S-SBG/P-CSC/BWM to D-SBG Interface Implementation Agreement; H.248 Profile Version 2 for Distributed Session Border Gateways

MSF-IA-MEGACO.016-FINAL

MultiService Forum
Implementation Agreement

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Title: S-SBG/P-CSC/BWM to D-SBG Interface Implementation Agreement; H.248 Profile Version 2 for Distributed Session Border Gateways

Editor: Albrecht Schwarz
+49 711 821 41425
albrecht.schwarz@alcatel-lucent.de

Working Group Chairperson: Chris Gallon
Date: August 19, 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.

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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

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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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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

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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

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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-MEGACO.009-FINAL** [29]

See also clause i.3.

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i Introduction

i.1 Overview

<SAME as in “MSF_BGF/1”>:

Session Border Gateways (SBG) are required to support a distributed model in order to provide an evolution path to converged network architectures. The distributed model provides a physical separation of the signaling and media functions, as defined in “MSF Session Border Gateway Requirements” [30], and shown in Figure i.1.

An SBG can be logically split into two portions, namely a signaling path function (Signaling SBG function or **S-SBG**) and a data path function (Data Path SBG function or **D-SBG**). This split gives much clarity when trying to address what functions are addressed by different types of SBGs. These two functions:

- May co-reside within the same physical component with no standard interface (**Integral Model**)
- May co-reside within the same physical component with a standard interface (**Integrated Model**)
- May be physically separated into components, with a standard interface (**Distributed Model**).

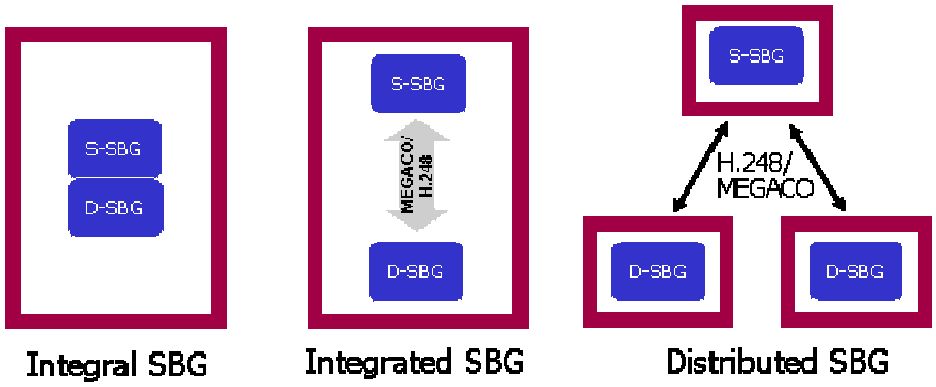

Figure i.1. SBG Models

This IA describes the abstracted properties, in form of an H.248 Profile (see part II "Profile Definition") required to create the interface between the S-SBG and the D-SBG, in the Distributed Model. The integral and integrated SBG models are mentioned in the SBG requirements specification [30], but both are out of scope of this IA.

i.2 Detailed Distributed Model

<SAME as in “MSF_BGF/1”>:

Figure I.2 illustrates the "distributed SBG" in more detail. The distributed network entities are communicating via a control interface according ITU-T Rec. H.248.1. The SBG is decomposed into

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S-SBG and D-SBG elements from H.248 perspective. The S-SBG is playing the "MGC role", and the D-SBG the "MG role", again from pure H.248 point of view.

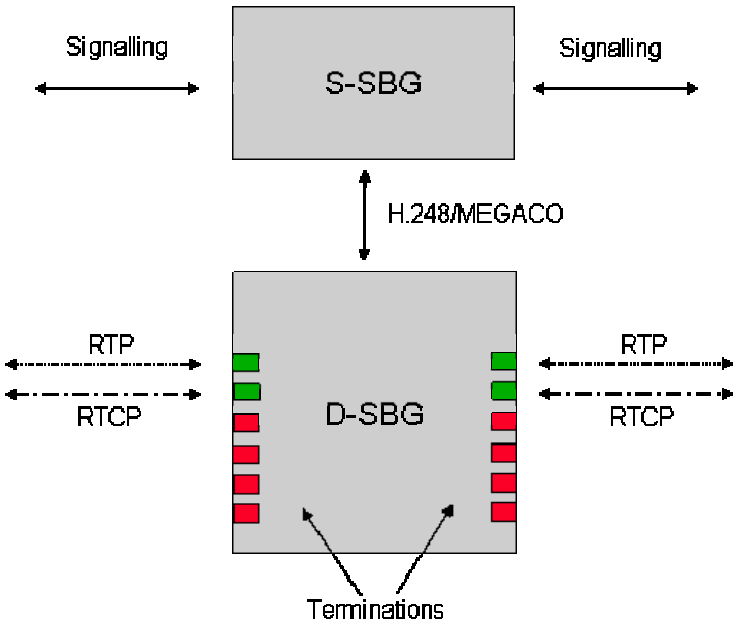

Figure i.2. Distributed SBG Model

NOTE: “RTP” is just an example, the H.248 profile is also supporting non-RTP IP streams.

The H.248 interface (relates here to MSF TC-1 interface) is defined ("profiled") by using the Profile concept of H.248 (see § 13/H.248.1). The Profile definition is contained in the next chapter, and follows the proposed "Profile template" format according Appendix III/H.248.1 Version 3.

It has to be noted that the ratio of "S-SBG"-to-"D-SBG" may be in general 1:N, with N greater or equal to one.

i.3 NGN Alignment – Baseline for H.248 Profile

This Profile is called "**H.248 Profile for Distributed Session Border Gateways**" with scope on **MSF R3/R4 "TC-1"** interface.

