



MSF Release 2 Implementation Guidelines

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Abstract

The *MSF Release 2 Implementation Guidelines* are intended to assist Service Providers and their Vendors evolve their networks with MSF compliant solutions. MSF Members who are able to demonstrate equipment that is compliant with the Release 2 Architecture and the supporting Implementation Agreements can claim MSF R2 “Compliance” and use the MSF R2 Logo on that equipment.

Introduction

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

The MSF activities include developing MSF Implementation Agreements, promoting worldwide compatibility and interoperability Events, and encouraging input to appropriate national and international standards bodies.

In so doing we aim to

- 1) Accelerate the deployment of open communications systems that realize economic benefits, resulting in the flexible support of a full range of network services using multiple infrastructure technologies.
- 2) Focus on the development of architectures and industry agreements that enable interoperability and innovation in a rapidly evolving environment.

The MSF recognizes that a fully standardized multi-service network is the result of an evolutionary process that can be accelerated by appropriate collaboration. Through such collaboration, technical understanding grows and businesses and networks can be procured & built more cost effectively than otherwise would be the case.

Much of the MSF's work is directed towards developing Implementation Agreements (IA's) that further this mission and simplify the process of specifying, procuring & integrating modular, multi-service, multi-technology, multi-vendor systems. A key aspect

of this approach is to leverage the work of other industry bodies, which have also developed standards and protocols that support this goal.

The MSF Architecture provides the essential framework and common semantic for the definition of a multi-service network. Definition of a set of Physical Architecture implementations within this framework enables MSF members to focus on a common bounded set of commercially viable scenarios.

MSF Implementation Agreements (IA's) help get the right focus on key protocols and ensure interoperability between components from different vendors, by specifying options and required functionality for key interfaces.

The Global MSF Interoperability (GMI) Program (especially the high profile GMI 2002 & GMI 2004 events) provide an opportunity to put the components together in a multi-vendor, end-to-end network deployment scenario, and verify that everything interoperates.

All of this puts the MSF at the forefront of helping define the telecommunications network of the future.

This document provides the second set (Release 2) of guidelines that service providers and their suppliers should use to claim "Compliance" to the Architecture and IA's resulting from the MSF 2003/4 work program that culminated in GMI2004. The MSF expects to release revised sets of guidelines as the industry matures and further Implementation Agreements (IA's) become deployable.

Evolutionary Stages

Multi-service networks provide the industry with an option for sharing transmission and switching between multiple services in a flexible manner. There are capital and operational cost benefits that can be achieved through this approach.

A significant value proposition of these networks is the inherent ability to add additional services at marginal cost. This value proposition is strengthened if the network is architected to enable modules to be provided by different vendors. The network integration costs of using multiple vendors are reduced by using open protocols and interfaces and through the development of standardized profiles that guarantee interoperability.

Some implementations of multi-service switched networks have evolved and will continue to evolve through many stages. The stages that have been seen in this evolution may be categorized as:

Proprietary Protocols – The network is built using proprietary protocols, but achieves the benefits of shared switching and transmission resources.

Multi-vendor Protocols – The network uses open protocols that are published either by a standards body or an industry forum. This allows multiple vendors to be integrated into the network to further extend its capabilities. This integration typically requires the parties to agree on the precise options of each protocol.

Standardized Protocols – The network uses open protocols with well-defined profiles. This allows other vendors to be integrated into the network in a systematic fashion with minimum network integration cost and complexity.

The same principles of operation are applied in both releases of the MSF architecture. However due to changes in the underlying protocols, such as SIP, which is constantly evolving, it is not possible to achieve true backwards compatibility between Release 2 and the earlier Release 1.

The MSF encourages this evolution and supports the latter two phases of this evolution in the MSF Implementations Guidelines with the goal of accelerating the full availability of standard protocols.

High Level Guidelines

The *MSF Release 2 Implementation Guidelines* are consistent with the architecture documented in the *MSF Architecture Release 2 Implementation Agreement*. The work of the MSF in support of these documents was driven by an initial focus on the following key topics:

- IP core network QoS
- Advanced services
- Interworking with legacy PSTN
- Multiple carrier QoS enabled solutions
- Global advanced services interoperability
- IPv4/IPv6 inter-working where applicable

