

SMART HOME USING IOT DEVICES AND WIRELESS NETWORK

A COURSE PROJECT REPORT

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In partial fulfilment for the Course

of

18CSC302J - COMPUTER NETWORKS

in

Computer Science Specialization in Software Engineering



FACULTY OF ENGINEERING AND TECHNOLOGY

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

Kattankulathur, Chengalpattu District

NOVEMBER 2021

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

(Under Section 3 of UGC Act, 1956)

BONAFIDE CERTIFICATE

Certified that this project report "**Smart Home using IoT devices and wireless network**" is the bonafide work of **Keegan Paul Colaco (RA1911033010101)** and **Nikhil Kumar Singh (RA1911033010102)** who carried out the project work under my supervision.

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ACKNOWLEDGEMENT

We express our heartfelt thanks to our honourable **Vice Chancellor Dr. C. MUTHAMIZHCHELVAN**, for being the beacon in all our endeavors.

We would like to express my warmth of gratitude to our **Registrar Dr. S. Ponnusamy**, for his encouragement

We express our profound gratitude to our **Dean (College of Engineering and Technology) Dr. T. V. Gopal**, for bringing out novelty in all executions.

We would like to express my heartfelt thanks to Chairperson, School of Computing **Dr. Revathi Venkataraman**, for imparting confidence to complete my course project

We wish to express my sincere thanks to **Course Audit Professor Dr.M. LAKSHMI, Professor and Head, Data Science and Business Systems** and **Course Coordinator Dr.E. Sasikala, Associate Professor, Data Science and Business Systems** for their constant encouragement and support.

We are highly thankful to my Course project Internal **guide Dr. M. S. Abirami, Associate Professor, Department of Computational Intelligence**, for **her** assistance, timely suggestion and guidance throughout the duration of this course project.

We extend my gratitude to **Dr. R. Annie Uthra, B.E, M.S, Ph.D, Professor & Head, Department of Computational Intelligence SoC**, and my Departmental colleagues for their Support.

Finally, we thank our parents and friends near and dear ones who directly and indirectly contributed to the successful completion of our project. Above all, I thank the almighty for showering his blessings on me to complete my Course project

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1. ABSTRACT

In this modern era, where technology is manipulating almost every sector in day-to-day life, the introduction of Internet of Things (IoT) enables us to control appliances or any of that sort remotely over the internet network. This proves to be so useful, that human hardly needs to do any manual work. One such application of using IoT is to control home appliances and articles thorough a smartphone or laptop with the help of a wireless internet network.

Smart Home Using MIPv6 is the Integration of Technology and services for better quality of living. This paper provides a review of the recent Developments, Technology, Architecture, Application and future scope for Smart Homes with the tremendous help of MIPv6. The principles of MIPv6 are included for mobility on the design of the architecture for MIPv6 based Smart Homes. Smart Homes based on Mobile IPv6 Consists of various techniques and Home Networking for Interactive services. The crucial Advantages of Smart Home is to support and improve the quality of life for disabled and elderly people

2. INTRODUCTION

In this modern era, where technology is manipulating almost every sector in day-to-day life, the introduction of Internet of Things (IoT) enables us to control appliances or any of that sort remotely over the internet network. This proves to be so useful, that human hardly needs to do any manual work.

One such application of using IoT is to control home appliances and articles thorough a smartphone or laptop with the help of a wireless internet network.

vigorous increase in the use of computer technology in the term of devices are introduced in our society, which we use every day. Smart Home is also an outcome of this thought with integration of technology. A boundary that defines what a Smart Home is must first be established. A Smart Home is an environment, it may be any place office, house, apartment where appliances within that environment are networked to each other by integration various technology, processors sensors. These networked appliances must aim to meet the residents' basic demands on their living space. It should provide Health care, environment monitoring such as heating, ventilation, security and operation of technical equipment should be more convenient and almost invisible to the resident. This vision can also be extended where conventional devices like medicine cabinet, doors, curtains, carpets can also be made Smart included as functional pieces of Smart Home automation using MIPv6. The first and foremost function of the Smart Home is to adapt automatically

the needs of residents and provide help according to need and daily routine with greater convenience and safety and concern with energy conservation. The Smart Home growing interest due to the need to enable elder care for disabled individuals.

