**Lab Manual – Software PBX**

**Computer Science 336 – Computer Networks 2**

This lab is designed to introduce you to VoIP concepts and guide you along setting up a small PBX. A PBX (private branch exchange) is a telephone system that is serves a business or office, rather than a telephone company that serves the general public. In a Voice over IP (VoIP), a PBX is the hardware and software that controls the system. It provides registration for phones and does all of the routing needed for a modern phone system. It allows you to have diversions (divert to Voicemail when busy or unavailable), and group calling (calling one number rings many phones at once), and supports DID/DOD, where the internal extensions map directly to external direct-dial-in numbers.

What you will do in this lab:

* Download, install and configure PBX software to support VoIP calls
* Register some phones on this PBX and demonstrate a working knowledge of diversions and group calling
* Solve a Real-World problem using a combination of PBX features

We will be using a PC to host a software-based PBX. It will serve VoIP phone service over a LAN to other PCs running softphones and to IP-based phone hardware. While I used Axon Virtual PBX Plus, available for free from: <http://www.nch.com.au/pbx/index.html>, you should feel free to try others. There are many free PBX software products, both for Windows and Linux. Be sure the software you are using uses the SIP VoIP Standard (RFC 2543 or RFC 3261) and has internal voicemail, or can support an external voicemail that you set up.

Download and install the PBX software of your choice to one of the machines in the lab. You will be given hard phones to connect to the LAN; you must ensure connectivity between the phones and the PC. Use the IP-phone administrative manual to configure the phone with the SIP settings from your PBX software. Install a softphone to another PC.

Once you have connected the specified devices, and can demonstrate they work properly with the PBX, set up voicemail for these lines.

Next, consider the following situation:

You work in an enterprise where Executives have dedicated administrative assistants, but still prefer to be reachable directly at their desk. They still need the assistant to answer the phone in the case where they cannot, and in cases where the assistant misses the call, it should go to the voicemail of the executive. Calls directly to the assistant should go to their voicemail, not to that of the executive. Using calling groups and diversions, configure some lines to support this.