This MSF Profile for MSF R4 is based on the the MSF R3 Profile and ETSI TISPAN R2 Profile. This approach facilitates alignment between both NGN architectures. The MSF Profile will be an extension of the ETSI Profile because the a) SBG requirements for MSF NGN R3/R4 [30, 31, 32] going beyond the scope of ETSI TISPAN R2 and b) support of the additional capability according [35]. An MSF-specific Profile Identifier is therefore used.

Figure I.3 illustrates the profile history (since around 2002) and dependencies between the different profile specifications. The righthand side indicates the roadmap of MSF-defined profiles, the left-hand side the ones from ETSI TIPHON and TISPAN. It may be noted that any alignment with ETSI TISPAN R3 is out of scope for this IA, i.e. TISPAN work on H.248 Ia Profile Version 3 is not considered.

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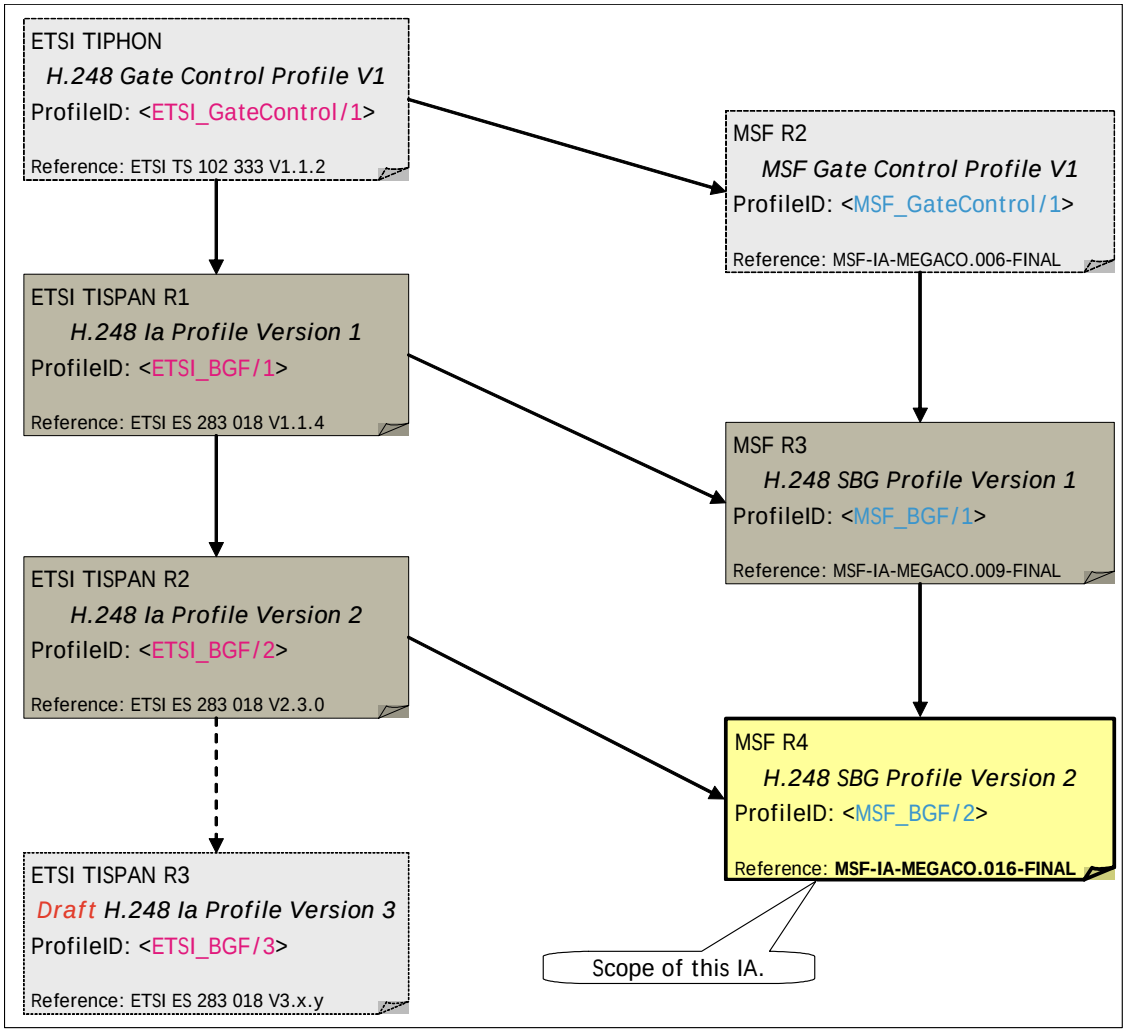

Figure i.3. Profile history and dependencies –
Roadmaps of MSF and ETSI TISPAN profiles for IP-to-IP gateways

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ii Profile Definition

The present document endorses the two profile definitions **ETSI ES 283 018** [28] and **MSF-IA-MEGACO.009-FINAL** [29] and merges them into a single profile specification. Where implementation detail is not provided within this IA, **ETSI ES 283 018** [28] implementation specification shall take precedence over that in other specifications.[1]

Except where otherwise indicated, each section that follows has the same number as the section of **ETSI ES 283 018** [28] which it modifies.

The following **notation** is used to identify the differing types of changes or modifications used compared to the profile pre-decessor specifications in **ETSI ES 283 018** [28] and **MSF-IA-MEGACO.009-FINAL** [29], and new requirements (not already covered by **ETSI ES 283 018** [28]) as a result of the MSF Release 4 (see also Figure II.1):

<AP>	Indicates a provision which adds precision, but no new normative content.
<SAME as in "ETSI_BGF/2">	Capability identical to H.248 Ia Profile Version 2 according **ETSI ES 283 018** [28].
<SAME as in "MSF_BGF/1">	Capability identical to H.248 SBG Profile Version 1 according **MSF-IA-MEGACO.009-FINAL** [29].
<NEW due to "MSF R4">	Indicates new normative content (NOTE). <NEW> in a section header indicates that the section heading is new relative to **ETSI ES 283 018** [28].
<CHG>	Indicates changed normative content.
NOTE – "New normative content" relates to capabilities which may be not covered **already** by **ETSI ES 283 018** [28]. Status 01/2008: **ETSI ES 283 018** [28] may satisfy all required capabilities for MSF R4.	

