Experiences with Blending HTTP, RTSP, and IMS[1]

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***Abstract* – SIP based IMS network is popular for IP voice and video telephony but Web and streaming applications prefer RTSP and HTTP proxy and this results extra costs ofduplication of network components, separate maintenance and inefficient scaling. The solution is a hybrid platform that integrates three of them.**

***Index Terms* – RTSP, SIP, IMS, HTTP**

INTRODUCTION

IMS provides voice, video, data and multimedia which make online experience of users easier and make money easier for service providers by personalization and faster deployment. The details of each application type should be specified and the more separated application domains and the more details are specified, the more successful IMS is by easier and faster deployment. Moreover, techniques should be developed to integrate services within IMS otherwise, separate management would be an important problem. In this article, one integration example is given, namely, shared streaming video (SSV).

CURRENT APPROACH

Current strategy is partioning the signalling networks for push to talk, VoIP, video streaming and web applications due to different delay sensitivity requirements. All networks work in parallel and each has its own subscribe probile db, signalling functions, application policy filters, media transfer, billing and security functions. This deployment schema enable provider to tune easily each service to different configuration while causing extra cost of redundant components and separate maintenance. Separate maintenance is important because using services requires authentication in each network and coordination, scheduling and seamless handover of the concurrent services are difficult.

EXTENDED IMS ARCHITECTURE

IMS is composed of profile, signaling, QoS, media and charging functions. Profile function is executed by Home Subsriber Server, signaling function relies on SIP and Session Description Protocol, and does authentication, registration, location trakking, call routing and handover so referred as Call Session Control Function (CSCF). QoS enforces some policies for quality of the service and in some systems QoS is referred as policy decision (enforcement) function [PD(E)F]. Charging is responsible for online or offline billing. Media function performs transcoding, translating and framing media for handsets. Most importantly, there is a need of application policy function (service delivery platform) that determines application specific parameters to create, manage and implement policy rules.

Advantages are maintenance of single platform, ease of service creation, reduction of redundancy, improved scalability and seamless mobility.

ENHANCED IMS ARCHITECTURE

Current video streaming and web architecture includes multimedia gateway (WMG) and web gateway (WWG) and both of them do their own authentication, authorization and accounting so they can be brought into extended IMS by getting signaling function to speak RTSP and HTTP to application policy function. However, HSS is upgraded to support flexible schema of generalized subscriber information. This design improves service creation, seamless handover and concurrent service availability. By integration of web and video streaming, service is provided from one point so duplication of the components, security and privacy borders are reduced.

SHARED STREAMING VIDEO APPLICATION PROTOTYPE

SSV enables users to share concurrent video applications by integrating SIP-IMS with non-IMS HTTP and RTSP. SIP/IMS is used for call setup and session management, RTSP is used for streaming video and HTTP is used for the user interface of the conference. CSCF and HSS controls call and session and they are purely IMS elements and speak SIP. Firstly, this layer registers the end-points and routes SIP messages to application server (AS-SV) and media resource function controller – conference bridge (MRFC-CB). AS-SV and MRFC-CB are hybrid elements. AS-SV implements the code of the application and speaks SIP with call function, HTTP with clients for interactions and some proprietary protocols with MRFC-CB and video server. MRFC-CB is just gateway for conference bridge that talks SIP. Video server and conference bridge are purely non-IMS elements. Video server provides synchronized streamed video content. Conference bridge sums the incoming streams and delivers the other users.

Some experiements are done. In the first one, two clients are in the pop VoIP call and client1 want to show a video to client2. The phone of the Client1 has a share-video button when it pressed, web browser starts and different video clips are shown by SSV web pages. Client1 chooses and clicks it. A video player starts at both end and voice call keeps alive. When video is finished, client1 can choose a different video clip. Second experiment is extension of the first one, when two clients are sharing a video, they decides to call client3. Client1 moves the call to conference call and when client3 answers, video is automatically shared with client3. Moreover, client1 has now information of the conference session such as the identities of participants of the conference.

Service broker is an entity of the application policy function and makes coordination and control of the multi-standard entities and sits between CSCF and AS_SV. Since it can speak multi-protocol, it can be used for seamless blending without modifying the current applications.

CONCLUSION and FUTURE WORK

Here, enhanced IMS architecture that bring together SIP, HTTP and RTSP and an evolutionary prototype (SSV) is presentented. SSV provides rich user experience and enables the creation of many multimedia services that can be shared within the entire community. Pitfalls of enhancement of IMS are new protocols, delay for new applications and reimplementation of old applications, incompatibility problems. Benefits of new IMS are seamless mobility experience of SIP, RTSP and HTTP applications, domain expand, easy scalability of IMS services and reduced parallel maintenance.

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