Integrated Voice-communication Server for Small and Medium Enterprise

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Project Overview
Efficient communication between employees is very important in many businesses and the way they conduct their projects. Traditionally, each server cannot leverage the power of the servers working together. Process effectiveness could not be benefited from well-planned communication infrastructure as huge amounts of money are wasted. In order to deal with the above problems, a multi-functional server is suggested for Small and Medium Enterprise (SME).

Aim and objectives
- Builds communication system that uses existing computer infrastructure.
- Allows employees within the SME to verbally communicate with each other using their computers, taking away the need for telephone systems.

Methodology
As a practical solution, we propose to use a Voice over IP (VoIP) server which can perform as a traditional Public Switched Telephone Network (PSTN). This will automate communication within a company, saving space, costs and provide a convenient platform for internal communication.

- Establishes all the functional servers by an all-in-one VoIP server.
- Image provides high fault tolerance abilities.
- Server can recover in a short period of time when hardware error occurs.

System Block Diagram
The block diagram shows an overall picture of the Integrated Voice-communication Server project.

Guest zone - VoIP Linux Server
- Apache web server
- SIP voice server
- LDAP authentication server
- MySQL database server
- SIP Modification Page

Ring zone
- Existing network facilities of a company
- Generic internal network
- VoIP network
- External DNS Server for retrieving the internal server IP with Network Address Translation (NAT)

SIP Modification Page
If the user needs to update an extension account in the SIP server, he or she needs to modify the record in the database and communicate. This is very inconvenient and time consuming.

Moreover, users are also required to familiarize with the configuration files and Linux operation. Hence, we have developed a GUI web platform to tackle with this problem.

Results
In order to communicate with each other through the SIP Server, it is necessary to use soft phone. As most of them are open source, WiFi de are not used to acquire extra phones. A soft phone is an application for dialing calls over the Internet with generic computers.

Synchronization Between Database and SIP Records
- SIP Modification Page is an instance on the SIP dialing function.
- It will not synchronize until user presses the synchronize button.
- Once the user clicks the button, a progress is shown by the system.

We suggest using X-Lite soft phone since it is user-friendly with buttons and GUI display panel. To register an account from the SIP server record, user just require to enter the extension detail such as display name, password domain name etc.