VoIP
Lab 5 – The VoIP Call Center

Goals

• Experiment with a commercial call center application based on SIP.
• Examine configuration and management of SIP phones.

Some Notes on the Equipment

• You have a diagram at the lab station that shows the various devices and their function. Take a moment to look it over.
• A list of extensions, usernames, and passwords is at your lab station.
• Use the Mac to access the primary server using Remote Desktop. (The Mac is used only for this purpose)
• You have 3 computer workstations which are paired with phones.
• You have one “stand-alone” phone.
• You have partial printouts of the user and administrator manuals (the full manuals are on the web site).
• Note 1: some phone functions require a password; the default is “456”
• Note 2: You are working on a complex system with many functions; use some caution when making changes – your instructor might get grumpy after a 2-hour reset...

Steps to Complete

1. ITS382 and the phone “2000” near it have been configured to allow packet capture. Examine the wiring carefully and note what traffic you should be able to record.
2. Examine the network wiring for the remaining phones and workstations; you may assume that all local jacks tie into the lab network.
3. Examine how each phone is powered.
4. Log Carol into ITS380, Alice into ITS412 (the center one) and Pat into ITS382. Record the IP addresses of each PC.
5. In the Interaction Administrator, locate the lists of stations, IP phones, Users, and workgroups. Find out which extensions are defined where.
6. On each phone, navigate to the status menu and record the IP address and the SIP version of each phone.
7. On 2003, navigate to (but do not change any settings here) the advanced settings and examine the information listed for “Line 1” (it is under the SIP settings) and “Line 2”.
8. Again on 2003, examine the SIP server settings.
9. Make a call from 2003 to 2000 while capturing data.
10. While capturing data, initiate a reboot on the phone labeled 2000. There is a lot going on in the packet capture, take a little time to understand what you are seeing.
11. Attempt a call from 2000 to Carol’s extension (not the extension of the phone) while capturing data. What happens to the call.
12. Have Carol start the Interaction Client and set her status to available. Repeat the call and capture the SIP signaling.

13. Have Pat and Carol switch workstations. (Pat to ITS380, Carol to ITS382). Start the Interaction clients on both machines. Confirm that calls to their personal extensions follow them.

14. Start the Interaction Client for Alice. Have Alice activate the Sales workgroup she is in, and do that same for Carol (she is in Support). Confirm that calls to both workgroup numbers succeed as intended.

15. Have 2003 call Support. While that call is in progress, have Pat call Support. Examine what happens. When Carol hangs up the first call, the second one should be answered.

16. While capturing packets, call Carol from 2003, but this time use the on-screen options to answer the call. Again, using the on-screen options, place the call on hold and call Pat by using the on-screen directory. Switch between calls a few times. Hand the calls up from the PC controls.
Lab Report Guidelines

Each report is to be written individually, although the data for the lab is collected during the lab with your partner/group. Reports should be typed/word processed and brought to class in printed form.

Lab writeups are due in class on the Monday following the lab. They don’t generally need to be more than a few (several) pages. Officially, they need to be “long enough to answer the questions”. Each lab writeup must have a header on the first page that includes:

- Your name
- The lab section (i.e. the day) that you attended
- Your lab partner’s names

In Your Report

1. Draw a network diagram showing how the devices are connected together; include the details of the packet capture setup.

2. List how the phones are powered; comment on the implications for providing communications during blackouts.

3. Prepare a table showing IP addresses for all devices, and extension number, station names, and SIP versions of all phones.


5. Show the SIP server settings for 2003.

6. Show the SIP signaling for a simple test call to 2000.

7. List and explain (as much as possible) all interactions between the phone and the SIP server during the reboot. File are loaded via HTTP GET, so you can see the file names requested by the phone – list them.

8. Examine the DHCP request and acknowledge packets; identify what information the phone requested and received.

9. Show the SIP diagram for the first call from 2000 to Carol; match this up with what you heard/saw.

10. Show the SIP signaling for the successful call from 2000 to Carol.

11. Examine in detail the SIP signaling used when you were controlling the phones from the PC screen.