PROJECT

Topic: IMS

Description:

With this project, students will get familiar with IMS (*IP Multimedia Subsystem*) ecosystem, a relevant complement to mobile cellular networks for voice and other multimedia services. IMS is based in the SIP and Diameter protocols, used to establish the interactions between clients (User Agent) and service platforms.

The students are challenged to instantiate IMS components (P-CSCF, I-CSCF, S-CSCF and HSS) and showcase its operation, exercising it for voice, videoconferencing and other multimedia services. The addition of an Application Server is the ultimate challenge to be implemented.

For the first experiments and get familiar with VoIP and SIP, students may start by using a free online service (e.g. linphone) and/or non-IMS solution like Asterisk.

General objectives:

1. Identify the main components of an IMS system and how they interrelate
2. Instantiate and make a simple configuration for basic SIP calls
3. Verify the different stages a SIP client go throght until a SIP session is established
4. Play with advanced IMS features via demonstration scenarios (presence, conference, redirect, etc)

Components to be used:

The suggestion if the adoption of Kamailio (OpenSER) SIP Server. However the simpler OpenIMS may be a good starting point.

Project proposed initial steps:

1. Install the IMS software; Select a suitable IMS solution. Suggestion is for Kamailio (URL1 and URL2) or OpenIMS (URL2)
2. Configure simple scenario with one P, I and S-CSCF, plus HSS
3. Configure different clients (may start with IMSdroid) and make first call/SIP Session
4. Configure IMS platform for more advanced IMS features

Suggested additional steps:

5. Add an Application Server for advanced services
6. Test other SIP clients

For all the experimentations above, annotate and explain the messages exchanges between the involved components.

URLs:

1. https://www.asterisk.org/
2. https://www.kamailio.org/
3. https://github.com/kamailio/kamailio-docs
4. http://openimscore.sourceforge.net/
5. https://www.voip-info.org/imsdroid/