
# MSFR4 Implementation Agreement for the DB-2 interface

## MSF-IA-DIAMETER.007-FINAL

# MultiService Forum
# Implementation Agreement

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**Abstract:**

The MultiService Forum (MSF) is responsible for developing Implementation Agreements or Architectural Frameworks which can be used by developers and network operators to ensure interoperability between components from different vendors. MSF Implementation Agreements are formally ratified via a Straw Ballot and then a Principal Member Ballot.

Draft MSF Implementation Agreements or Architectural Framework may be published before formal ratification via Straw or Principal Member Ballot. In order for this to take place, the MSF Technical Committee must formally agree that a draft Implementation Agreement or Architectural Framework should be progressed through the balloting process. A Draft MSF Implementation Agreement or Architectural Framework is given a document number in the same manner as an Implementation Agreement.

Draft Implementation Agreements may be revised before or during the full balloting process. The revised document is allocated a new major or minor number and is published. The original Draft Implementation Agreement or Architectural Framework remains published until the Technical Committee votes to withdraw it.

After being ratified by a Principal Member Ballot, the Draft Implementation Agreement or Architectural Framework becomes final. Earlier Draft Implementation Agreements or Architectural Frameworks remain published until the Technical Committee votes to withdraw them.

The use of capitalization of the key words “MUST”, “SHALL”, “REQUIRED”, “MUST NOT”, “SHOULD NOT”, “SHOULD”, “RECOMMENDED”, “NOT RECOMMENDED”, “MAY” or “OPTIONAL” is as described in section V-B of the MSF Technical Committee Operating Procedures.

The goal of the MSF is to promote multi-vendor interoperability as part of a drive to accelerate the deployment of next generation networks. To this end the MSF looks to adopt pragmatic solutions in order to maximize the chances for early deployment in real world networks.

To date the MSF has defined a number of detailed Implementation Agreements and detailed Test Plans for the signaling protocols between network components and is developing additional Implementation Agreements and Test Plans addressing some of the other technical issues such as QoS and Security to assist vendors and operators in deploying interoperable solutions.

The MSF welcomes feedback and comment and would encourage interested parties to get involved in this work program. Information about the MSF and membership options can be found on the MSF website http://www.msforum.org/

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# I. The MultiService Forum

The MultiService Forum (MSF) is a global association of service providers, system suppliers and other organizations committed to developing and promoting open-architecture, multiservice communication systems. Founded in 1998, the MSF is an open-membership organization comprised of the world's leading telecommunications companies.

The MSF's activities include developing implementation agreements, promoting worldwide compatibility and interoperability, and encouraging input to appropriate national and international standards bodies.

As part of MSF’s effort to drive and promote interoperability, the MSF has created a number of programs geared toward accelerating real world network deployments:

1. Global MSF Interoperability (GMI) events. GMI events provide a real-world setting for vendors to test their solutions and provide evidence that vendor products meet the interoperability standards set forth by MSF Implementation Agreements. Each MSF GMI event is built around a set of capabilities defined for a given release of the MSF Architecture.

2. Next Generation Network (NGN) Test Bed. The NGN test bed provides a facility to enable carriers and vendors to perform in-depth testing of a specific interface as defined in a given release of the MSF architecture.

3. Certification Programs. For more mature technologies the MSF can provide Certification of compliance to a given Implementation Agreement where MSF members believe that it is of value to the industry to do so.

# II. An introduction to MSF documentation and GMI 2008

This document is part of the MSF Release 4 set of architectural, protocol and test documentation.

The MSF Release 4 Architecture is a physical implementation of the functional architectures that have been proposed by the key Standards Development Organizations. As such the MSF Release 4 Architecture represents the current state of the industry and it identifies current open interfaces between physically separate network elements.

MSF Implementation Agreements define the protocols to be used over specific open interfaces. Where possible MSF Implementation Agreements are based on industry standard protocols augmented with additional information so as to ensure interoperability between communicating network elements. This level of interoperability is achieved by closing any gaps and tightening any optional capabilities in those industry standards to remove the danger of mutually incompatible selections by vendors. An MSF Implementation Agreement is targeted at a given release of the MSF architecture but can be used in any circumstance where an operator wishes to deploy the open interface and its functionality within their own network.

The MSF Release 4 architecture and its associated implementation agreements are used as the basis for GMI 2008. GMI 2008 is a global test event executed to demonstrate multi-vendor, multi-service interoperability based around IMS and includes IPTV and web based services.

As part of GMI 2008 a number of detailed test scenarios have been developed and a number of test plans defined. Test plans contain the set of test cases required to demonstrate a given MSF Release 4 capability and serve to exercise and validate the set of Implementation Agreements required to realize the capability.

