

**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**

---

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)  
Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/0cc8c335-9f69-4add-894f-e120c6540e0d/etsi-es-283-018-v2.3.1-2008-06>



---

Reference

RES/TISPAN-03192-NGN-R2

---

Keywords

H.248, interface

**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C  
Association à but non lucratif enregistrée à la  
Sous-Préfecture de Grasse (06) N° 7803/88

---

**Important notice**

Individual copies of the present document can be downloaded from:

<http://www.etsi.org>

The present document may be made available in more than one electronic version or in print. In any case of existing or perceived difference in contents between such versions, the reference version is the Portable Document Format (PDF). In case of dispute, the reference shall be the printing on ETSI printers of the PDF version kept on a specific network drive within ETSI Secretariat.

Users of the present document should be aware that the document may be subject to revision or change of status. Information on the current status of this and other ETSI documents is available at

<http://portal.etsi.org/tb/status/status.asp>

If you find errors in the present document, please send your comment to one of the following services:

[http://portal.etsi.org/chaicor/ETSI\\_support.asp](http://portal.etsi.org/chaicor/ETSI_support.asp)

---

**Copyright Notification**

No part may be reproduced except as authorized by written permission.  
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 2008.  
All rights reserved.

DECT™, PLUGTESTS™, UMTS™, TIPHON™, the TIPHON logo and the ETSI logo are Trade Marks of ETSI registered for the benefit of its Members.

3GPP™ is a Trade Mark of ETSI registered for the benefit of its Members and of the 3GPP Organizational Partners.

# Contents

Intellectual Property Rights .....	8
Foreword.....	8
1 Scope .....	9
2 References .....	9
2.1 Normative references .....	9
2.2 Informative references.....	11
3 Definitions and abbreviations.....	11
3.1 Definitions.....	11
3.2 Abbreviations .....	13
4 Applicability.....	13
4.1 Architecture .....	13
5 Profile description .....	14
5.1 Profile identification.....	14
5.2 Summary .....	14
5.3 Gateway Control Protocol Version .....	15
5.4 Connection model.....	15
5.5 Context attributes .....	15
5.6 Terminations.....	15
5.6.1 Termination names .....	15
5.6.1.1 IP Termination .....	15
5.6.1.1.1 Overview and prose specification.....	15
5.6.1.1.2 Syntactical Specification .....	18
5.6.2 Multiplexed terminations.....	18
5.7 Descriptors .....	18
5.7.1 TerminationState descriptor.....	18
5.7.2 Stream descriptor .....	19
5.7.2.1 LocalControl descriptor .....	19
5.7.3 Events descriptor .....	19
5.7.4 EventBuffer descriptor.....	20
5.7.5 Signals descriptor.....	20
5.7.6 DigitMap descriptor.....	21
5.7.7 Statistics descriptor.....	21
5.7.8 ObservedEvents descriptor .....	21
5.7.9 Topology descriptor.....	21
5.7.10 Error descriptor.....	22
5.8 Command API.....	22
5.8.1 Add .....	23
5.8.2 Modify .....	23
5.8.3 Subtract.....	24
5.8.4 Move.....	24
5.8.5 AuditValue.....	24
5.8.6 AuditCapabilities .....	24
5.8.7 Notify.....	24
5.8.8 ServiceChange .....	24
5.8.9 Manipulating and auditing context attributes.....	25
5.9 Generic command syntax and encoding.....	25
5.10 Transactions .....	25
5.11 Messages .....	26
5.12 Transport .....	26
5.13 Security .....	27
5.14 Packages.....	27
5.14.1 Overview .....	28
5.14.2 Package usage information .....	29

