



**MSFR4 Implementation Agreement for the
TC-6 interface**

MSF-IA-DIAMETER.010-FINAL

MultiService Forum Implementation Agreement

Contribution Number: msf2008.107.01
Document Filename: MSF-IA-DIAMETER.010-FINAL
Working Group: Protocol & Control
Title: MSFR4 Implementation Agreement for the TC-6 interface

Editor: David Hutton
+44 7920 271321
david.hutton@vodafone.com

Working Group Chairperson: Chris Gallon
Date: September 16, 2008

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/>

Note: Attention is called to the possibility that use or implementation of this MSF Implementation Agreement may require use of subject matter covered by intellectual property rights owned by parties who have not authorized such use. By publication of this Implementation Agreement, no position is taken by MSF as its Members with respect to the existence or validity of any intellectual property rights in connection therewith, nor does any warranty, express or implied, arise by reason of the publication by MSF of this Implementation Agreement. Moreover, the MSF shall not have any responsibility whatsoever for determining the existence of IPR for which a license may be required for the use or implementation of an MSF Implementation Agreement, or for conducting inquiries into the legal validity or scope of such IPR that is brought to its attention.

DISCLAIMER

The information in this publication is believed to be accurate as of its publication date. Such information is subject to change without notice and the MultiService Forum is not responsible for any errors or omissions. The MultiService Forum does not assume any responsibility to update or correct any information in this publication. Notwithstanding anything to the contrary, neither the MultiService Forum nor the publisher make any representation or warranty, expressed or implied, concerning the completeness, accuracy, or applicability of any information contained in this publication. No liability of any kind whether based on theories of tort, contract, strict liability or otherwise, shall be assumed or incurred by the MultiService Forum, its member companies, or the publisher as a result of reliance or use by any party upon any information contained in this publication. All liability for any implied or express warranty of merchantability or fitness for a particular purpose is hereby disclaimed.

The receipt or any use of this document or its contents does not in any way create by implication or otherwise:

Any express or implied license or right to or under any MultiService Forum member company's patent, copyright, trademark or trade secret rights which are or may be associated with the ideas, techniques, concepts or expressions contained herein; nor

Any warranty or representation that any MultiService Forum member companies will announce any product(s) and/or service(s) related thereto, or if such

announcements are made, that such announced product(s) and/or service(s) embody any or all of the ideas, technologies, or concepts contained herein; nor

Any commitment by a MultiService Forum company to purchase or otherwise procure any product(s) and/or service(s) that embody any or all of the ideas, technologies, or concepts contained herein; nor

Any form of relationship between any MultiService Forum member companies and the recipient or user of this document.

Implementation or use of specific MultiService Forum Implementation Agreements, Architectural Frameworks or recommendations and MultiService Forum specifications will be voluntary, and no company shall agree or be obliged to implement them by virtue of participation in the MultiService Forum.

For addition information contact:

MultiService Forum
48377 Fremont Blvd., Suite 117
Fremont, CA 94538 USA
Phone: +1 510 492-4050
Fax: +1 510 492-4001
info@msforum.org
<http://www.msforum.org>

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 is a new specification for MSF release 4 and GMI 2008.

Content

1. Introduction	7
2. References	8
3. General on Diameter Rx Application	9
3.1 Identification of the Rx Application	9
3.1.1 Identification of extensions to the Rx Application	9
4. Rx Interface Profile	9
4.1 TC-6 Interface between P-CSC and PCRS	9
4.1.1 Commands	9

1. Introduction

As part of GMI 2008, MSF is defining network elements and interfaces that draw heavily on the definition of PCC (Policy and Charging Control) as defined in Release 7 of 3GPP specifications. This part of the GMI 2008 architecture thus has considerable similarity to the 3GPP architecture itself and so the interfaces that 3GPP define can be greatly re-used and need only minor modifications to become applicable to their equivalent interfaces in GMI 2008. Amongst the interfaces in GMI 2008 architecture are a number that connect to the P-CSC and the PCRS. Addressed in this IA is the reference point between the PCRF and the AF that are similar to the Rx Interface defined in 3GPP TS 29.214 [1], specifically the TC-6 interface between the PCRS and P-CSC.