[1] Because the TISPAN R2 profile ETSI ES 283 018 [28] is in many areas a superset with regards to the MSF R3 profile MSF-IA-MEGACO.009-FINAL [29].

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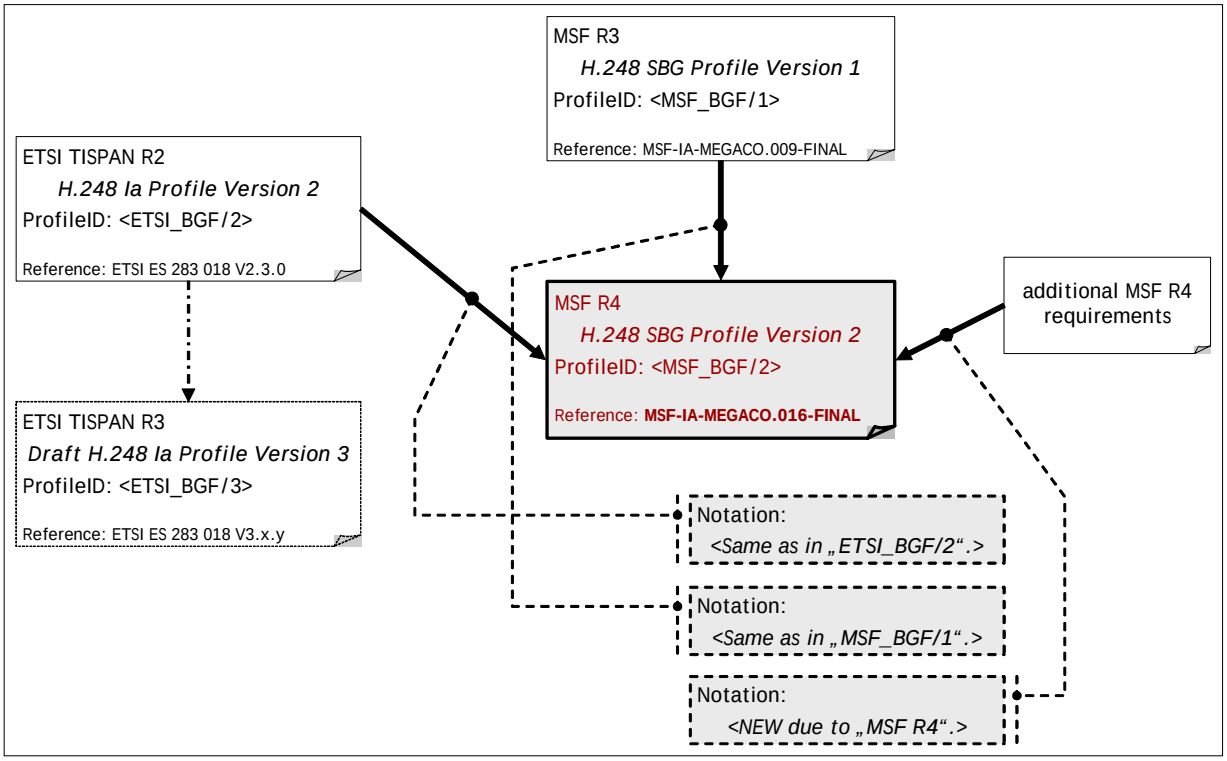

Figure ii.1. Profile dependencies – Notation

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.

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MSF Release 4
—
H.248 Profile Version 2 for Distributed Session Border Gateways

1 Scope

<SAME as in “MSF_BGF/1”>

2 References

The following references are shown specifically for use in this IA, but are **redundant** to **ETSI ES 283 018** [28]:

[1] ITU-T Recommendation H.248.1 (2005): "Gateway control protocol: Version 3".

[2] ETSI TS 102 333: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Gate control protocol".

[3] ETSI ES 282 003: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Resource and Admission Control Sub-system (RACS); Functional Architecture".

[4] ITU-T Recommendation H248.45 (5/2006): "Gateway control protocol: MGC Information Package".

[5] ITU-T Recommendation H.460.18: "Traversal of H.323 signalling across network address translators and firewalls".

[6] IETF RFC 4234: "Augmented BNF for Syntax Specifications: ABNF".

[7] IETF RFC 3264: "An Offer/Answer Model with Session Description Protocol (SDP)".

[8] IETF RFC 2663: "IP Network Address Translator (NAT) Terminology and Considerations".

[9] ITU-T Recommendation H.248.37 (9/2005): "Gateway control protocol: IP NAPT traversal package".

[10] ITU-T Recommendation H.248.54 (8/2007): "Gateway control protocol: MPLS Support package".

[11] ITU-T Recommendation H.248.56 (8/2007): "Gateway control protocol: Packages for VPN Support".

[12] ITU-T Recommendation H.248.40 (1/2007): "Gateway control protocol: Application Data Inactivity package".

[13] ITU-T Recommendation H.248.14 (3/2002): "Gateway control protocol: Inactivity Timer package".

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[14] ITU-T Recommendation Q.3303.2 (8/2007): “Protocol at the Interface between a Policy Decision Physical Entity (PD-PE) and a Policy Enforcement Physical Entity (PE-PE) (Rw Interface): H.248 Alternative”.

[15] ITU-T Recommendation H.248.11 (11/2002): "Gateway control protocol: MG Overload Control package".

[16] ITU-T Recommendation H.248.41 (5/2006): "Gateway control protocol: IP Domain Connection package".

[17] ITU-T Recommendation H.248.52 (x/2008): "Gateway control protocol: QOS Support packages".

[18] ITU-T Recommendation H.248.43 (x/2008): "Gateway control protocol: Gate Management and Gate Control packages".

