



**MSFR4 Implementation Agreement for the
TC-5 interface**

MSF-IA-DIAMETER.009-FINAL

MultiService Forum Implementation Agreement

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Source: Vodafone
Contributing Individual(s) - David Hutton
Contributor's phone +44 7920 271321
david.hutton@vodafone.com

Abstract:

This contribution documents the MSF Diameter based Gx Profile. More specifically, this IA is an endorsement of 3GPP TS 29.212 (Policy and Charging Control over Gx reference point).

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For addition information contact:

MultiService Forum
48377 Fremont Blvd, Suite 117, Fremont, CA 94538
(510) 492-4050
(510) 492-4001(fax)
info@msforum.org
<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 is a new specification for MSF release 4 and GMI 2008.

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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 GGSN and the PCRS. Addressed in this IA is the reference point between the PCRF and the PCEF that are similar to the Gx Interface defined in 3GPP TS 29.212 [1], specifically the TC-5 interface between the PCRS and GGSN.

The definition of the PCEF, as located within the GGSN in the MSFR4 Architecture [2], 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].

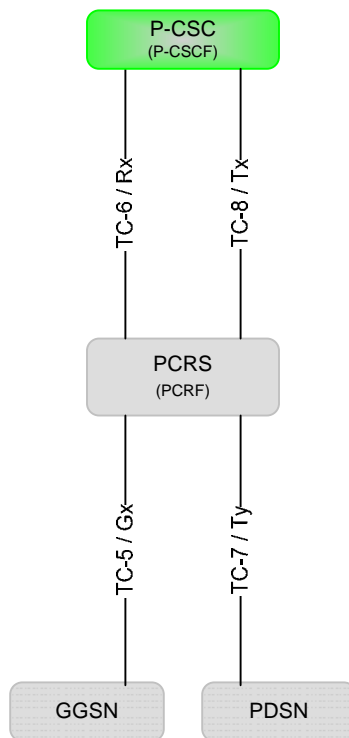


Figure 1.1: Reference points for Policy and Charging Control

The Gx 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 29.212 [1]. The Interface is

specified as a Vendor specific application that is implemented on the DIAMETER Base Protocol (RFC3588 [5]). The TC-5 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 Gx 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 Gx Application

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

3.1 Identification of the Gx 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 Gx Application is to be used, the nodes SHALL include the application identification of the Gx Application as described in 3GPP TS 29.230 [6].

Because Gx 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 Gx Application identity, see section 5.1 of 3GPP TS 29.212 [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-5 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 Gx 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. Gx Interface Profile

Unless stated, implementation of TC-5 interface in MSF GMI 2008 architecture SHALL be in accordance with definitions in 3GPP TS 29.212 [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-5 Interface between PCRS and GGSN

4.1.1 Commands

The TC-5 Interface between PCRS and GGSN SHALL implement the following commands;-

- Command-Code-Request/Answer (CCR/CCA) command pair as defined in 3GPP TS 29.212. [1] section 5.6.2 and 5.6.3.
- Re-Auth-Request/Answer (RAR/RAA) command pair as defined in 3GPP TS 29.212 [1] section 5.6.4 and 5.6.5.