Buffer Handling Media Attribute in SDP for Seamless Session Mobility
draft-mingqiang-mmusic-session-mobility-attribute-00.txt

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Overview

- Requirements for seamless session mobility for video on demand
- Proposed media handling approach
- Possible protocol extension for the media handling approach
- Open issues, Next steps
About Session Mobility

- **Session mobility:** A mechanism that allows a user to transfer an ongoing communication session from one device to another device

- **Seamless session mobility (SSM):**
  - Minimum media disruption
  - Instant media transfer

Session Mobility for VOD

- **Target Application:** VOD

- **Characteristics of VOD**
  - Data buffering is required in streaming clients for continuous playback
  - Playback delay is caused by filling the buffer to a desired level

*What happens during session transfer for VOD?*
Session Mobility Using REFER for VOD

- Playback delay in the selected device will be perceived by user

```
A  B  Media Server

Session /Media stream
```

- Start session transfer
- Refer
- Invite (To establish a session)
- Media stream
- Start sending media
- Start receiving and buffering media
- Delay taken for buffering
- Delay perceived by user
- Start displaying media
- Notify
- Bye

Requirements for SSM for VOD

- **What happened during session transfer for VOD**
  - Data buffering will be started in the selected device
  - Buffering time will be perceived by user
    
    \[ \text{Delay perceived by user} = \text{Session setup delay} + \text{Buffering time} \]

- **Requirement for SSM for VOD:**
  Need to eliminate the buffering time so that user can feel media is transferred instantly
Proposed Media Handling for Seamless Session Mobility

Forward media from A to B directly before starting session transfer

Need to indicate that the media is just for buffering in Invite.

Possible Protocol Extensions for Media Handling

- **Choice 1: SDP**
  - Define a new SDP property attribute:
    - Attribute Name: a=bufferonly

- **Choice 2: SIP**
  - Define a new option-tag:
    - Option-tag Name: bufferonly
  - Define a new media feature tag:
    - Media feature tag name: mediahandling="bufferonly"
### Performance

- **Experiment Environment**

<table>
<thead>
<tr>
<th>Media Server</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>2.4GHz</td>
<td>3.0GHz</td>
</tr>
<tr>
<td>Memory Capacity</td>
<td>512MB</td>
<td>512MB</td>
</tr>
<tr>
<td>OS</td>
<td>Windows XP</td>
<td></td>
</tr>
<tr>
<td>Streaming Platform</td>
<td>Microsoft DirectShow</td>
<td></td>
</tr>
<tr>
<td>Buffer</td>
<td>100 frames</td>
<td></td>
</tr>
</tbody>
</table>

- **Experiment Results**

<table>
<thead>
<tr>
<th></th>
<th>Minimum (ms)</th>
<th>Average (ms)</th>
<th>Maximum (ms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media Delay (without Media Handling)</td>
<td>3333</td>
<td>3409</td>
<td>3533</td>
</tr>
<tr>
<td>Media Delay (with Media Handling)</td>
<td>33</td>
<td>65</td>
<td>100</td>
</tr>
</tbody>
</table>

#### Seamless Session Mobility in IETF

- **Shacham’s draft for session mobility**
  - Title: Session Initiation Protocol (SIP) Session Mobility (draft-shacham-sipping-session-mobility-01.txt)
  - Seamless is proposed as a requirement for session mobility
  - Estimated total transfer delay should not be much longer than 1s

- **Relation with Shacham’s draft**
  - Targeting for the applications with long buffering time
  - Complementary to Shacham’s draft
Open Issues

◆ Other use cases for the proposed extension?
◆ Where to put the proposed extension, SDP or SIP?

Next Steps

◆ Add media synchronization section
◆ Make clear the targeted application as VOD
◆ Add a performance section