[19] ITU-T Recommendation H.248.53 (x/2008): "Gateway control protocol: Traffic Management packages".

[20] Not Used.

[21] Not Used

[22] ETSI ES 283 018 V1.1.4 (8/2007): “Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Resource and Admission Control: H.248 Profile for controlling Border Gateway Functions (BGF) in the Resource and Admission Control Subsystem (RACS); Protocol specification”.

[23] ITU-T Recommendation H.248.49 (08/2007): "Gateway control protocol: Session Description Protocol RFC and Capabilities Packages".

[24] ITU-T Recommendation H.248.36 (09/2005): "Gateway control protocol: Hanging Termination Detection package ".

[25] ITU-T Recommendation H.248.47 (01/2007): "Gateway control protocol: Statistic Conditional Reporting Package".

[26] ETSI TR 183 025 V2.0.0 (05/2007): “TISPAN NGN Release 2; H.248 Non-Call Related Procedures and Management System Interaction”.

[26] IETF RFC 2327: "SDP: Session Description Protocol".

[27] IETF RFC 4566: "SDP: Session Description Protocol".

<NEW> The following references are additional to those in **ETSI ES 283 018** [28]:

[28] ETSI ES 283 018 V2.3.0 (2007-12): “Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Resource and Admission Control: **H.248 Profile for controlling Border Gateway Functions (BGF) in the Resource and Admission Control Subsystem (RACS); Protocol specification”.**

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[29] MSF-ARCH-009.00-FINAL: “S-SBG/P-CSC to D-SBG Interface Implementation Agreement; H.248 Profile Version 1 for Distributed Session Border Gateways”.

[30] MSF-PS-SBG.001-FINAL: **“MSF Session Border Gateway Requirements”.**

[31] MSF-ARCH-003.00-FINAL: “**MSF Release 3 Architecture”.**

[32] MSF-ARCH-xxx.00-FINAL: “**MSF Release 4 Architecture”.**
Draft msf2008.045

[33] ITU-T Recommendation H.248.45 (05/2006): “Gateway control protocol: MGC information Package”.

[34] IETF RFC 4733 (12/2006): “RTP Payload for DTMF Digits, Telephony Tones and Telephony Signals”.

[35] MSF-ARCH-014.00-FINAL: “Implementation Agreement for explicit SIP signaling pinhole control via H.248 as a supplement document of H.248 IA”.

3 Terms and Definitions

3.1 Definitions

<SAME as in “ETSI_BGF/2”>

<AP> The "BGF" entity in ETSI ES 283 018 [28] relates to the D-SBG entity from H.248 Profile perspective.
The "SPDF" entity in ETSI ES 283 018 [28] relates to the S-SBG, P-CSC or SPDS (Session Policy Decision Server) entity from H.248 Profile perspective.

3.2 Abbreviations

<NEW> The following references are additional to those in **ETSI ES 283 018** [28]:

BWM	Bandwidth Manager
CALEA	Communications Assistance for Law Enforcement Act
D-SBG	Data-Path SBG
ETSI	European Telecommunications Standards Institute
IA	Implementation Agreement
MSF	MultiService Forum
PaRe	Packet Relay
PaTh	Pass-Through
P-CSC	Proxy Call and Session Controller
S-SBG	Signalling SBG
SBG	Session Border Gateway

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4 Applicability

4.1 Architecture

No change.

<AP> MSF R4 is the correspondent NGN architecture. Scope of this Profile is "TC-1" (also known/denoted as “Ia” in [32]).

4.2 Relation with the explicit SIP signaling pinhole control method in D-SBGs as defined by MSF-ARCH-014.00-FINAL

Principal concept: <SAME as in “MSF_BGF/1”>

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5 Profile Description

5.1 Profile Identification

This Profile name SHALL be "**MSF_BGF**" and its version shall be **2**. The MSF Profile is based on Profile "**ETSI_BGF/2**" as defined in ETSI ES 283 018 [28]. The defined Profile capabilities are given by the MSF SBG requirements specification [30] and [32].

NOTE: The profile will be registered at IANA (see http://www.iana.org/assignments/megaco-h248).

5.2 Summary

<SAME as in “ETSI_BGF/2”>

5.3 Gateway Control Protocol Version

<SAME as in “ETSI_BGF/2”>

<NEW> H.248.1 V2 may be chosen as minimum protocol version in the case of no Version 3 capabilities being used. The ServiceChange based procedures for registration and re-registration would then stop at V2 level.

5.4 Connection Model

<SAME as in “ETSI_BGF/2”>.

5.5 Context Attributes

<SAME as in “ETSI_BGF/2”>.

5.6 Terminations

5.6.1 Termination Names

<SAME as in “ETSI_BGF/2”>.

5.6.2 Multiplexed terminations

<SAME as in “ETSI_BGF/2”>.

5.7 Descriptors

5.7.1 TerminationState Descriptor

<SAME as in “ETSI_BGF/2”>.

5.7.2 Stream Descriptor

<SAME as in “ETSI_BGF/2”>.

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5.7.2.1 LocalControl Descriptor

<SAME as in “ETSI_BGF/2”>.

5.7.3 Events Descriptor

<SAME as in “ETSI_BGF/2”>.

5.7.4 EventBuffer Descriptor

<SAME as in “ETSI_BGF/2”>.

5.7.5 Signals Descriptor

<SAME as in “ETSI_BGF/2”>.

5.7.6 DigitMap Descriptor

<SAME as in “ETSI_BGF/2”>.

5.7.7 Statistics Descriptor

<SAME as in “ETSI_BGF/2”>.

5.7.8 ObservedEvents Descriptor

<SAME as in “ETSI_BGF/2”>.

5.7.9 Topology Descriptor

<SAME as in “ETSI_BGF/2”>.

5.7.10 Error Descriptor

<SAME as in “ETSI_BGF/2”>.

5.8 Command API

<SAME as in “ETSI_BGF/2”>.

