INSE7110 – Semester Long Project – End-Users Services in Hot Spots

The main objective of this project is to specify, design, implement and demonstrate a simplified infrastructure for provisioning end-users' services in hot spots. This will help the students in getting a deep understanding of:

- End-users' services in next generation networks
- Service gateways (also know as service delivery platforms) in next generation networks
- Signaling in next generation networks
- Media handling in next generation networks

1. Scope

The project covers the specification, design, implementation and demonstration of end-user services, service gateway, signaling and media handling.

- ***End-User Services***

The suggested end-user services are multiparty sessions. The minimum requirement is a pre-arranged voice-conferencing. Additional participants should also be able to join after the conference has started. Students can optionally consider adding other types of media to the voice-conferencing service (e.g. text, video). They can also optionally consider other types of multiparty sessions (e.g. gaming).

- **Service gateways**

The service gateway acts as mediator between the end-users' services and the network infrastructure (i.e. signaling + media handling). Any of the paradigms presented in the course (e.g. Parlay, SIP servlets, Web services) can be used (e.g. Parlay, SIP servlets, Web services). The minimum requirement is the support of the following three functions:

1. Multiparty session initiation – It is important to not that the multiparty runs in a fully distributed manner (there is no centralized conference bridge)
2. Multiparty session ending
3. Adding new parties to the session

- **Signaling**

There are several implementations of SIP available in freeware. The students should select one of them. The minimal requirement is that the signaling system of the project allows the setting up of fully distributed multiparty sessions. Extending the selected SIP freeware may be needed. If it is the case, RFC 315 [1] and/or expired draft [2] should be used as basis for the extension(s).

- **Media handling**

Several implementations of media handling protocols (e.g. RTP) are available in freeware. The students should select one of them. The Java Media Framework (JMF) APIs are recommended although not mandatory.

2. Assumptions and Recommended steps

The following assumptions are made for simplicity sake:

- The implementation and demonstration can be made in a fixed environment, although hot spots remain the final targets.
- At any given time, the nodes with service gateway functionality are known by the nodes with end-user services functionality, although in real hotspots dynamic discovery mechanism are required.
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The following steps are recommended for a successful completion of the project:

First step: Specify / design the overall architecture
Second step: Specify / design / implement the media handling part
Third step: Specify / design / implement the signaling part
Fourth step: Select the paradigm to be used for the service gateway
Fifth step: Specify / design / implement the service gateway
Sixth step: Specify / design / implement the actual service
Final step: Integrate / test all the modules

References

[1] R. Sparks, The Session Initiation Protocol Refer Method, RFC 3515, April 2003
[2] Mark/Kelley, "Distributed Multipoint Conferences using SIP", IETF Internet Draft, March 8, 2000, available on-line at:
http://www.softarmor.com/wgdb/docs/draft-mark-sip-dmcs-00.txt