Implementation Agreement for SIP-T Profile for Media Gateway Controller

MSF-IA-SIP-T.001-FINAL

Multiservice Switching Forum
Implementation Agreement

Multimedia Switching Forum
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Abstract:
This contribution is an Implementation Agreement for inter Media Gateway Controller signalling using the Session Initiation Protocol for Telephones (SIP-T). This IA is concerned with a SIP-T interconnect between MSF compliant Media Gateway Controllers.

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The intent of this Forum is to support the rapid advancement of an efficient and compatible technology base that promotes a competitive marketplace. The Forum activities include promoting global development of multiservice switching system technology; promoting worldwide compatibility and interoperability; encouraging input to appropriate national and international standards bodies; and identifying, selecting, augmenting as appropriate, and publishing multiservice switching system implementation agreement drawn from appropriate national and international standards.

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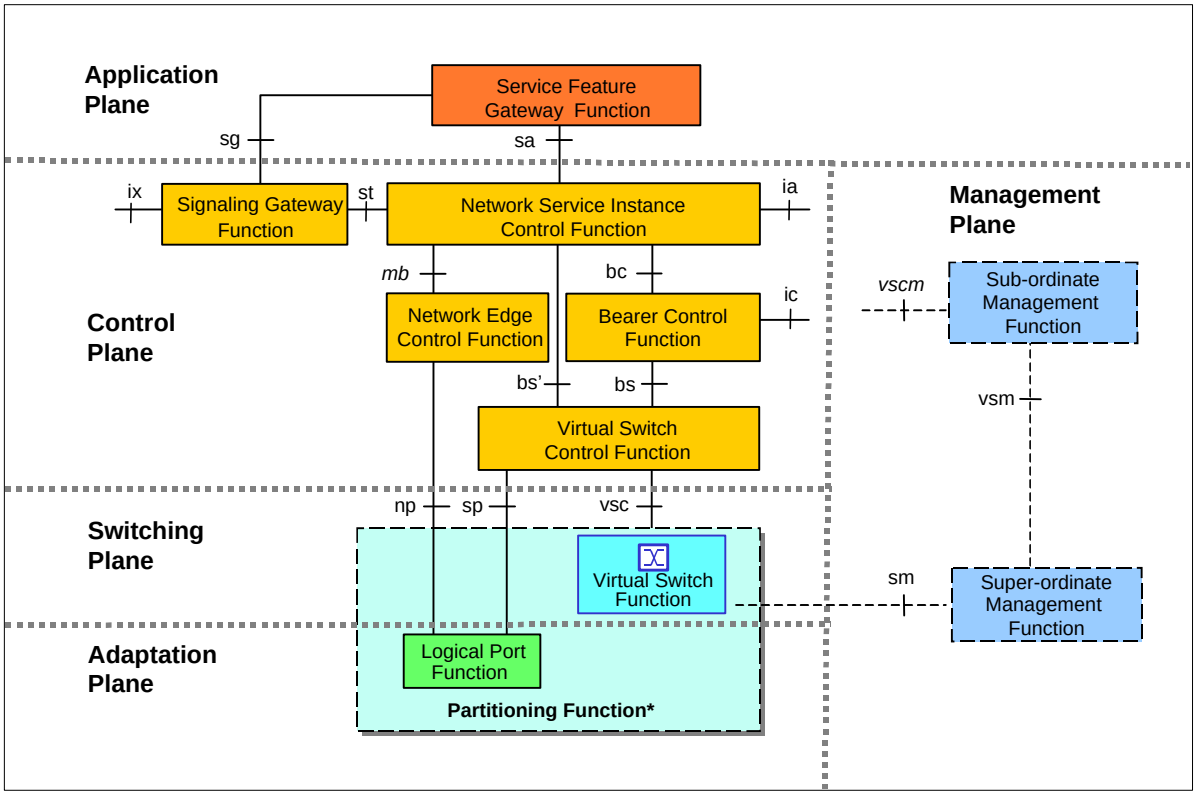
1 Multiservice Switching Forum

The charter of the Multiservice Switching Forum is to develop and promote implementation agreements for protocols and interfaces that enable an open architecture for multiservice switching systems supporting ATM, Frame Relay, IP, Voice and Video services. A Multiservice Switching System is a distributed switching (frame, cell or packet based) system designed to support voice, video, private line, and data such as Asynchronous Transfer Mode (ATM), Frame Relay, and Internet Protocol (IP) services. Multiservice switching systems may use a broad range of access technologies, including traditional Time Division Multiplexing (TDM), Digital Subscriber Line (xDSL), wireless data, and cable modems. MSF Implementation Agreements define the requirements of the interfaces between components of a MSS.

