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LAN VoIP SYSTEM (LVoIP)

CHEN PEI LING

This report is submitted in partial fulfillment of the requirements for the

Bachelor of Computer Science (Computer Networking)

FACULTY OF INFROMATION AND COMMUNICATION TECHNOLOGY

UNIVERSITY TEKNIKAL MALAYSIA MELAKA

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DECLARATION

I hereby declare that this project report entitled

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is written by me and is my own effort and that no part has been plagiarized without citations.

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DEDICATION

I would like to dedicate this thesis to my beloved family. Without their support and love, this work will not be possible to be complete on time. I would also like to dedicate this thesis to my supervisor who has always inspired and assisted me throughout this project. Finally, I want to dedicate this thesis to all my friends and also to everyone who have directly or indirectly helped and support me.

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ABSTRACT

The LVoIP (Local Area Network Voice over Internet Protocol System) is developed for organizations or individuals that need VoIP service through the LAN. It is a local area network VoIP system that provides VoIP service to the organizations or individuals without the needs of internet. The users need to register themselves to the system before they can start to use the system. A database are needed by the system to store the user information and also make the authentication process to be more secure because only user exist in the database can login to use the system. After the user's registration process is completed successfully, the user can start to use the system by log in to the system with the use of the username and password they defined in the registration process. Only user that is authenticated can gain access to use the system. The user can use the system to call other users that are available in their contact list. The user also can use the system to search for other user and add them to their contact list for further communication. The methodology that used to develop this system is Rapid Application Development (RAD) Model. A review has been done based on the current existing system and from the analysis, the problem statements and requirements to build the system has been identified. The LAN VoIP system can provide VoIP service to the user without the need of internet connection, it is suitable for individual and organizations that need a LAN VoIP system and also organizations that block the VoIP packet to send over internet.

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ABSTRAK

LVoIP (Local Area Network Voice over Internet Protocol System) dibangunkan untuk organisasi-organisasi dan individu yang memerlukan perkhidmatan VoIP (Suara melalui Protokol Internet) melalui rangkaian kawasan setempat. Ia adalah satu sistem VoIP rangkaian kawasan setempat yang menyediakan perkhidmatan VoIP untuk pertubuhan-pertubuhan dan individu tanpa memerlukan sambungan ke internet. Pengguna perlu mendaftarkan diri mereka kepada sistem ini sebelum mereka boleh memulakan untuk mengunakan sistem ini. Satu pelayan pangkalan data adalah diperlukan oleh sistem ini untuk menyimpan maklumat pengguna dan ini turut membuatkan proses pengesahan menjadi lebih selamat kerana hanya pengguna yang wujud dalam pangkalan data boleh log masuk untuk mengunakan sistem ini. Jika proses pendaftaran pengguna itu berjaya, pengguna boleh mula mengunakan sistem ini dengan log masuk ke sistem ini dengan penggunaan nama pengguna dan kata laluan yang mereka daftarkan dalam proses pendaftaran. Hanya pengguna yang disahkan boleh mendapat capaian untuk mengunakan sistem itu. Pengguna boleh menggunakan sistem ini untuk memanggil pengguna lain yang didapati di senarai hubungan mereka. Pengguna juga boleh menggunakan sistem ini untuk mencarikan pengguna lain dan menambah mereka ke senarai hubungan mereka untuk komunikasi selanjutnya. Kaedah yang digunakan bagi menghasilkan sistem ini adalah Rapid Application Development (RAD). Satu kajian semula telah dibuat berdasarkan sistem sedia ada. Daripada analisis, kenyataan-kenyataan masalah dan syarat-syarat untuk membina sistem ini telah dikenalpasti. LVoIP boleh menyediakan perkhidmatan VoIP untuk pengguna yang memerlukan servis VoIP tanpa keperluan sambungan internet, ia adalah sesuai untuk individu dan pertubuhan-pertubuhan yang memerlukan satu LAN VoIP sistem dan juga pertubuhan-pertubuhan yang blok bingkisan VoIP dari menghantar ke internet.

