Creating a Private Network with Chat and VOIP

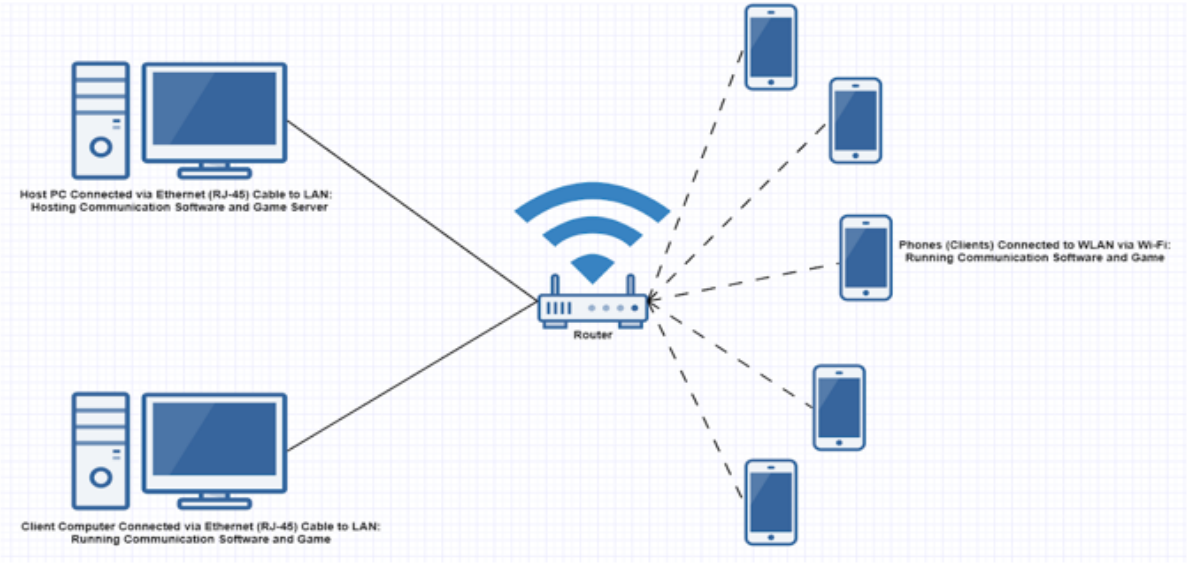

Figure 1 - Overall Diagram of Intranet Setup

Introduction

In this project, my goal was to create a Local Area Network (LAN) where computers were connected via an Ethernet (RJ-45) cable, while phones were connected via Wi-Fi. This allows users to communicate between devices and create a game server featuring cross-platform multiplayer. I was successful in achieving these goals in a series of steps, albeit facing many challenges along the way. An overall diagram of the intranet setup can be found in Figure 1.

Setting up LAN Communication

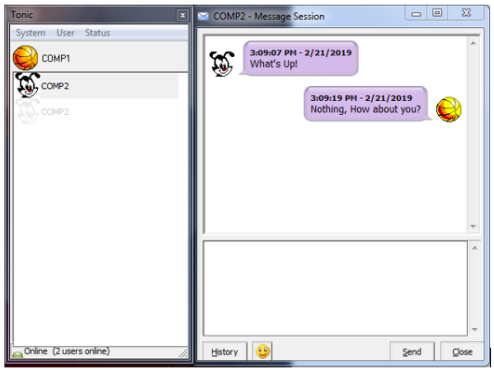

Figure 2 - Basic Tonic Interface

To accomplish the goal of establishing LAN communication, I had to start with the basics and worked my way up to face more difficult tasks. Hence, I started by having a basic setup of a Peer-to-Peer messaging system, with two computers communicating with each other via an Ethernet cable I created myself. After researching, the best communication software available was called Tonic, as shown in Figure 2. This software allowed me to set profile pictures, and send buzzers, messages, images, and videos. Next, I took on the challenge of creating a LAN that was also broadcasted through Wi-Fi (WLAN) that allowed users to communicate across iOS, Android, and computers. A D-Link router was used to connect to the host computer, which was

the server for the communication software. In order to find the best software with a great feature set, lots of research was done. I came to the conclusion that Output Messenger (shown in Figure 3) was the best fit. This is because it allows for Voice Over Internet Protocol (VOIP) calling (shown in Figure 4), messaging, sending images, and videos between multiple platforms. Also, it allows for the set up of user accounts with each of them having their own password and profile picture, and the ability to give multiple users administrator privileges. In order to set up these accounts, I had to find the IPv4 address. The IPv4 address was discovered by opening the command prompt and accessing the IP configuration settings by typing the command “ipconfig”. Overall, this project allowed me to gain many new skills in networking and the different communication software available today.

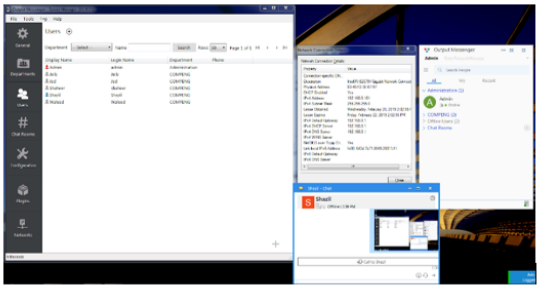

Figure 3 - Output Messenger Server Application

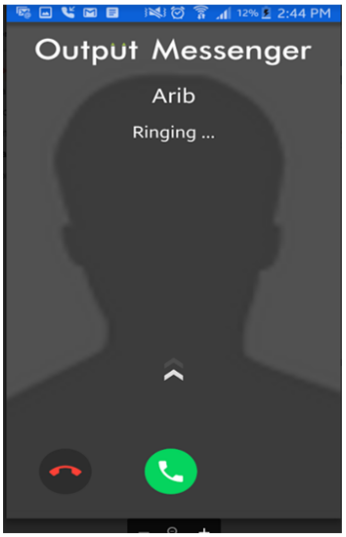

Figure 4 - Calling via Output Messenger

All in all, this project was a great learning experience for me. Learning about how to create and manage a LAN and run a communication software, has allowed me to gain valuable skills about both networking and about how to critically identify, analyze, and find solutions to problems.