5.14.2.1	Generic (g) .....	29
5.14.2.2	Base root (root) .....	30
5.14.2.3	Network (nt) .....	31
5.14.2.4	Differentiated Services (DS) .....	31
5.14.2.5	Gate Management (GM) .....	32
5.14.2.6	Traffic management (tman) .....	33
5.14.2.7	IP NAPT Traversal (ipnapt) .....	33
5.14.2.8	MPLS (mpls) .....	34
5.14.2.9	VLAN (vlan) .....	34
5.14.2.10	MGC Information (mgcinfo) .....	35
5.14.2.11	Inactivity (it) .....	35
5.14.2.12	Segmentation (seg) .....	36
5.14.2.13	RTP Package .....	37
5.14.2.14	Application Data Inactivity Detection (adid) .....	37
5.14.2.15	IP Domain Connection (ipdc) .....	38
5.14.2.16	Media Gateway Overload Control Package .....	38
5.14.2.17	Hanging Termination Detection (Hangterm) .....	39
5.14.2.18	Statistic Conditional Reporting (scr) .....	39
5.15	Mandatory support of SDP and Annex C information elements .....	40
5.16	Optional support of SDP and Annex C information elements .....	41
5.17	Overview of Procedures .....	42
5.17.1	Overview of Session Dependent Procedures .....	42
5.17.1.1	Gate control .....	43
5.17.1.2	Allocation and translation of IP addresses, ports and versions (NAPT-PT) .....	44
5.17.1.3	Support of Hosted NAT Traversal .....	45
5.17.1.4	QoS marking .....	45
5.17.1.5	Bandwidth control - Reservation, Allocation and Policing .....	45
5.17.1.5.1	Admission Control .....	46
5.17.1.5.2	Traffic Descriptor .....	46
5.17.1.5.3	Bandwidth reservation and allocation .....	47
5.17.1.5.4	Bandwidth policing .....	47
5.17.1.5.5	Non-specification of <i>tman</i> properties .....	47
5.17.1.6	Usage metering and statistics reporting .....	47
5.17.1.6.1	Statistics for Media/Transport-agnostic IP packets .....	47
5.17.1.6.2	Traffic Volume related Statistics .....	47
5.17.1.7	RTCP Handling .....	48
5.17.1.7.1	RTCP Port Allocation .....	48
5.17.1.7.2	RTP/RTCP to-H.248 Stream Mapping .....	49
5.17.1.8	RTCP Forwarding .....	49
5.17.1.8.1	Conditions for RTCP packet policing .....	49
5.17.1.8.2	Forwarding of regular RTCP traffic .....	49
5.17.1.8.3	Handling of RTCP XR/HR traffic .....	49
5.17.1.9	Media Inactivity .....	49
5.17.1.10	IP Realm/Domain Indication .....	50
5.17.1.10.1	Codepoint and format/encoding .....	50
5.17.1.10.2	Unsuccessful indication .....	50
5.17.1.10.3	Fix assignment per termination lifetime .....	50
5.17.1.10.4	Number of IP Realms/Domains .....	50
5.17.1.11	Two-Stage BGF Resource Reservation .....	51
5.17.1.12	Hanging Termination Detection .....	51
5.17.1.13	Real Time Statistics Reporting .....	51
5.17.1.14	Transcoding .....	52
5.17.1.14.1	Media types and formats (Codecs) .....	52
5.17.1.14.2	Decision for transcoding .....	52
5.17.2	Overview of Session Independent Procedures .....	52
5.17.2.1	Introduction - Relation to TR 183 025 .....	52
5.17.2.2	Session-independent procedures .....	52
5.17.2.3	MG Overload Control: Rate limitation of H.248 Messages from MGC-to-MG .....	52
5.18	Session Dependent Procedures (Command Level Details) .....	53
5.18.1	Add Termination .....	54
5.18.1.1	Add Termination - Remote Addr and Port Known, Select Local Addr and Port .....	54
5.18.1.1.1	Conditions for Address Policing: SAF, SPF, SAM, SPR, SPRR .....	56