The definition of the Application Function, located within the MSFR4 Architecture [2] as the P-CSC, is defined within 3GPP TS 23.203 [3].

The definition of the PCRF, as located within the MSFR4 Architecture [2] as the PCRS, is defined within 3GPP TS 23.203 [3].

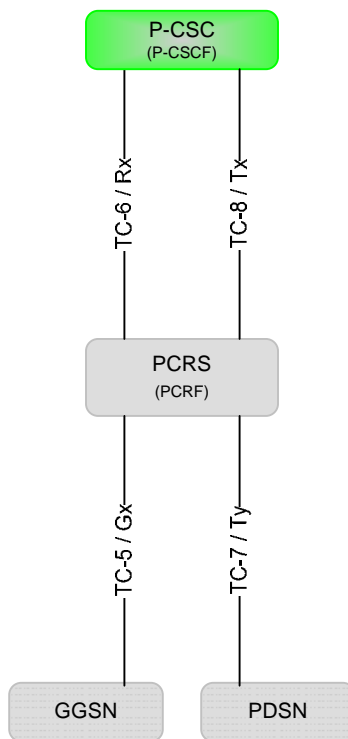


Figure 1.1: Reference points for Policy and Charging Control

The Rx interface in 3GPP is identified within in 3GPP TS 23.002 [4], and has requirements for its functionality defined in 3GPP TS 23.203 [3]. The protocol implementation on the interface is defined in 3GPP TS 29.214 [1]. The Interface is specified as a Vendor specific application that is implemented on the DIAMETER Base

Protocol (RFC3588 [5]). The TC-6 interface has very similar requirements and so can draw almost entirely on the 3GPP documents for definition.

2. References

- [1] 3GPP TS 29.212: "Policy and charging control over Rx reference point".
- [2] MSF-ARCH-004.00-FINAL: "MSF Release 4 Architecture".
- [3] 3GPP TS 23.203: "Policy and charging control architecture".
- [4] 3GPP TS 23.002: "Network architecture".
- [5] IETF RFC3588: "Diameter Base Protocol".
- [6] 3GPP TS 29.230: "Diameter applications; 3GPP specific codes and identifiers".

3. General on Diameter Rx Application

The protocol used on the Rx interface within 3GPP is defined as a Vendor-Specific Diameter Application. This means that implementations of the Rx interface SHALL support the Diameter Base Protocol as described in RFC3588 [5].

3.1 Identification of the Rx Application

At establishment of a Diameter Session, Diameter Base Protocol (RFC3588 [5]) 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 Rx Application is to be used, the nodes SHALL include the application identification of the Rx Application as described in 3GPP TS 29.230 [6].

Because Rx Application is defined by 3GPP, the nodes SHALL 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 Rx Application identity, see section 5.1 of 3GPP TS 29.214 [1]. The description for how vendor identity information is transported in Diameter messages, AVPs and in the CER/CEA exchange is defined in RFC3588 [5].

The implication of this is that manufacturers implementing the TC-6 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 Rx Application

Diameter Base Protocol (RFC3588 [5]) 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 [5].

4. Rx Interface Profile

Unless stated, implementation of TC- 6interface in MSF GMI 2008 architecture SHALL be in accordance with definitions in 3GPP TS 29.214 [1].

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 TC-6 Interface between P-CSC and PCRS

4.1.1 Commands

The TC-6 Interface between P-CSC and PCRS SHALL implement the following commands;-

- AA-Request/Answer (CCR/CCA) command pair as defined in 3GPP TS 29.214 [1] sections 5.6.1 and 5.6.2.
- Re-Auth-Request/Answer (RAR/RAA) command pair as defined in 3GPP TS 29.214 [1] section 5.6.3 and 5.6.4.
- Session-Termination-Request/Answer (STR/STA) command pair as defined in 3GPP TS 29.214 [1] section 5.6.5 and 5.6.6.
- Abort-Session-Request/Answer (ASR/ASA) command pair as defined in 3GPP TS 29.214 [1] section 5.6.7 and 5.6.8.