Exercise 3
Capture and Analysis of SIP packets

Computer Network Technologies and Services (CNTS)
Tecnologie e Servizi di Rete (TSR)

Warning

The Exercise requires:

- Two PCs running MS Windows XP (at least SP1)
- The X-Lite software installed on that PCs. You can download it from:
  
  http://www.counterpath.com/x-lite.html

- Two SIP accounts, which can be obtained at iptel.org. For each account, please follow this procedure:
  
  http://serweb.iptel.org/user/reg/

- A network analyzer installed on the PCs.

The X-Lite software is already installed on LABINF and LADISPE PCs.

1 SIP User Agent Configuration

1. Install the X-lite SIP User Agent
2. Create a SIP account using the iptel service

  http://serweb.iptel.org/user/reg/

At the end of the creation procedure, a web page will appear showing your SIP URI in the form sip:<username>@iptel.org. You will receive a notification email to the email account you indicated during the registration procedure. This email contains all data concerning your new SIP account.

3. Run your X-lite software. Right-click on the X-lite window and select SIP Account Settings.... The SIP Accounts window will open: click Add.... In the window it will open:
(a) Insert the name you want associate to the account in the **display name** box (any name)

(b) Insert your username SIP in the **username** box. For example, if the URI you have received is **sip:torrero@iptel.org**, only insert **torrero** (**sip:** and @**iptel.org** are not used)

(c) Insert your password in the **password** box

(d) Leave blank the **Authorization user name** box

(e) Insert **iptel.org** in the **domain** box

(f) Be sure that **Register with domain and receive incoming calls** is selected (it should be by default)

(g) Select **domain** in the **Send Outbound via:** box

(h) Disable **check for voice mail** in the **voice mail** box

(i) Click **Ok** to close the window. Now, once you click **Close**, in the **SIP Accounts** window will start the registration procedure to the **iptel.org** domain.

4. Close the **X-lite** application and start the network analyzer. Select the proper network interface and start the capture

5. Then, run again **X-lite**: you should see packets related to the registration procedure.

6. If your registration capture is correct, save the capture and be ready to start the capture of the SIP call. To do this, you need a second SIP account on **iptel.org**. Clearly, you also need a second PC. The suggestion is to meet in the lab with another group of the class and try to setup a SIP call with them.

7. When you are ready, start the capture and make the phone call. To make a call, it is sufficient to digit the complete URI of the user you would like to call (in the form **sip:<nome_utente>@iptel.org**) in the **X-lite** interface.

8. If you have the two captures, you can start answering the following questions.
CNTS Lab3: Answer the Questions

Registration procedure analysis

1. Write the most important data of the connection (URI of the user is registering, IP address of the UA is registering, SIP domain, and SIP Proxy IP address)

2. Write the SIP messages sent during the registration phase (requests and replies, excluding possible SIP packets that are not strictly necessary for the registration)
3. Briefly discuss each message. Describe their meaning, highlighting the most significant fields of their SIP headers in the context of the registration.
Phone call analysis

4. Write the most important data of the connection (URI of the involved users, SIP domain of each users, IP addresses of the involved PCs)

5. Write the list of all SIP messages exchanged during the voice session setup (it is preferable to use the SIP trapezoid, including all requests and replies)
6. Briefly describe the meaning of the most important SIP messages in the context of a voice call, also highlighting their most significant fields