5.18.1.1.2	Assigning IP Domain/Realm to Termination .....	57
5.18.1.1.3	Add Termination - Remote Addr and Port Known, Select Local Addr and Port - Examples.....	57
5.18.1.2	Add Termination - Select Local Addr and Port.....	59
5.18.1.2.1	Add Termination - Select Local Addr and Port - Examples .....	61
5.18.1.3	Add Termination - Remote Addr Known, Select Local Addr.....	62
5.18.1.3.1	Add Termination - Remote Addr Known, Select Local Addr - Examples .....	63
5.18.1.4	Add Termination - Select Local Addr .....	64
5.18.1.4.1	Add Termination - Select Local Addr - Examples .....	65
5.18.2	Session Establishment Update .....	65
5.18.2.1	Session Establishment Update - Remote Addr and Port Known.....	66
5.18.2.1.1	Session Establishment Update - Remote Addr and Port Known - Examples .....	67
5.18.2.2	Session Establishment Update - Remote Addr Known.....	69
5.18.2.2.1	Session Establishment Update - Remote Addr Known - Examples .....	70
5.18.2.3	Session Establishment Update - Through Connect .....	71
5.18.2.3.1	Session Establishment Update - Through Connect - Examples.....	72
5.18.2.4	Session Establishment Update - Select Local Port.....	73
5.18.2.4.1	Session Establishment Update - Select Local Port - Examples .....	75
5.18.2.5	Session Establishment Update - Bandwidth Change.....	76
5.18.2.5.1	Session Establishment Update - Bandwidth Change - Examples .....	78
5.18.3	Mid-Session Update.....	78
5.18.3.1	Mid-Session Update - Bandwidth Change .....	79
5.18.3.1.1	Mid-Session Update - Bandwidth Change - Examples.....	81
5.18.3.2	Mid-Session Update - Media Change .....	82
5.18.3.2.1	Mid-Session Update - Media Change - Examples .....	84
5.18.3.3	Mid-Session Update - Remote Port Change.....	85
5.18.3.3.1	Mid-Session Update - Remote Port Change - Examples .....	87
5.18.3.4	Mid-Session Update - Add Stream, Remote Addr and Port Known .....	88
5.18.3.4.1	Mid-Session Update - Add Stream, Remote Addr & Port Known - Examples .....	90
5.18.3.5	Mid-Session Update - Add Stream.....	91
5.18.3.5.1	Mid-Session Update - Add Stream - Examples .....	93
5.18.3.6	Mid-Session Update - Delete Stream.....	94
5.18.3.6.1	Mid-Session Update - Delete Stream - Examples .....	95
5.18.4	Auditing .....	98
5.18.4.1	Mid-Session Statistics Audit .....	98
5.18.4.1.1	Mid-Session Statistics Audit - Example .....	99
5.18.5	Notification of MG Events .....	100
5.18.5.1	Notification of IP Media Stop .....	100
5.18.5.2	Notification of Hanging Termination.....	101
5.18.5.3	Notification of Statistic Conditional Reporting.....	102
5.18.6	Delete Session/Termination .....	103
5.18.6.1	Delete Session/Termination .....	103
5.18.6.1.1	Delete Session/Termination - Examples.....	104
5.18.6.2	Delete Session/Termination - Wildcarded Reply.....	106
5.18.6.2.1	Delete Session - Wildcarded Reply - Examples .....	106
5.19	Non-Session Related Use Cases .....	106
5.19.1	Enable MG.....	107
5.19.1.1	Enable MG (at MGC).....	107
5.19.1.2	Enable MG (at MG) .....	107
5.19.1.2.1	Enable MG (at MG): Cold Boot .....	108
5.19.1.2.2	Enable MG (at MG): Warm Boot.....	109
5.19.2	Enable MGC .....	110
5.19.3	Disable MG (Graceful) .....	110
5.19.3.1	Disable MG (Graceful) (MGC).....	110
5.19.3.2	Disable MG (Graceful) (MG) .....	111
5.19.4	Disable MG (Immediate).....	111
5.19.4.1	Disable MG (Immediate) (MGC).....	111
5.19.4.2	Disable MG (Immediate) (MG) .....	112
5.19.5	Disable MGC .....	112
5.19.6	Enable Termination.....	112
5.19.7	Disable Termination (Graceful).....	112
5.19.8	Disable Termination (Immediate).....	112
5.19.9	MG Failure and Recovery.....	113