5.8.1 Add

<SAME as in “ETSI_BGF/2”>.

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5.8.2 Modify

<SAME as in “ETSI_BGF/2”>.

5.8.3 Subtract

<SAME as in “ETSI_BGF/2”>.

5.8.4 Move

<SAME as in “ETSI_BGF/2”>.

5.8.5 AuditValue

<SAME as in “ETSI_BGF/2”>.

5.8.6 AuditCapabilities

<SAME as in “ETSI_BGF/2”>.

5.8.7 Notify

<SAME as in “ETSI_BGF/2”>.

5.8.8 ServiceChange

<SAME as in “ETSI_BGF/2”>.

5.8.9 Manipulating and auditing context attributes

<SAME as in “ETSI_BGF/2”>.

5.9 Generic command syntax and encoding

<SAME as in “ETSI_BGF/2”>.

5.10 Transactions

<SAME as in “ETSI_BGF/2”>.

5.11 Messages

<SAME as in “ETSI_BGF/2”>, i.e. **Text-encoding** is mandatory..

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5.12 Transport

<SAME as in "MSF_BGF/1">, i.e. **UDP** is mandatory.

5.13 Security

<SAME as in "MSF_BGF/1">..

5.14 Packages

Semantic of key words "*mandatory*" and "*optional*" in the context of detailed package usage specifications: <SAME as in "ETSI_BGF/2">.

5.14.1 Overview

<SAME as in "ETSI_BGF/2">.

= **Mandatory** Packages: <SAME as in "MSF_BGF/1">
plus *ipdc* v1.

= **Optional** Packages: <SAME as in "MSF_BGF/1">
plus *adid* v1, *hangterm* v1, *scr* v1 and *gm* v2.

There is thus not any NEW (mandatory or optional) package introduced by MSF R4. Leading to following summary, see Tables 67 and 68:

Table 67: Mandatory Packages

Mandatory Packages:		
Package Name	Package ID	Version
Generic	g	2
Base root	root	2
Network	nt	1
Diffserv	ds	1
Gate management	gm	1
Traffic management	tman	1
IP NAPT traversal	ipnapt	1
IP Domain Connection	ipdc	1

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Table 68: Optional Packages

Optional Packages:			
Package Name	Package ID	Version	Support dependent on:
MPLS	mpls	1	Support of MPLS label stacks- i.e., Label Switched Paths terminated by the MG and related to the H.248 termination.
VLAN	vlan	1	Support of VLAN tags and/or Ethernet priorities
MGC Information	mgcinfo	1	Support of MGC related recovery.
Inactivity Timer	it	1	Only applicable for UDP transport.
Segmentation	seg	1	Applicable for UDP transport where sufficiently large messages are required to be supported.
RTP	rtp	1	Support of usage metering and statistics reporting. Particular package capabilities are only applicable for “media-aware” bearer connections.
Application Data Inactivity Detection	adid	1	MGC requires to be explicitly informed of a cessation of an application data flow.
Media Gateway Overload Control	ocp	1	Support of message throttling, based on rate limitation, from MGC towards MG.
Hanging Termination Detection	hangterm	1	Support of Hanging Termination Detection
Statistics Conditional Reporting	scr	1	Support of real time reporting of specific statistics based on a particular condition. This package may be supported as an operator option.
Gate management	gm	2	Support of filtering based on source port range

5.14.2 Package Usage Information

5.14.2.1 Generic Package

<SAME as in “ETSI_BGF/2”>

5.14.2.2 Base Root Package

<SAME as in “ETSI_BGF/2”>

5.14.2.3 Network Package

<SAME as in “ETSI_BGF/2”>

5.14.2.4 Differentiated Services Package

<SAME as in “ETSI_BGF/2”>

5.14.2.5 Gate Management Package

<SAME as in “ETSI_BGF/2”>

5.14.2.6 Traffic Management Package

<SAME as in “ETSI_BGF/2”>

5.14.2.7 IP NAPT Traversal Package

<SAME as in “ETSI_BGF/2”>

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5.14.2.8 MPLS Package

<SAME as in “ETSI_BGF/2”>

5.14.2.9 VLAN Package

<SAME as in “ETSI_BGF/2”>

5.14.2.10 MGC Information Package

<SAME as in “ETSI_BGF/2”>

5.14.2.11 Inactivity Timer Package

<SAME as in “ETSI_BGF/2”>

5.14.2.12 Segmentation Package

<SAME as in “ETSI_BGF/2”>

5.14.2.13 RTP Package

<SAME as in “ETSI_BGF/2”>

5.14.2.15 IP Domain Connection Control Package

<SAME as in “ETSI_BGF/2”>

5.14.2.16 Media Gateway Overload Control Package

<SAME as in “ETSI_BGF/2”>

5.14.2.17 Hanging Termination Detection Package

<SAME as in “ETSI_BGF/2”>

5.14.2.18 Statistic Conditional Reporting Package

<SAME as in “ETSI_BGF/2”>

5.15 Mandatory support of SDP and Annex C information elements

<SAME as in “ETSI_BGF/2”>

<AP> Note: "Annex C" relates to H.248.1 Annex C "Tags for Media Stream Properties".

<AP> The *address type* value in the SDP "c=" line may be either "IP4" or "IP6". This allows to perform all permutations of address translations concerning the IP version (IPv4↔ IPv6 address translation, IPv4↔ IPv4 address translation and IPv6↔ IPv6 address translation).