The current MSF Reference Architecture, as defined in MSF-ARCH-001.00-FINAL IA, Multiservice Switching Forum System Architecture Implementation Agreement[1], provides three reference points, ia, ix, and st, all of which can be defined as the interface for SIP (see Figure 1).



Notes:
- Italicized reference points are not considered open reference points for release 1.
- Bearer transport reference points are not shown.
- Management functions overlaid on functional architecture
* The Partitioning Function maintains partition integrity between partitions of a partitioned entity.

Figure 1 MSF Reference Architecture Corresponding to Functional Definitions

[1] Bjorkman, Nils, "Multiservice Switching Forum System Architecture Implementation Agreement", MSF-ARCH-001.00-FINAL IA, May 23, 2000

2 Assumptions

The MSF will issue several Implementation Agreements (IAs) to be used in the MSF Interoperability testing and demonstrations. This agreement does not define the test suites or scenarios for the testing, but will provide the framework for those tests. This IA defines a SIP-T profile for a media gateway controller (MGC) session signalling with its peer elements.

This release of the implementation agreement is geared specifically toward MSF interoperability testing.

3 Definitions

A Media Gateway Controller, as used in this IA, is responsible for controlling a number of GWs. The underlying bearer technology is IP. In order to realize a scaleable network, it is envisaged that there would be a number of such Media Gateway Controllers.

SIP-T (SIP for Telephones) is a mechanism that uses SIP to facilitate the interconnection of the PSTN with packet networks. It is characterized by the encapsulation of legacy signalling (typically, though not exclusively, ISUP) in the SIP body for feature transparency, translation of ISUP information into the SIP header for routability, and use of the INFO method for mid-call signalling.

Inter-MGC signalling is used to establish, modify, and terminate sessions between peers. The MGC control profiles include several inter-MGC signalling protocols, and this IA addresses the SIP-T option (See figure 2). Figure 2 shows only MGCs controlling a trunking gateway, but this IA also covers a MGC that controls an access or residential gateway, and operates in a mode where ISUP is generated, as for a normal PSTN trunk call, and then encapsulated in SIP (i.e. SIP-T).

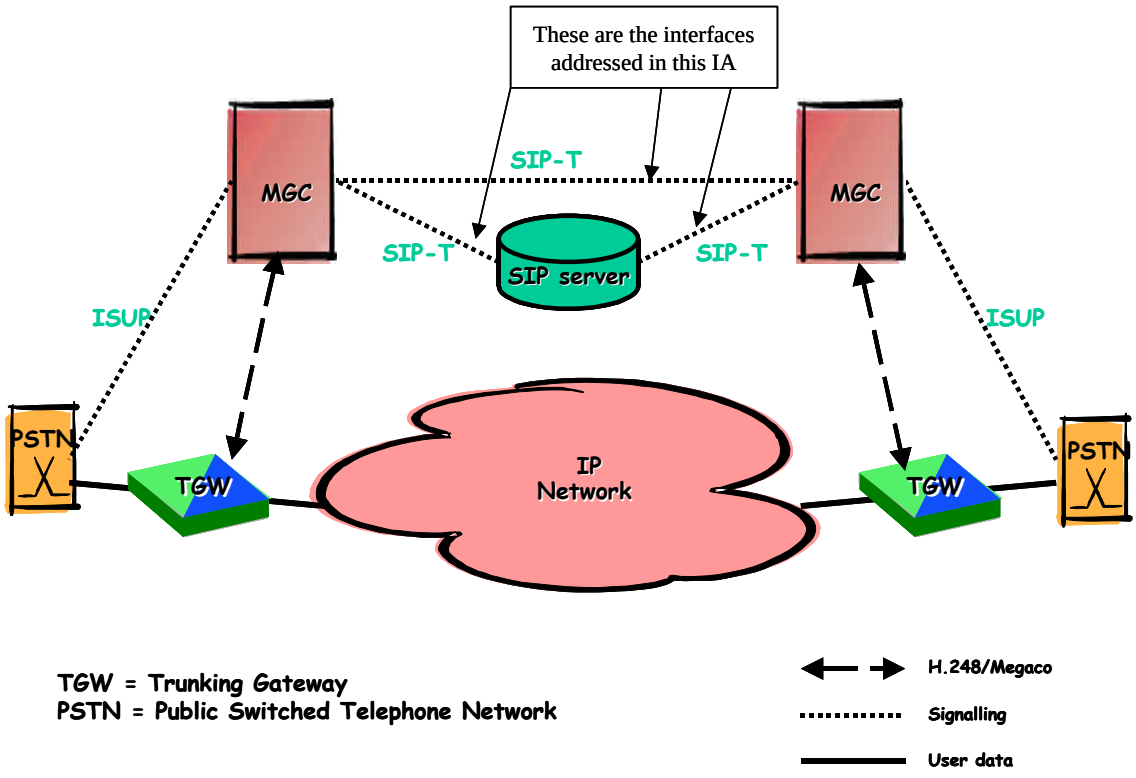


Figure 2 - Functional Gateway/Controller Architecture

4 SIP-T Profile

4.1 Identifications

This profile shall be entitled “MSF SIP-T Controller Profile”. The version number shall be 1.0.

