

SIPPING Working Group
Internet-Draft
Intended status: Informational
Expires: December 13, 2007

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June 11, 2007

**Requirements for third-party initiated partial session transfers
draft-bijwaard-sipping-tpipst-requirements-00**

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Abstract

Partial session mobility is defined as moving part of an active multimedia session to another device. Partial session mobility can be triggered both from a terminal as from a third-party node.

This document describes the requirements for SIP-based third-party initiated partial session transfers that works together with terminal initiated partial session transfers.

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1. Requirements notation

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [[RFC2119](#)].

2. Introduction

As work in progress [[shacham06](#)] described, SIP [[RFC3261](#)] Session Mobility is the seamless transfer of media of an ongoing communication session from one device to another. A system for session mobility is defined, aimed at allowing a Mobile Node (MN) to discover available nodes and to include them in an active session. [[shacham06](#)] also defines how the different parts of a session can be individually transferred to these devices, meaning the different stream endpoints in a multimedia-stream can each be transferred to another device, here called partial session mobility.

This document describes the requirements for third-party-initiated partial session mobility, i.e. partial session mobility initiated by a third-party. The work in progress [[aartsetuijn07](#)] describes a method that meets most of these requirements and was a result of [[aartsetuijn06](#)] in which existing methods were also compared. Third-party initiated partial session transfers would typically be triggered by external events like third-party discovery of nearby multimedia devices like beamers. Since these multimedia devices are often stationary, the third-party could use a static map of devices and only has to keep track of the location of the user terminal in relation to devices in this static map.

3. High-level requirements

This section describes the high-level requirements for third-party initiated partial session mobility. The requirements are listed in Table 1 below and most contain background and examples.

Req.#	Requirement
1.	It should be possible to transfer different parts (stream endpoints) of an existing multimedia-session individually to other nodes. This is a basic requirement to enable both user-initiated and third-party initiated partial session mobility.
2.	A third-party should be able to propose a transfer of a stream endpoint to a SIP UA and get a related response for agreement or disagreement. The following information are deemed necessary for the SIP UA to agree or disagree to such a transfer: which stream endpoint is to be transferred; to what node the stream endpoint is to be transferred; the proposed media-parameters. E.g. when the user does not know what stream endpoint is transferred where and with what quality, (s)he is less likely to agree to the transfer. Additionally, this information would be necessary if the user wants to close or transfer the stream elsewhere afterwards.
3.	A third-party should be able to initiate a transfer of a stream endpoint in a session to another node after agreement by the SIP-UA that is responsible for this endpoint. This agreement can be in advance for all sessions or per transfer proposal as in Requirement 2. The advantage of having a third-party to initiate a transfer is that a SIP UA does not necessarily need support for partial session mobility (and associated device discovery) itself, it only needs to be able to agree in advance or per session. A likely candidate solution for the third-party initiation is a B2BUA that also knows or can easily obtain information about other registered devices. We could imagine a conference hotel where all SIP-enabled beamers, cameras, TVs and hifi-sets have a fixed location, in this case the third-party only has to track the location of the user device to find candidate devices for his/her session.

4. Partial session mobility should be possible at least in a limited way for [RFC 3261](#) compliant SIP UAs. In order to get partial session mobility being used, it helps when it also works with off-the-shelf user agents, so everybody can use and experience it. This usage (with possibly limited functionality) may drive the need for more advanced UAs that can also handle partial session mobility themselves.
5. A SIP UA should be able to transfer a stream endpoint of an ongoing SIP session. This is to enable initiating partial session transfers from an advanced SIP user agent. E.g. when entering a conference room, the user may want to initiate the transfer of video in his session from the beamer in that room back to his/her mobile device. This also keeps the user in control and would enable him/her to undo a transfer by transferring it back, or to transfer an already transferred stream to another device.
8. A SIP UA should be able to close the multimedia-session in which a stream endpoint was transferred. This is to keep the user in control, (s)he may not be able to control the devices in the conference room himself, but (s)he should at least be able to close the session including the part that was transferred to the beamer.
8. It should be possible to transfer a transferred stream endpoint back or elsewhere from a third-party node (see req. 3). For SIP UAs that do not support partial session mobility themselves, this is required to move the stream back to the user device, and also to not have to move it back to the user device first when a better candidate device is found or when the other one fails.
9. It should be possible for a third-party to close the multimedia session in which it transferred a stream endpoint, i.e. including the transferred stream endpoint. This is to be able to close a session after failure of the original user agent on behalf of which a stream endpoint was transferred. The battery of the user device could have run out, or it could have crashed.
10. There should be a (SIP) session relationship (here called sub-session) between the node to which a stream endpoint was moved and the node that initiated the transfer of the stream endpoint. This session relationship is needed to be able to change or close the session afterwards.

11.	The node to which a stream endpoint was moved should be able to close the sub-session described in req 10. This closing is to enable e.g. a beamer in a conference room that is reserved at a specified time for another user. The node (third-party or user) that initiated the transfer is responsible to move the stream back to the user device or elsewhere, since it has the session relationship (req. 10) with the node that closes the sub-session.
12.	The initiator (third-party or user) of the partial session transfer should have control on the mediaparameters of a transferred media-stream. This means the node initiating the partial session transfer should be able to propose the media-parameters (e.g. the codec) to be used in a SDP [RFC4566] body. When the initiator would not be able to propose these parameters, they may not be compatible with the peer in the session which would result in a discontinued media stream.
13.	For the transfer of a stream endpoint, the session (req. 9) with the new node should be setup before breaking the old stream (make before break). Without make before break, the users in the session may experience gabs in their communication or their communication discontinues when the session setup with the new endpoint fails.
14.	A solution for partial session mobility should not be incompatible with general use of SIP sessions.
15.	Both third-party and terminal initiated partial session mobility should exploit the existing possibilities of SDP and SIP.

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Table 1

4. Security Considerations

All security considerations as described in [[shacham06](#)] also apply for this proposal. Besides those considerations here some other are described that are related to third-party initiated partial session transfers.

4.1. Sender of proposal can be any third-party node

The proposal for a partial session transfer can virtually be send by any third-party node, but this third-party needs to be aware of a certain session. This likely means that the third-party is in the signaling path between the user and its peer.

4.2. Sudden disconnection of the SIP UA

In case a media-stream has been transferred to another node and the SIP UA of the user suddenly disconnects, that specific media-stream does not stop working; it only stops when that node or the peer in the session disconnects, or when that node, the peer in the session, or a third-party node uses SIP signalling to stop the media-stream.

4.3. SIP UA is informed about the existence of a involved node

In case of a third-party initiated partial session transfer, the SIP UA is informed about the existence of the involved node at the moment it receives a proposal for the partial session transfer. It is the task of the third-party node that proposes the transfer to make sure an involved node is only exposed to nodes that are trusted.

4.4. Involved node is informed about the IP-address of the communication peer

At the moment the SIP UA accepts a transfer, the involved node is informed about the IP-address of the peer in the original session. This peer might not want other nodes beside the SIP UA to know about its IP-address.

5. IANA Considerations

This document does not require actions by the IANA.

6. Acknowledgements

The work described in this Internet-Draft is based on results of IST FP6 Integrated Project DAIDALOS. DAIDALOS receives research funding from the European Community's Sixth Framework Programme. Apart from this, the European Commission has no responsibility for the content of this Internet-Draft. The information in this document is provided as is and no guarantee or warranty is given that the information is fit for any particular purpose. The user thereof uses the information at its sole risk and liability.

7. Normative References

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Acknowledgment

Funding for the RFC Editor function is provided by the IETF Administrative Support Activity (IASA).