5.16 Optional support of SDP and Annex C information elements

<SAME as in “ETSI_BGF/2”>

5.16.1 Media Types (Codecs)

<SAME as in “MSF_BGF/1”>

5.16.1.1 DTMF Codec

<SAME as in “MSF_BGF/1”>

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5.16.1.2 Audio Codec Types

<SAME as in “MSF_BGF/1”>

5.16.1.3 VBD Codec: V.152

<SAME as in “MSF_BGF/1”>

5.16.1.4 Clearmode Codec: RFC 4040

<SAME as in “MSF_BGF/1”>

5.16.1.5 Video Codec Types

<SAME as in “MSF_BGF/1”>

5.17 Overview of Procedures

5.17.1 Overview of Session Dependent Procedures

5.17.1.1 Gate Control

<SAME as in “ETSI_BGF/2”>

5.17.1.2 Allocation and Translation of IP Addresses, Ports and Versions (NAPT-PT)

<SAME as in “ETSI_BGF/2”>

5.17.1.3 Support of Hosted NAT Traversal

<SAME as in “ETSI_BGF/2”>

5.17.1.4 QoS Marking

<SAME as in “ETSI_BGF/2”>

5.17.1.5 Bandwidth Control – Reservation, Allocation and Policing

<SAME as in “ETSI_BGF/2”>

5.17.1.6 Usage Metering and Statistics Reporting

<SAME as in “ETSI_BGF/2”>

5.17.1.7 RTCP Handling

<SAME as in “ETSI_BGF/2”>

5.17.1.8 RTCP Forwarding

<SAME as in “ETSI_BGF/2”>

5.17.1.9 Media Inactivity

<SAME as in “ETSI_BGF/2”>

5.17.1.10 IP Realm/Domain Indication

<SAME as in “ETSI_BGF/2”>

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5.17.1.11 Two-Stage BGF Resource Reservation

<SAME as in "ETSI_BGF/2">

5.17.1.12 Hanging Termination Detection

<SAME as in "ETSI_BGF/2">

5.17.1.13 Real Time Statistics Reporting

<SAME as in "ETSI_BGF/2">

5.17.1.14 Transcoding

<SAME as in "ETSI_BGF/2">

5.17.2 Overview of Session Independent Procedures

<CHG>

5.17.2.1 Introduction – Relation to TR 183 025

<SAME as in "ETSI_BGF/2">

5.17.2.2 Session-independent procedures

<SAME as in "ETSI_BGF/2">

5.17.2.3 MG Overload Control: Rate limitation of H.248 Messages from MGC-to-MG

<SAME as in "ETSI_BGF/2">

5.17.2.3.1 Rate limitation of H.248 Messages from MGC-to-MG

H.248.11 may be used for throttling of H.248 messages from MGC to MG.

5.17.2.3.2 Rate limitation of H.248 Messages from MG-to-MGC

Not supported in this version of the profile.

5.18 Session Dependent Procedures (Command Level Details)

5.18.1 Add Termination

<SAME as in "ETSI_BGF/2">

5.18.2 Session Establishment Update

<SAME as in "ETSI_BGF/2">

5.18.3 Mid-Session Update

<SAME as in "ETSI_BGF/2">

5.18.4 Auditing

<SAME as in "ETSI_BGF/2">

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5.18.5 Notification of MG Events