4.2 Base specifications

A conforming MGC shall implement the following specifications:

[1] IETF draft - draft-ietf-sip-rfc2543bis-09.txt, "SIP: Session Initiation Protocol" (Note)
[2] IETF RFC2976, "The SIP INFO Method"
[3] IETF RFC3204, "MIME media types for ISUP and QSIG Objects"
[4] IETF draft - draft-ietf-sipping-sipt-01.txt, "SIP for Telephones (SIP-T): Context and Architectures"
[5] IETF draft - draft-ietf-100rel-06.txt, "Reliability of Provisional Responses in SIP" (Note)
[6] IETF draft - draft-ietf-sipping-isup-01.txt, "ISUP to SIP Mapping"

Note: These internet drafts have been agreed to become RFCs, and this IA refers the RFCs when the RFC numbers are allocated.

4.3 Optional specifications

There is no optional specification at this stage.

4.4 Informational Documents

A conforming MGC shall follow the following informational documents:

[7] IETF draft - draft-ietf-sip-call-flows-05.txt, "SIP Call Flow Examples"
[8] IETF draft - draft-ietf-sip-service-examples-03.txt, " SIP Service Examples"
[9] IETF draft – draft-ietf-sip-sctp-01.txt "SCTP as a Transport for SIP"

4.5 Configuration

Routing information to peer MGCs shall be provisioned in the MGC.

An MGC knows that it should use SIP-T across an interface to a peer node via provisioning for this version of the profile.

4.6 Transport

A conforming MGC shall support UDP, and may implement TCP or SCTP.

When UDP is used, only unicast support is required.

4.7 RTP stream and SDP description

A conforming MGC shall support unicast for RTP streams. Multicast may be supported.

INVITEs shall contain session descriptions except where session descriptions have not been determined prior to issuing INVITEs, e.g. interworking with non fast connect H.323 terminals. In this case the session descriptions shall be sent in the ACK.

4.8 Encapsulated messages

This profile applies to the encapsulation of ISUP messages only.

A conforming ingress MGC (the one that is receiving the ISUP message and sending it as SIP-T over the packet network) shall translate an ISUP message to a SIP message and encapsulate the ISUP message using a MIME multi-part into the SIP message body when interworking from ISUP to SIP.

The ingress MGC may send either national variants of ISUP or international variants of ISUP. The ISUP may be marked as required or optional in the handling indication in the Content-Disposition header.

Within the packet network SIP servers do not understand encapsulated ISUP, and do not modify or look at the encapsulated message.

A conforming egress MGC shall extract an ISUP message when interworking from SIP to ISUP, if present in the SIP message body. The SIP headers should take precedence over the ISUP as the contents of SIP headers may be updated in routing within the IP network.

The egress MGC will respond in the following ways. If the encapsulated ISUP is marked as optional then it will be processed (if understood) and ignored if not. If the encapsulated ISUP is marked as required and the egress MGC does not understand either the variant of ISUP or it does not understand ISUP at all then it shall respond with 415, "Unsupported Media Type".

The ingress MGC may then either reject the call or re-send the invite. If the ingress MGC chooses to re-send the invite and in the case where it first sent national ISUP, then it may choose to encapsulate international ISUP. This may be marked optional or required. However because it is not possible to distinguish between the case where the egress MGC is not ISUP capable or is merely unable to support a given ISUP version sent in the first invite, it is recommended that the ingress MGC mark the international ISUP as optional in the second invite.

4.9 URL

A conforming MGC shall support tel-URLs in addition to SIP-URLs. No other non-SIP URLs are required.

Passwords in the userinfo field are not recommended and are to be ignored if present.

4.10 Security

This release of the IA does not utilize security.

4.11 QoS

Use of resource reservation is for further study and not required for this profile.

4.12 SIP Protocol

(1) Supported methods

A conforming MGC shall support all the methods defined in the base specifications (section 4.2), and may support ones in the optional specifications (section 4.3).

Currently, INVITE, ACK, BYE, CANCEL, PRACK, and INFO are mandatory for a conforming MGC.

(2) Message body in 1xx and 300 and greater responses

A conforming MGC should support text/plain type and may support text/html.

(3) Compact Form

A conforming MGC shall use only compact forms.

(4) ISUP SUS/RES

ISUP SUS/RES shall be transferred using the INFO method.