Smart Homes are also known as Intelligent Homes or Interactive Homes. It helps to control various Mechanical Appliances, cellular or Internet using IPv6. Smart Home Technology is a way for electronics appliances, consumers to Communicate with each other. It uses the existing technology for Smart devices by installing computers with advanced functionality using DSL, Bluetooth and wireless Technology. This technology provides the way to have a home network for devices to communicate with each other using Internet. It is Application of Ubiquitous computing and remote access control. We have used MIPv6 due to tremendous advantages like more efficient Routing, efficient packet processing, directed data flows, simplified network configuration, support for new services and security majors.

3. REQUIREMENT ANALYSIS

3.1 Hardware Requirements

Processor: 1GHz Clock Speed (Minimum)

RAM: 1 GB (Minimum)

Hard Disk: 500 MB (Minimum free space)

3.2 Software Requirements

Operating System: Windows 7 and above

Platform: Cisco Packet Tracer

4. ARCHITECTURE & DESIGN

We created a simple architecture to implement our use case. The home is divided into 3 sections. The living room, the bedroom and the Outdoor area. Each room has devices and appliances connected to the home gateway. We connected various home appliances and devices to the home gateway which would be controlled remotely by a smartphone through a wireless network connection. The smartphone is configured in such a way that it establishes a wireless connection with the home gateway. All these devices integrated together through the configured network will be implemented to achieve the goal.

5. IMPLEMENTATION

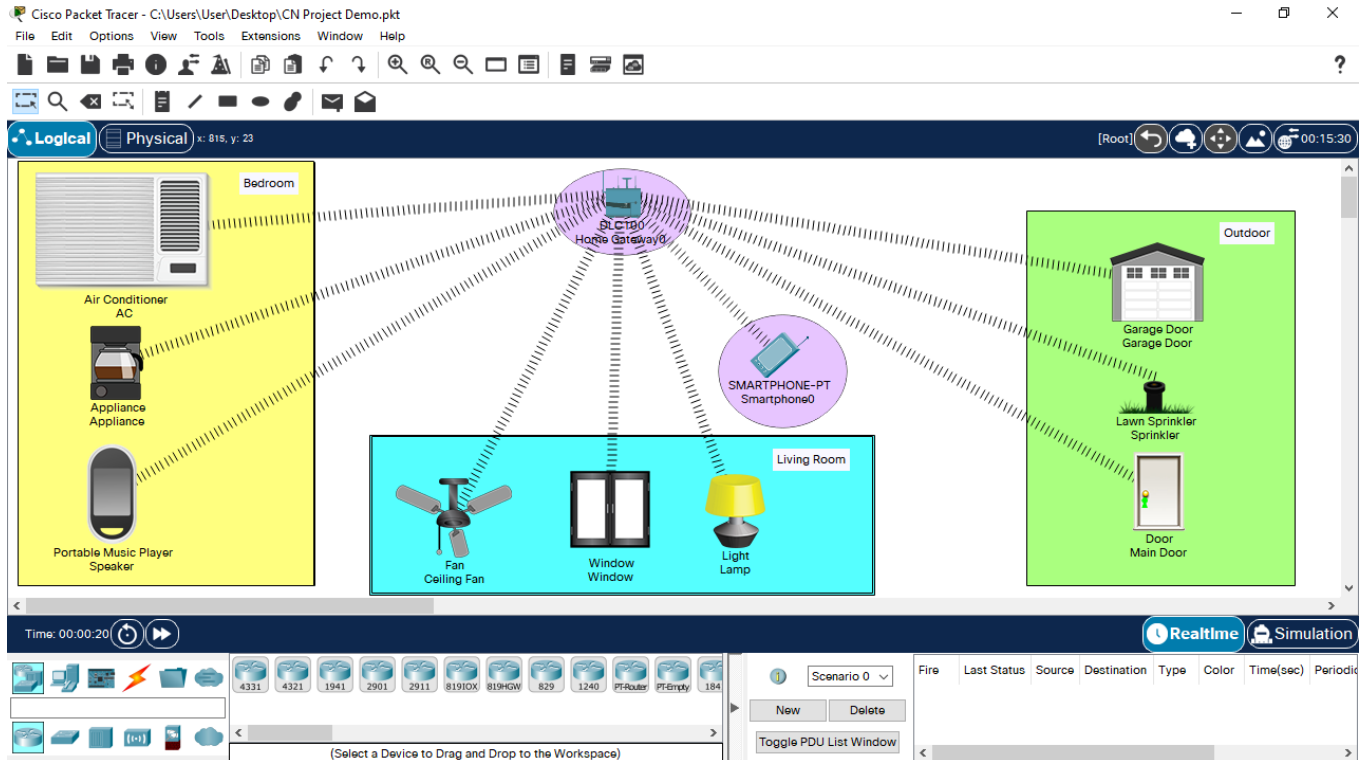
In the Cisco Packet Tracer, firstly, the home gateway device is placed in the workspace. Following this, three sections of the house are created. Firstly, in the living room, appliances/devices such as fan, window and lamp are placed.