<SAME as in “ETSI_BGF/2”>

5.18.6 Delete Session/Termination

<SAME as in “ETSI_BGF/2”>

5.19 Non-Session Related Use Cases

5.19.1 Enable MG

<SAME as in “ETSI_BGF/2”>

5.19.2 Enable MGC

<SAME as in “ETSI_BGF/2”>

5.19.3 Disable MG (Graceful)

<SAME as in “ETSI_BGF/2”>

5.19.4 Disable MG (Immediate)

<SAME as in “ETSI_BGF/2”>

5.19.5 Disable MGC

<SAME as in “ETSI_BGF/2”>

5.19.6 Enable Termination

<SAME as in “ETSI_BGF/2”>

5.19.7 Disable Termination (Graceful)

<SAME as in “ETSI_BGF/2”>

5.19.8 Disable Termination (Immediate)

<SAME as in “ETSI_BGF/2”>

5.19.9 MG Failure & Recovery

<SAME as in “ETSI_BGF/2”>

5.19.10 MG Termination Failure & Recovery

<SAME as in “ETSI_BGF/2”>

5.19.11 MGC Failure & Recovery

<SAME as in “ETSI_BGF/2”>

5.19.12 User Plane Failure

<SAME as in “ETSI_BGF/2”>

5.19.13 MGC-MG Control Association Failure & Recovery

<SAME as in “ETSI_BGF/2”>

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5.19.14 MG Overload

<SAME as in “ETSI_BGF/2”>

5.19.15 MGC Overload

<SAME as in “ETSI_BGF/2”>

5.19.16 MGC Hand-Off

<SAME as in “ETSI_BGF/2”>

5.19.17 MGC Re-Direct

<SAME as in “ETSI_BGF/2”>

5.19.18 MG Failover

<SAME as in “ETSI_BGF/2”>

5.20 Session Independent Procedures (Command Level Details)

5.20.1 MG Initial Registration

<SAME as in “ETSI_BGF/2”>

5.20.2 MG Restoration

<SAME as in “ETSI_BGF/2”>

5.20.3 Packages Audit

<SAME as in “ETSI_BGF/2”>

5.20.4 Context Audit

<SAME as in “ETSI_BGF/2”>

5.20.5 MG Termination Available

<SAME as in “ETSI_BGF/2”>

5.20.6 MG Termination Unavailable

<SAME as in “ETSI_BGF/2”>

5.20.7 Audit Termination State

<SAME as in “ETSI_BGF/2”>

5.20.8 Set ROOT Termination Events/Properties

<SAME as in “ETSI_BGF/2”>

5.20.9 MGC Ordered Re-Register

<SAME as in “ETSI_BGF/2”>

5.20.10 Check MG Availability

<SAME as in “ETSI_BGF/2”>

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5.20.11 MG OOS Graceful

<SAME as in “ETSI_BGF/2”>

5.20.12 MG OOS Immediate

<SAME as in “ETSI_BGF/2”>

5.20.13 MGC Hand-Off

<SAME as in “ETSI_BGF/2”>

5.20.14 MG Re-Register

<SAME as in “ETSI_BGF/2”>

5.20.15 MG Termination OOS Graceful

<SAME as in “ETSI_BGF/2”>

5.20.16 MGC Overload Notification

<SAME as in “ETSI_BGF/2”>

5.20.17 Registration Redirect

<SAME as in “ETSI_BGF/2”>

5.20.18 User Plane Failure

<SAME as in “ETSI_BGF/2”>

5.20.19 Check MGC Availability

<SAME as in “ETSI_BGF/2”>

5.20.20 Re-Establish Previous Control Association

<SAME as in “ETSI_BGF/2”>

5.20.21 MGC Failover - Establish New Control Association

<SAME as in “ETSI_BGF/2”>

5.20.22 MG Primary Failover

<SAME as in “ETSI_BGF/2”>

5.20.23 MG Overload Notification

<SAME as in “ETSI_BGF/2”>

5.20.24 MG Ordered Re-Register

<SAME as in “ETSI_BGF/2”>

5.20.25 Wildcarded Subtract

<SAME as in “ETSI_BGF/2”>

5.20.26 MG Secondary Failover

<SAME as in “ETSI_BGF/2”>

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5.20.27 MGC Service Cancellation

<SAME as in “ETSI_BGF/2”>

5.20.28 Audit Service State

<SAME as in “ETSI_BGF/2”>

Annex A: Illustration of Gate/Pinhole Concept

<SAME as in “ETSI_BGF/2”>

Annex B: Comparison with ETSI TS 102 333 (Gate Control Protocol)

<SAME as in “ETSI_BGF/2”>

Annex A (informative): Illustration of Gate/Pinhole Concept

<SAME as in “ETSI_BGF/2”>

Annex B (informative): Comparison between ES 283 018 V1.1.4 (Ia Profile Version 1) and TS 102 333 (GCP)

<SAME as in “ETSI_BGF/2”>

Annex C (informative): Comparison with Ia Profile Version 1

<SAME as in “ETSI_BGF/2”>

Annex D (informative): Illustration of an IP processing model for an H.248 (IP, IP) Context

<SAME as in “ETSI_BGF/2”>

Annex E (informative): Guidelines for Ia-to-Gq’ mapping

<SAME as in “ETSI_BGF/2”>

Annex F (informative): Bibliography

<SAME as in “ETSI_BGF/2”>

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Appendix I (Informative): Network Deployment Scenarios – Possible roles of the Datapath Session Border Gateway (D-SBG)

This profile is supporting MSF-ARCH-014.00-FINAL [35], an optional profile extension for "explicit SIP signaling pinhole control via H.248". This capability is tightly coupled with the applied network engineering principles concerning bearer-path coupled or decoupled (SIP) signalling-paths.[2] This informative Appendix shall illustrate the principal options:

I.1 Network deployment option "Bearer-path decoupled (SIP) Signalling-path"

Figure I.1 shows the decoupled path scenario.

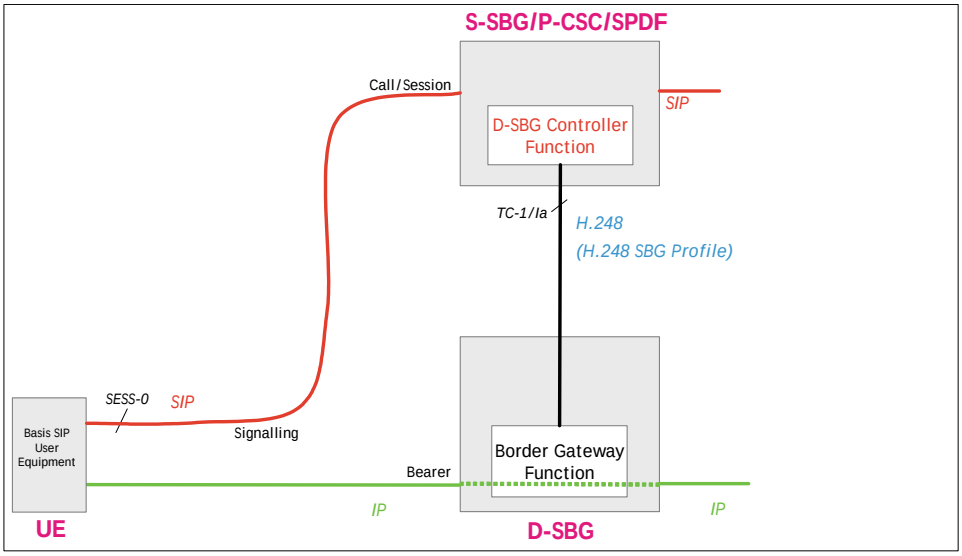

Figure I.1 – Bearer-path decoupled (SIP) Signalling-path – The physical node with the embedded D-SBG is only processing IP bearer traffic

I.2 Network deployment option "Bearer-path coupled (SIP) Signalling-path" with native RFC 1812 forwarding of SIP traffic

The physical node with the embedded D-SBG would also provide a native IP router function (i.e. compliant to RFC 1812) for SIP traffic.

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2 It may be noted that the different path routing principles are also known in other network technologies. For instance, Signalling System No. 7 (SS7) networks do support *associated* and *nonassociated* signalling. In *associated* mode (or *bearer-path coupled signalling* mode) is the transport connection for signalling traffic "directly parallel" to the bearer transport connection (for which it is providing signalling). In *nonassociated* mode (or *bearer-path decoupled signalling* mode) are separated paths (or network routes).

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I.3 Network deployment option "Bearer-path coupled (SIP) Signalling-path" with H.248-controlled policing of SIP traffic

Figure I.2 illustrates this scenario.