Following the completion of GMI 2008 the MSF Release 4 architecture and individual implementation agreements will be updated if the testing identifies any deficiencies in the documents.

For more information about the scope of GMI2008 please go to http://www.msforum.org

## III. Impact on previously published MSF documents

This specification is for MSF release 4 and GMI 2008. It replaces the following earlier MSF documents

- MSF-IA-DIAMETER.003-FINAL (msf2006.048)

# Content

# 1. Introduction

Within the MSF Release 4 Architecture in MSF.2008.045 [3] for GMI 2008, a number of devices that can be seen to be either identical or very similar to those defined in 3GPP IMS architecture (see 3GPP TS 23.228 [4]) are identified. Within MSF.2008.045 [3], a number of new IA's are also identified and in some cases, these IA's refer closely to 3GPP reference points or interfaces. This IA addresses one such 3GPP defined interface and the equivalent MSF interface that requires an IA – the 3GPP Sh interface and the DB-2 interface within the MSF architecture.

The HSS is a 3GPP defined element where subscriber information relating to identity, contactability, service preferences and other subscription information relating to IMS and other 3GPP defined network domains is stored (see 3GPP TS 23.002 [5]). The Subscriber Location Function (SLF) in 3GPP is defined as a Diameter redirect that is used in networks where more than one HSS has been deployed. Nodes wishing to contact the HSS that holds subscription records for a specific subscriber send their requests to the SLF first, where the correct HSS address for the subscriber is inserted into the message. The SLF then returns the message to the node, which can then route the message to the correct HSS. Figure 1.1 below shows the interfaces defined for GMI 2008 to the HSS and to the SLS (the MSF equivalent of the SLF), including the DB-2 interface to the Service Broker/SCIM, the Parlay X Gateway and the Application Server.

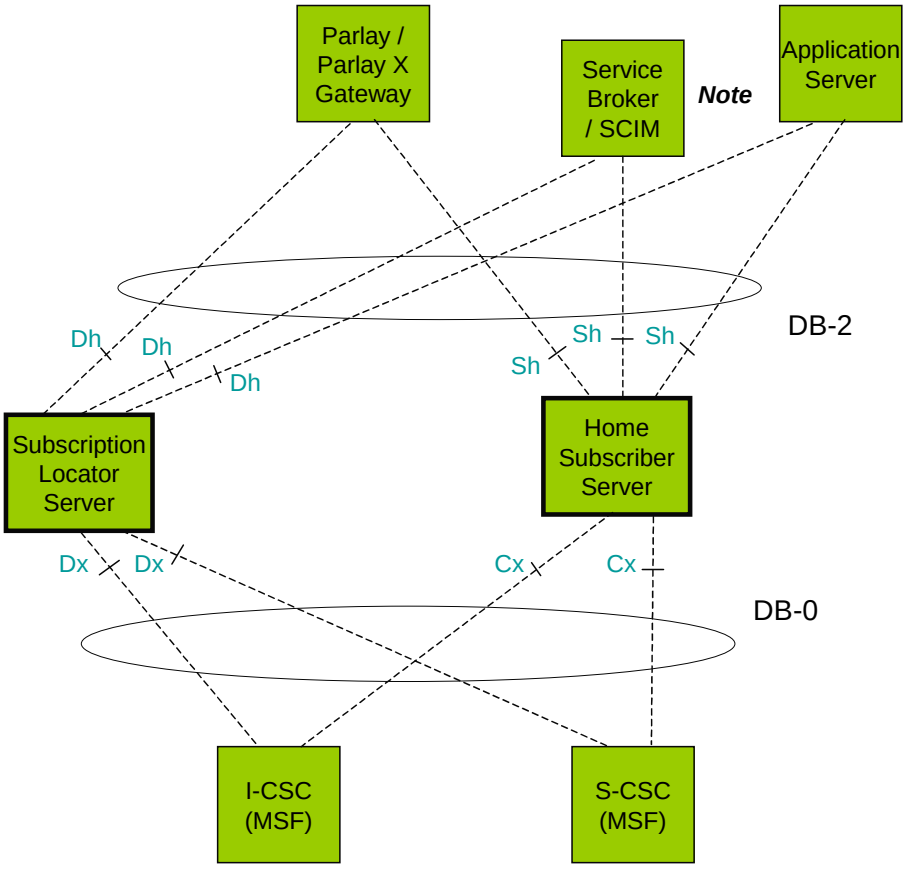


Figure 1.1: Interfaces to the HSS

Sh and Dh interfaces in 3GPP are identified in 3GPP TS 23.002 [5], have requirements for its functionality defined in 3GPP TS 23.228 [4], and have the protocol implementation on the Sh interface defined in 3GPP TS 29.328 [1] and 3GPP TS 29.329 [2]. The Application used on the Sh and Dh interfaces is specified as a Vendor specific application that is implemented on the DIAMETER Base Protocol (RFC3588 [6]). The DB-2 interface has very similar requirements and function as the Sh interface and so can draw almost entirely on the 3GPP documents for definition.