Secondly, in the bedroom appliances/devices such as air conditioner, coffee maker and portable speaker are placed. And lastly, devices such as sprinkler, garage door and main door are placed in the outdoor area. All of these devices and appliances are connected to the home gateway wirelessly via the wireless card connection among the devices and the home gateway. This connection is made via the I/O config tab on the home gateway configuration settings which allows all the devices to connect to it wirelessly.

Once all the devices are connected to the home gateway, a smartphone is also connected to the home gateway in similar fashion. Once all these are connections are made, we can open the IOT monitor from the smartphone apps. This app displays all the devices connected to the home gateway. Each device has a switch to toggle its working state. The devices can be turned on and off remotely with the help of the smartphone. This is how all the devices in the house can be controlled remotely with the help of IoT devices.

6. EXPERIMENT RESULTS & ANALYSIS

6.1 RESULTS



Result: All the devices can be operated through the smartphone remotely and hence the project is successfully implemented

6.2 CONCLUSION

The Idea of Smart Homes is exciting. In simple terms and Smart Phones provides superior comfort, convenience, security and energy saving through intelligent control using the electric devices, Networks and Mobile IPv6. Concluding we believe that the future in home automation using MIPv6 is towards the Internet. Web technologies have the potential to become the future standards in Smart Home environments towards an interoperable and sustainable. The goal of Smart Homes using MIPv6 is to be integrated into every facet of an individual's life, resulting in the culmination of the technology into the home environment and effectively creating a Smart Home where all user needs are anticipated and cared for. We hope that through our effort Smart Home is no longer a conceptual topic but will be applicable to anyone's home and being adopted in anyone's living style. So, we can say that Smart Home is a living space saturated with computing and communication, yet gracefully integrated with human occupants and visitors. So, we can say that Smart Home is a living space saturated with computing and communication, yet gracefully integrated with human occupants and visitors.

6.3 FUTURE WORK

Home Automation, Health monitoring and decision making are the main features which will be the part and parcel of near future in the smart phones. Smart Homes will contain multiple, connected devices such as: appliances; control actuators; personal health and home-environment sensors, entertainment console and displays. Data from these devices can be exchange easily in support of a range of Smart Home services. Examples include local and remote home energy management, security monitoring, wellness monitoring and the sharing of Internet and entertainment content. These services make the lives of householders easier, as individuals gain finer control over their environment by accessing a variety of context and situation-aware application.

7. REFERENCES

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