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
- The X-Lite software installed on that PCs. You can download it from:
  
  http://www.counterpath.com/x-lite.html
- 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. 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. Your username is your student ID.
   (c) Insert your password in the password box the password is your surname with all capital letter (if there are accented letters use ’)
   (d) Leave blank the Authorization user name box
   (e) Insert tsrsip.ipv6.polito.it 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.
3. Close the X-lite application and start the network analyzer. Select the proper network interface and start the capture.

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

5. 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. 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.

6. When you are ready, start the capture and make the phone call. To make a call, it is sufficient to digit the student ID of the user you would like to call in the X-lite interface.

7. If you have the two captures, you can start answering the following questions.
Answer the Following 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.