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LIST OF ABBREVIATIONS

LVoIP	Local Area Network Voice over Internet Protocol System
VoIP	Voice over Internet Protocol
LAN	Local Area Network
WAN	Wide Area Network
PSTN	Public Switched Telephone Networks
UDP	User Datagram Protocol
RTP	Real-Time Transport Protocol
RTCP	Real-Time Transport Control Protocol
SDLC	System Development Lifecycle
RAD	Rapid Application Development
TCP/IP	Transmission Control Protocol/Internet Protocol
WBS	Work Breakdown Structure
ERD	Entity Relationship Diagram
DBMS	Database Management System
DDL	Data Definition Language

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Appendix C	Project Proposal
Appendix D	LVoIP Test Results and Analysis
Appendix E	User Manual
Appendix F	Log Book

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CHAPTER I

INTRODUCTION

1.1 Project Background

VoIP stands for Voice over Internet Protocol, and it means "voice transmitted over a computer network". It is an IP telephony term for a set of facilities used to manage the delivery of voice information over the Internet. By using VoIP, voice information is sends in digital form in discrete packets rather than by using the traditional circuit-committed protocols of the PSTN (public switched telephone networks). A major advantage of VoIP is that it can avoid the tolls charged by ordinary telephone service. A computer based VoIP system means that the users of the system speak through a microphone that is connected to a computer.

VoIP is gradually widely in use and is poised to take over from the century-old PSTN because of the low cost and conveniences it provide. VoIP services for the public network are always concerned by the community but other than this, the LAN (Local Area Network) VoIP services also need to be concern. LAN VoIP can protect the user's data from outer network hacker because it is place under the firewall of the network. It also can provide VoIP services to the organization that block the VoIP service to connect to the internet.

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The computer based LAN VoIP system suggested is build for the users that need a conversation over the Local Area Network without the needs of connecting to the internet. It can be use by the organization for office use and also by common user for personal use. This system is suitable for organization that need VoIP service but do not allow the service to connect to the internet because of sensitive conversation content issue. This system can use in all industry as long as a computer and LAN connections are provided.

1.2 Problem Statement

VoIP is a technology that are widely use nowadays, but the internet based VoIP services are getting more focus by the community. Although the internet based VoIP service are very important and useful, but the LAN VoIP service also need to be focus by the community.

Many software that provide internet based VoIP service are easily to be found online but software that provide LAN VoIP services are not much to be found and most of it are not open source software and user need to pay to use the software.

Software that provides internet based VoIP service is not useable by the user if they do not have connection to the internet. Other than this, the user requirement that do not want their VoIP packet to be send over the internet cannot be fulfill if the internet based VoIP service is use. To overcome these problems, system that provide LAN VoIP service need to be build.

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1.3 Objective

Objective of the system:

1. To build a computer based VoIP system.
   - A VoIP system that enables PC-to-PC voice calls will be build.
2. To enable user to use VoIP service without connect to internet.
   - The VoIP system will work within a local area network without the needs of internet connection.
3. To add Authentication feature to the VoIP system.
   - User will be authenticated with the use of login feature of the system.
4. To use RTP as the protocol for the Voice calls.
   - Real-time Transport Protocol will be use as the protocol for voice calls.

1.4 Scope

Scope of the system:

1. Voice call feature and the personalize user features will be build in this system. The personalize user features will be implement in this system includes Change user nickname, change password, add user to contact list, delete user from contact list, search user and help.
2. Authentication feature will be adds to the VoIP System to validate the identity of the user to prevent masquerade.
3. This system is only available for computer based calls.
4. This system is only available in Local Area Network.

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1.5 Project Significance

This project is important because the system can provide the VoIP service to the user without the needs of internet connection. The user only needs a Local Area Network connection to use the system. This system is useful for the organization that wants to protect their conversation data packet from send to the internet. The authentication features of the system also can verify the identity of the user to prevent masquerade and make sure the user is who they claim they are. It also can facilitate the users under an organization where the network setting of the organization block the VoIP service from connect to the internet. This system also makes the use of VoIP technology to be more cost saving and secure.

1.6 Expected Output

The expected output of this project is a local area network computer based VoIP system that can provide VoIP service for the users inside the local area network and authenticate the identity of the user.

1.7 Conclusion

VoIP technology is gradually widely in use but the communities are more concern on the internet based VoIP. Other than the internet based VoIP service, the LAN VoIP services also have an important role. The LAN VoIP service can provides VoIP service to the local area network user without the needs of the connection to the internet so it can facilitate the user where their organization have network setting that block the VoIP service from connect to the internet. Because of that, a LAN VoIP

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system need to be implement to provides the VoIP services to satisfy the user's needs. More information of the project will be continues in chapter two titled Literature Review.

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