## 2. References

[1] 3GPP TS 29.328: "IP Multimedia (IM) Subsystem Sh interface; signalling flows and message contents"; Release 7.

[2] 3GPP TS 29.329: "Sh Interface based on the Diameter protocol – Protocol details"; Release 7.

[3] MSF2008.045 "MSF Release 4 Architecture".

[4] 3GPP TS 23.228: "IP Multimedia (IM) Subsystem – Stage 2"; Release 7.

[5] 3GPP TS 23.002: "Network architecture"; Release 7.

[6] IETF RFC3588: "Diameter Base Protocol".

[7] 3GPP TS 29.230: "Diameter applications; 3GPP specific codes and identifiers"; Release 7.

# 3. General on Diameter Sh Application

The protocol used on the Sh and Dh interfaces within 3GPP is defined as a Vendor-Specific Diameter Application. This means that implementations of the Sh and Dh interfaces need to support the Diameter Base Protocol as described in RFC3588 [6].

## 3.1 Identification of the Sh Application

At establishment of a Diameter Session, Diameter Base Protocol (RFC3588 [6]) requires the two nodes engaging in the session to send Capability-Exchange-Request/Answer (CER/CEA) message pairs to establish which Diameter Applications can be used within that Session. When Sh Application is to be used, the nodes SHALL include the application identification of the Sh Application as described in 3GPP TS 29.230 [7].

Because Sh Application is defined by 3GPP, the nodes SHALL to include the IANA allocated vendor identity for 3GPP (10415) within an instance of the Supported-Vendor-Id AVP in the CER/CEA exchange, as well as the Sh Application identity, see section 5 of 3GPP TS 29.329 [2]. The description for how vendor identity is transported in Diameter messages, AVPs and in the CER/CEA exchange is defined in RFC3588 [6].

The implication of this is that manufacturers implementing the DB-2 interface based on Sh interface SHALL include the 3GPP Vendor Identity in an instance of the Supported-Vendor-Id AVP of their CER/CEA implementations.

### *3.1.1 Identification of extensions to the Sh Application*

Diameter Base Protocol (RFC3588 [6]) provides the possibility for individual vendors to extend applications in ‘proprietary’ ways. This is done by identifying the specific Vendor by use of the Vendor-Id AVP as described in RFC3588 [6].

# 4. Sh Interface Profile

Unless stated, implementation of DB-2 interface in MSF GMI 2008 architecture SHALL be in accordance with definitions in 3GPP TS 29.328 [1] and 3GPP TS 29.329 [2].

Note: The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", "OPTIONAL", "CONDITIONAL" and "IF" in this document are to be interpreted as described in the Technical Committee Operating Procedures.

## 4.1 DB-2 Interface to the HSS

### *4.1.1 Commands*

The DB-2 interface to the HSS from the Service Broker/SCIM, the Parlay X Gateway and the Application Server SHOULD implement the following commands;-

- User-Data-Request/Answer (UDR/UDA) command pair as defined in 3GPP TS 29.328 [1] section 6.1.1.
- Profile-Update-Request/Answer (PUR/PUA) command pair as defined in 3GPP TS 29.328 [1] section 6.1.2.
- Subscribe-Notifications-Request/Answer (SNR/SNA) command pair as defined in 3GPP TS 29.328 [1] section 6.1.3.
- Push-Notification-Request/Answer (PNR/PNA) command pair as defined in 3GPP TS 29.328 [1] section 6.1.4.

## 4.2 DB-2 Interface to the SLS

### *4.2.1 Commands*

The DB-2 interface to the SLS from the Service Broker/SCIM, the Parlay X Gateway and the Application Server SHOULD implement the following commands;-

- User-Data-Request (UDR) command as defined in 3GPP TS 29.328 [1] section 6.1.1.
- Profile-Update-Request (PUR) command as defined in 3GPP TS 29.328 [1] section 6.1.2.
- Subscribe-Notifications-Request (SNR) command as defined in 3GPP TS 29.328 [1] section 6.1.3.

NOTE: Only Request messages are sent to the SLS. The SLS only inserts the HSS address information in the Diameter message header, to allow the Service Broker/SCIM, the Parlay X Gateway or the Application Server to route the request to the correct HSS for the subscriber whom the request relates to.

Extensions to the Sh Interface for SOA will need to be described here.