Evaluating the Use of SIP for Streaming Media Applications

draft-whitehead-mmusic-SIP-for-streaming-media

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Rationale for Exploring the Use of SIP

- Create value-added ‘blended’ services based on the use of a common signaling platform.
- Build on SIP instead of duplicating its capabilities in other protocols when SIP capabilities are needed.
- Unify and re-use common service architectures.
- Use SIP Rendezvous mechanism to access NATed resources.
- Use SIP extensions for conveying charging/settlement information.
- Use SIP extensions for pre-conditions and for signaling QOS transport.
- Other?

Use Cases

Service Convergence

- **Scenario: “Streaming Media and More” :**
  - Sarah receives her communications and entertainment services from a single service provider.
  - Services include: multi-media communications & messaging (text, voice, video); broadcast and on-demand streaming media (music and video).
  - Services are delivered to a wide variety of end-user devices (fixed & mobile).
- **Common service elements are used to implement common functions for multiple services:**
  - Service signaling, subscriber management, AAA & billing, service-based QOS
  - Use of common (SIP-based) features facilitates:
    - Development of ‘blended services’ by coordinating service interactions.
    - Avoiding duplicated functions.
    - New service deployment by building on existing mechanisms.

Use Cases

Access to Content on Private Networks

- **Scenario 1: Remote Monitoring:**
  - Susan has contracted with a video surveillance company to watch her house while she's away on vacation.
  - Using a SIP-based streaming media applications, employees at Acme Security can remotely control and view content from video cameras strategically located around Susan's home.
- **Scenario 2: Sharing Personal Videos:**
  - Bob has just uploaded the latest video of his newborn daughter Jessica on the family's personal media server. He sends an email to his parents that contains a URL to the movie. The grandparents click on the link, which initiates a SIP-based 'click-to-view' session with Bob's personal media server.
- **Use SIP rendezvous to locate and initiate a session with a server located behind a NAT/FW on private IP-network.**

Use Cases

Multi-provider Service Delivery

- **Scenario: Multiple Affiliated Content Providers:**
  - As part of Jane's IPTV service, her VOD entertainment package provides her with access to thousands of titles offered by dozens of content providers.
  - When she selects title to view, her service provider transparently coordinates subscriber identification, authorization, accounting, signaling and settlements with the affiliated content provider.
  - Moreover, QOS-enabled delivery of the video stream may require coordination across multiple transport providers, this too is transparently managed by Jane's service provider via a SIP-based signaling network.
- **Use SIP-based mechanisms to coordinate service delivery amongst multiple providers:**
  - Use a single-sign on mechanism to support multiple services offered by multiple providers.
  - Establish trusted signaling channels between providers.
  - Exchange transaction identifiers to facilitate charging and settlements between providers.

Use Cases

Local QoS Settings

- **Scenario: wireless customer watching a streaming video :**
  - When the server is not located in the same area as the client it prevents the VOD server from realistically acting as the Application Function (AF) to the regional/local Resource and Admission Control Function (RACF).
  - In the case of wireless video this is a realistic scenario since the it might be reasonable to deliver a “wireless” video stream long-distance across the Internet.
- **Use SIP-preconditions to establish local QOS.**

Solution Space

- **SIP-only solutions:**
  - Use SIP to signal streaming media application sessions.
  - Use SIP-based extensions to support application control signaling.
    - **Application control signaling: ‘trick-plays’, ‘camera controls’, ‘game-controls’.**
    - **Extension Techniques: (supported/signaled via ‘required/option headers):**
      - New SIP headers (e.g., SIP-MEX proposed extensions to Invite/Update).
      - New SIP bodies (e.g., control messages carried in INFO messages).
      - New SIP methods (e.g., new SIP methods for ‘trick-plays’).
- **Dual-protocol solutions:**
  - Use SIP to signal sessions for both media AND control flows.
  - Use a second protocol for application control signaling (e.g., RTSP or other).
  - Options:
    - **SIP & RTSP2 Interworking (via synchronization extensions)**
    - **SIP & RTSP-lite**
    - **SIP & MRCP2**
    - **SIP & ‘Boulton application control framework’**
- **All RTSP**

Draft Status

- **V0: Individual contribution.**
- **Informational.**
- **Collects inputs from authors and contributions from the mailing list.**
- **Provides use cases, defines requirements and refines the solution space.**

Next Steps

- **Evaluate WG interest in this topic:**
  - Are more people interested in developing this topic?
  - Under which working group Charter if any?
    - **MMUSIC, SIP, SIPPING, Other, None?**
  - Current I-D: Use Cases & Requirements:
    - **New version after meeting based on comments?**
- **Prototypes and working implementations:**
  - Work in progress on implementations POC.

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