameras .



ADVANTAGES OF PROPOSED SYSTEM

The primary objective of this research paper is to provide state of the art networking facilities for the IP-based medical devices, doctors, nurses, visitors and working staff of the hospital. Given below the points to throw light on the subject matter:

- Providing remote medical consultancy or to supervise the surgery/operation from remote location.
- Uninterrupted high speed internet connectivity.
- Provide better medical facilities to the patients.
- Uninterrupted communication between different departments of the hospital.
- Reducing the workload at nurse station, account department, reception desk.
- Keeping the research work of the doctors and medical records of patients secure.
- Providing limited internet access for the visitors

ESTIMATED COST

PRODUCT NAME	NUMBER OF ITEMS	COST
1) Smoke detector	2	1,996
2) Sprinkler	7	1,680
3) Wireless webcam	7	16,793
4) Siren	2	1,180
5) Motion detective sensor	2	2,400
6) Carbon monoxide and dioxide detector	2	1,984
7) Humidity detector & humidifier ((humidity + temp monitor) & humidifier)	2,2	998 + 6998 = 7,996
8) Switch	3	11,097
9) Access point	6	9,114
10) Smart led	1	1,399
11) Smart light bulb	6	4,200
12) Automatic AC	2	55,580
TOTAL:	44	1,15,365

CONCLUSION

With the growth of Information Technology in every sector and the explosion of medical IOT devices, the design of a network of any hospital has become very essential factor. The hospitals need to have a reliable, secure and scalable network design in order to keep the patients information, doctor's research work safe, convenient communication between various departments, etc. as well as keep it ready for any new IOT medical equipment that may be introduced in the future. The hierarchical model of networking best suits our needs along with providing additional features like easy maintenance, high security, simplified troubleshooting and effective performance

CONFIRMATION LETTER

To

Mr. Pradeep Khot,
KIT College, Kolhapur

Date : 2nd May 2022

Sub : Letter for confirmation of visit by your students

Respected sir,

Below students , namely

1. Sarvesh Gawade . (A01)
2. Irfan Mestri . (A04)
3. Akib Maner. (A05)
4. Sanmil Gaonkar. (A11)
5. Yogesh Karadage. (A33)

Have visited our hospital – **METRO HOSPITAL** , Shahupuri Kolhapur and have successfully studied our hospital network for their PBL studies .

We write this letter to you to confirm their visit in our hospital.


(Mr. Pradeep Khot)


(Mr. Pradeep Khot)
(MANAGER)

Our Team .