MSF Architecture Release 2

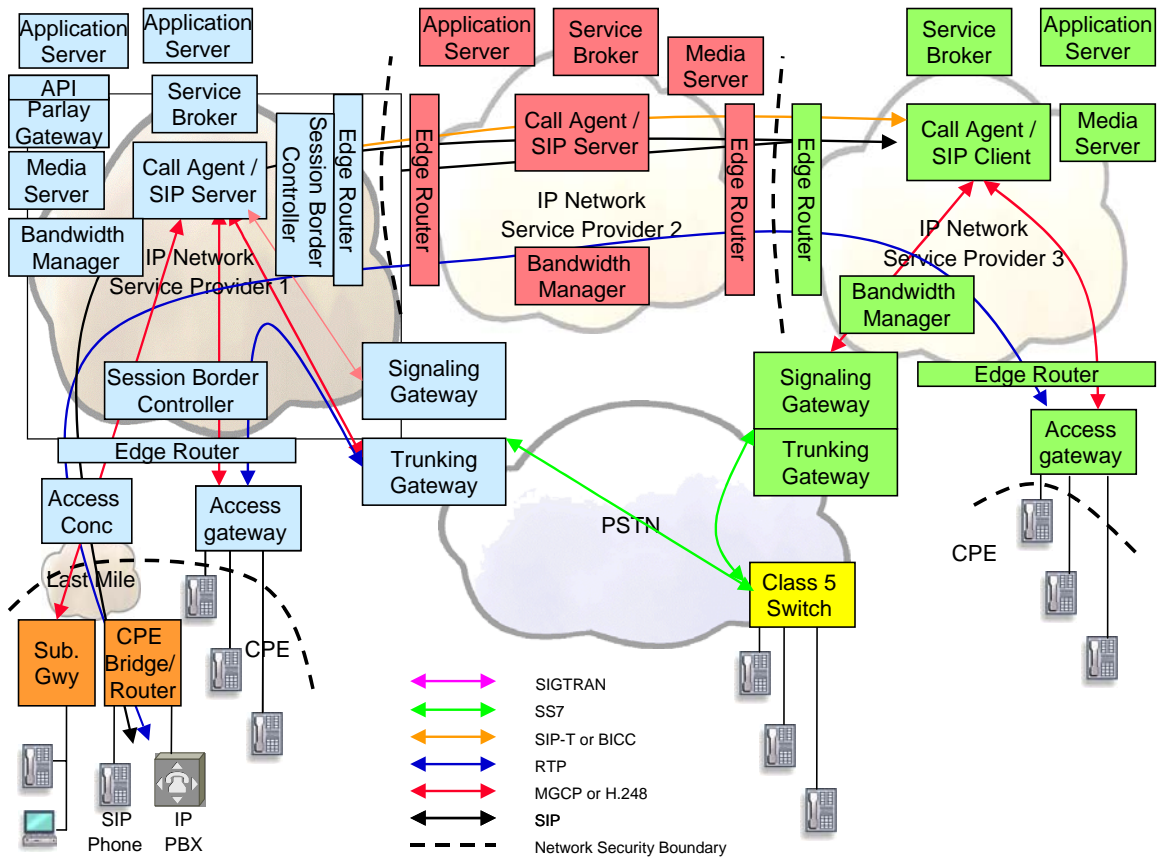


Figure 1 - MSF Release 2 Architectural Framework

The MSF architecture is intended for the support of a rich set of services including: -

- Call Screening
- Do Not Disturb
- DTMF Detection
- Find Me
- Voice Mail
- 3 Way Calling
- Click to Dial
- Conversational Video
- Video Conferencing

Support for Modular Architecture

The MSF recognizes that economic implementation of the MSF Architecture may result in physical & logical separation or combination of key network elements. Such elements include:

Access Concentrators, Access, Trunk & Signaling Gateways

Edge Routers

Session Border Controllers

Bandwidth Managers

Call Agents

SIP, Media & Application Servers

Service Brokers

Parlay Gateways

Support for Multi-vendor Protocols

The MSF recommends the use of multi-vendor protocols that are documented by standards bodies and industry fora. This provides greater network flexibility and will improve the market opportunities for service providers and vendors.

Support for MSF Release 2 Architecture requires that multi-vendor protocols be used for bearer, control and network management together with the MSF Implementation Agreements where available.

Table 1 contains a list of MSF Release 2 Implementation Agreements.

Table 1 List of Implementation Agreements	MSF Document
Megaco IA Between a Call Agent and an IP Trunking Gateway	Msf2004.073.02
H.248 Line Side Access Gateway	Msf2004.175.00
H.248 UK Access Gateway	Msf2003.117.03
Gate Control using H.248	Msf2004.032.02
MGCP VoIP between a Call Agent and a User Agent	Msf2003.073.04
MGCP CA - TGW	Msf2004.029.02
NRCP Network Resource Control Protocol (formerly DRIP Dynamic Resource Initiation Protocol)	Msf2004.118.02
Parlay/OSA API	Msf2004.052.05
IA of Parlay X API	Msf2004.059.03
SIP Core Profile, for Voice over IP	Msf2004.035.04
SIP for the CA to UA Interface	Msf2004.042.02
SIP Call Agent to Call Agent	Msf2004.041.04

SIP Call Agent to Service Broker Interface	Msf2004.064.06
SIP Service Broker to Application Server	Msf2004.063.06
SIP Media Server Interface	Msf2004.006.03
SIP Call Agent to Bandwidth Manager	Msf2004.027.03
SIP Media Server interface using the advanced audio package for value added services	Msf2004.120.03
Core SIP profile based on IPv6 for voice over IP and video calls	Msf2004.124.01
SIP-T Profile for Media Gateway Controller	Msf2004.030.03

Claiming Compliance with MSF Release 2 Architecture & Implementation Agreements

Accountability for claiming support for MSF Release 2 Architecture is the responsibility of the company making the claim. For its part the MSF provides guidelines that companies can use to validate their claims. The following checklist has been developed to serve that purpose. It should be noted that this checklist is a step in the evolution toward the MSF vision. As such, some requirements may still be relatively general at this time due to the maturity of particular standards and technology.