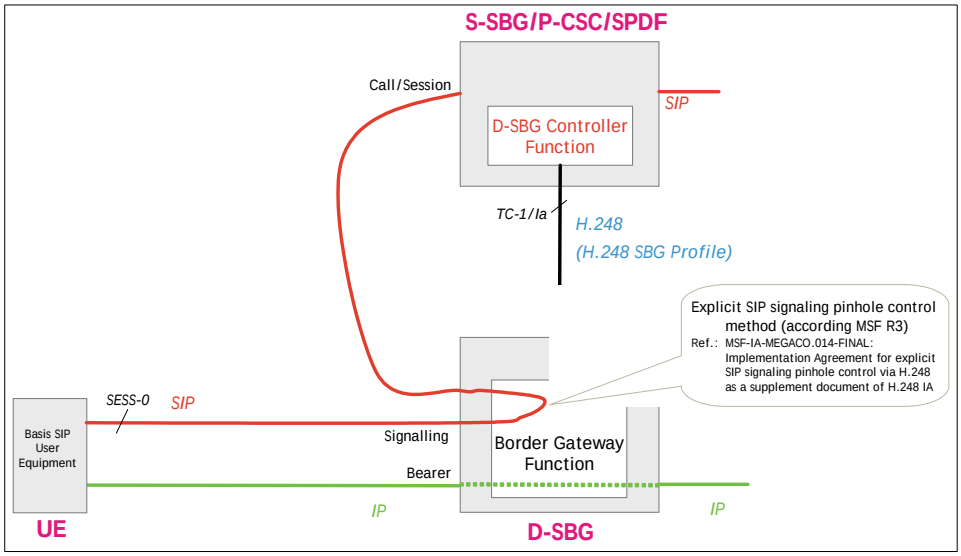

Figure I.2 – Bearer-path coupled (SIP) Signalling-path – The D-SBG is also providing H.248-controlled policing for call/session control signalling (SIP)

MSF-ARCH-014.00-FINAL [35] provides additional capabilities for SIP "pinhole control", which may be added to the MSF H.248 SBG profile versions. Policing in general means the enforcement of policy rules. "Policing of SIP traffic" in the context of [35] means the application of particular policy rules for H.248 ephemeral terminations, which are carrying "SIP traffic". So-called H.248 "SIP" terminations according [35].

Following policy rules could be for instance enforced for H.248 "SIP" terminations (not echaustive list):

1. Policy rules according main H.248 SBG profile capabilities
    - **Address policing**:
      e.g. range filters on remote source network addresses, or remote source transport addresses in order to "gate" SIP traffic from particular SIP user agents
      NOTE: other type of policy conditions may be also used.
    - **Traffic policing**:
      e.g. byterate policing on IP layer for individual SIP sessions or aggregated SIP traffic
      NOTE: byterate policing could be enforced for peak-rates or sustainable-rates or both.
    - others
2. Additional policy rules according [35]
    - **SIP "registration attempt rate" policing**
    - **SIP "session attempt rate" policing**
    - **Temporal, timer-controlled suspension of "SIP traffic"**

The way how MSF-ARCH-014.00-FINAL [35] may be used is described in clause 4.2 within the profile specification of this IA.

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It may be noted that the H.248 "SIP" Context/Termination/Stream is not terminating the SIP protocol. That means, that the D-SBG is **not** providing any SIP B2BUA or SIP proxy behaviour for the scoped policing functions of "SIP traffic".

Prerequisite for enforcement of such SIP policing functions are "bearer-path coupled (SIP) signalling-paths". This is a (IP) network engineering related issue by using the same (IP) routes (from D-SBG perspective) for bearer and signaling traffic. There are multiple options again to achieve such kind of network routing (actually it is related to IP routing), e.g. by correspondent RIB[3] entries in the interim IP routers, or by using IP service routers with SIP traffic aware routing ("which translates into a different RIB structure"), or advertising the D-SBG IP addresses to the SIP UA's (instead the IP address of the S-SBG/P-CSC/SPDF, or etc.

I.4 Network deployment option "Bearer-path coupled (SIP) Signalling-path" with H.248-independent policing of SIP traffic

Figure I.3 illustrates this scenario.

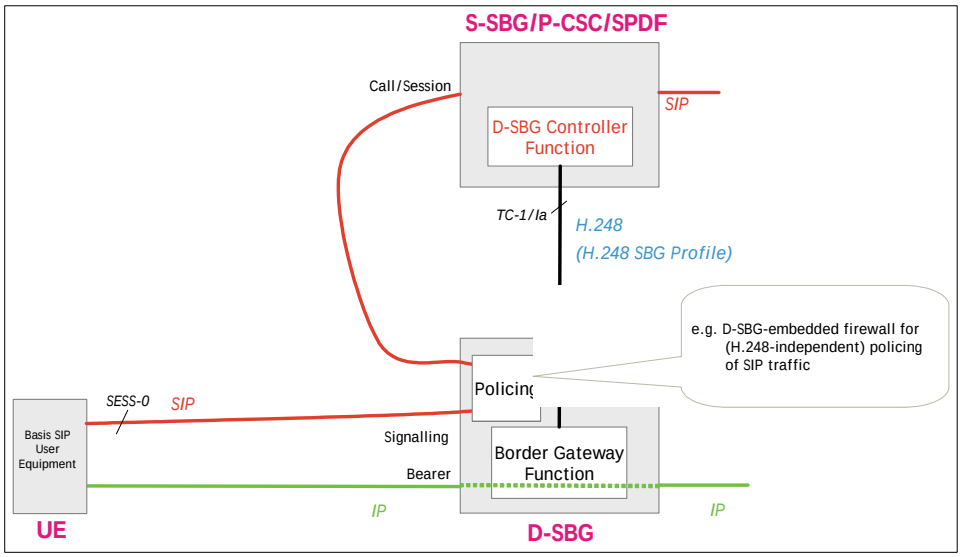

Figure I.3 – Bearer-path coupled (SIP) Signalling-path – The D-SBG is also providing an H.248-policing for call/session control signalling (SIP)

End of Document.

3 Routing Information Base

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