DCON - An IMS enabled architecture for Distributed Conferencing

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Architecture

DCON [1] is an IMS-compliant architecture offering a distributed conferencing service with enhanced functionality, such as conference scheduling and moderation. It exploits existing achievements in the field of conferencing. Starting from the IETF Centralized Conferencing (XCON) framework, we developed an open source XCON implementation which has been called CONFiance, standing for CONferencing IMS-enabled Architecture for Next-generation Communication Experience [2]. On top of it, we realized an architecture that effectively supports the creation and management of a distributed conference in a scenario involving a number if IMS-compliant core networks, interconnected through a communication channel created on an ad hoc basis.

Implementation

The figure depicts the main implementation choices of the DCON architecture. On the server side, each DCON focus is conceived as an integration of an Asterisk based implementation of the XCON focus (upper box) with a brand new module specifically conceived for the SPReAdig of Conference Events (which we called SPACE). SPACE is realized as a plug-in for Wildfire, a popular open source instant messaging server and actually represents a key component of the architecture, since it enables inter-focus communication through the exchange of conference information on XMPP server-to-server (s2s) channels. Inside DCON, communication between the legacy Confiance modules and the newly created distribution components occurs on the basis of an asynchronous paradigm in which a number of events are generated by Confiance modules whenever something relevant occurs in the XCON island they currently supervise. The client side functionality, instead, is actually carried out by a dedicated software we developed starting from an open source instant messaging client for the XMPP asynchronous paradigm in which a number of events are generated by Confiance modules whenever something relevant occurs in the XCON island they currently supervise.

Performance evaluation

The numerous performance tests we conducted have demonstrated how the DCON architecture improves the scalability of the centralized XCON framework it is based upon, as shown in [3]. Specifically, we found a linear increase in the number of users the conferencing system is able to manage and a huge improvement in terms of resource consumption, too.

References