MSF Members whose equipment is compliant with the Release 2 Architecture and the supporting Implementation Agreements can claim MSF R2 “Compliance” and use the MSF R2 Logo on that equipment.

The following definition is utilized in the below requirements: **MUST** - The requirement is mandatory for support of the *MSF Release 2 Architecture*.

Generic Requirements: All requirements in this section **MUST** be met for any device that would claim support for *MSF Release 2 Architecture*.

- Req. 1.1: **MUST** support the functional requirements of MSF Architecture Release 2
- Req. 1.2: **MUST** allow the physical separation of components in support of the MSF Release 2 Architecture.
- Req. 1.3: **MUST** utilize proven MSF IA’s for interoperability between components. Detailed multi-vendor protocol and IA’s are listed in Table 2. All of the following criteria **MUST** be met to be for equipment to be considered a “proven multi-vendor protocol”.
 - o Req. 1.3.1: Protocol **MUST** be documented and available to general industry
 - o Req. 1.3.2: Protocol **MUST** be published by an open membership standards body or industry forum

- Req. 1.3.3: Interoperability of independently developed implementations between 2 or more legally unique vendors MUST be demonstrated using OPEN Interfaces and Protocols. Acceptable demonstrations include North American and other industry interoperability events, IP and PSTN Service Providers labs, and/or Supplier labs.
- Req. 1.4: Component MUST support management access via proven multi-vendor mechanisms (e.g. SNMP, CORBA, XML, TL1) in a secure manner.

Network Components

Table 2 shows the MSF IA that must be supported between MSF Release 2 Architecture Network components in order for a Vendor to claim compliance.

Network Component	To Network Component	MSF IA
<u>Access Concentrator</u>	<u>Call Agent</u>	<u>MGCP or H248</u>
<u>Access Gateway</u>	<u>Call Agent</u>	<u>MGCP or H248</u>
<u>Edge Router</u>	<u>Bandwidth Manager</u>	<u>QOS IA- H.248 EMP or QoS IA - MSF modified GCP</u>
<u>Session Border Controller</u>	<u>Bandwidth Manager</u>	<u>QOS IA - H.248 EMP or QoS IA - MSF modified GCP</u>
<u>Bandwidth Manager</u>	<u>Call Agent</u>	<u>COPS or SIP</u>
	<u>Core Router</u>	<u>QOS IA</u>
	<u>Edge Router</u>	<u>QOS IA - H.248 EMP or QoS IA - MSF modified GCP</u>
	<u>Session Border Controller</u>	<u>QOS IA - H.248 EMP or QoS IA - MSF modified GCP</u>
<u>Trunk Gateway</u>	<u>Call Agent</u>	<u>MGCP or H248</u>
<u>Signalling Gateway</u>		<u>Sigtran or proprietary</u>
<u>Call Agent</u>	<u>Service Broker</u>	<u>SIP</u>
	<u>Trunk Gateway</u>	<u>MGCP or H248</u>
	<u>Bandwidth Manager</u>	<u>COPS or SIP</u>
	<u>Access Gateway</u>	<u>MGCP</u>

	<u>Call Agent</u>	<u>SIP</u>
<u>SIP Server</u>		<u>SIP</u>
<u>Service Broker</u>	<u>Application Server</u>	<u>SIP</u>
	<u>Call Agent</u>	<u>SIP</u>
	<u>Media Server</u>	<u>MGCP or SIP</u>
<u>Media Server</u>	<u>Service Broker</u>	<u>MGCP or SIP</u>
<u>Parlay Gateway</u>		
<u>Application Server</u>	<u>Service Broker</u>	<u>SIP</u>

For equipment to claim support for the *MSF Release 2 Architecture*, all requirements in Section 1 **MUST** be met and for inter-working between components at least one of the listed IA's in Table 2 must have been demonstrated for each of the interfaces. Detail of each Implementation Agreement can be found in the related IA documentation see Table 1.

Conclusion

This document is second of a series of MSF guidelines providing implementation assistance to service providers and suppliers. The primary intent is to clarify what is meant by "MSF Release 2" compliance & assist in the evolution of networks and equipment with the goal of providing simpler & more economic procurement, integration and operation of flexible next generation network platforms capable of supporting a full range of diverse services.

MSF Member Vendors who are able to demonstrate equipment that is compliant with the Release 2 Architecture and the supporting Implementation Agreements can claim MSF R2 "Compliance" and use the MSF R2 Logo on that equipment.

Future work of the MSF includes development of the multi-service network to embrace Fixed/Mobile convergence, Service Architecture and Service Assurance. As this work progresses the MSF Architecture and IA's will be updated together with this document.

Companies can contribute to future releases of these Implementation Guidelines as well as other Implementation Agreements through membership of the MultiService Forum. The MSF may be contacted at info@msforum.org.