5.19.10	MG Termination Failure and Recovery .....	113
5.19.11	MGC Failure and Recovery .....	113
5.19.12	User Plane Failure.....	114
5.19.13	MGC-MG Control Association Failure and Recovery .....	114
5.19.14	MG Overload .....	117
5.19.15	MGC Overload .....	117
5.19.16	MGC Hand-Off.....	117
5.19.17	MGC Re-Direct .....	118
5.19.18	MG Failover.....	118
5.20	Session Independent Procedures (Command Level Details).....	119
5.20.1	MG Initial Registration.....	120
5.20.2	MG Restoration .....	121
5.20.3	Packages Audit .....	121
5.20.4	Context Audit.....	122
5.20.5	MG Termination Available.....	123
5.20.6	MG Termination Unavailable .....	123
5.20.7	Audit Termination State.....	124
5.20.8	Set ROOT Termination Events/Properties.....	124
5.20.9	MGC Ordered Re-Register .....	125
5.20.10	Check MG Availability.....	125
5.20.11	MG OOS Graceful .....	126
5.20.12	MG OOS Immediate .....	126
5.20.13	MGC Hand-Off.....	127
5.20.14	MG Re-Register .....	128
5.20.15	MG Termination OOS Graceful .....	128
5.20.16	MGC Overload Notification .....	128
5.20.17	Registration Redirect .....	129
5.20.18	User Plane Failure.....	130
5.20.19	Check MGC Availability .....	130
5.20.20	Re-Establish Previous Control Association .....	131
5.20.21	MGC Failover - Establish New Control Association .....	131
5.20.22	MG Primary Failover.....	132
5.20.23	MG Overload Notification.....	133
5.20.24	MG Ordered Re-Register.....	133
5.20.25	Wildcarded Subtract .....	134
5.20.26	MG Secondary Failover.....	134
5.20.27	MGC Service Cancellation .....	134
5.20.28	Audit Service State .....	134
<b>Annex A (informative): Illustration of Gate/Pinhole Concept .....</b>		<b>135</b>
A.1	General .....	135
A.2	Relationships between gates and H.248 Streams .....	135
<b>Annex B (informative): Comparison between ES 283 018 V1.1.4 (Ia Profile Version 1) and TS 102 333 (GCP) .....</b>		<b>136</b>
B.1	General .....	136
B.2	Differences between TS 102 333 (GCP) and ES 283 018 V1.1.4 (Ia Profile Version 1).....	136
<b>Annex C (informative): Comparison with Ia Profile Version 1 .....</b>		<b>137</b>
C.1	General .....	137
C.2	Differences between ES 283 018 V1.1.4 (Ia Profile Version 1) and ES 283 018 V2.3.0 (Ia Profile Version 2).....	137
<b>Annex D (informative): Illustration of an IP processing model for an H.248 (IP, IP) Context.....</b>		<b>139</b>
D.1	Example model.....	139
D.2	Aspects of filter interaction .....	141
D.2.1	Interaction between address latching and address policing .....	141

<b>Annex E (informative):</b>	<b>Guidelines for Ia-to-Gq' mapping .....</b>	<b>143</b>
E.1	Guidelines for Ia-to-Gq' mapping with regards to session-independent procedures.....	143
E.1.1	Introduction .....	143
E.1.2	Mapping guidelines .....	143
E.1.2.1	Session-dependent procedures .....	143
E.1.2.2	Session-independent procedures .....	144
E.2	Guidelines for Ia-to-Gq' mapping with regards to bearer-specific events.....	144
E.2.1	Introduction .....	144
E.2.2	Mapping guidelines .....	145
E.2.2.1	Guidelines for <i>Specific Action AVPs</i> .....	145
E.2.2.2	Other AVPs.....	145
<b>Annex F (informative):</b>	<b>Bibliography.....</b>	<b>146</b>
<b>Annex G (informative):</b>	<b>Change history .....</b>	<b>147</b>
History .....		149

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/0cc8c335-9f69-4add-894f-e120c6540e0d/etsi-es-283-018-v2.3.1-2008-06>

---

## Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in ETSI SR 000 314: "*Intellectual Property Rights (IPRs); Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards*", which is available from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://webapp.etsi.org/IPR/home.asp>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in ETSI SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

---

## Foreword

This ETSI Standard (ES) has been produced by ETSI Technical Committee Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN).

**ETSI STANDARD PREVIEW**  
(standards.iteh.ai)  
Full standard:  
<https://standards.iteh.ai/catalog/standards/sist/0cc8c335-9f69-4add-894f-e120c6540e0d/etsi-es-283-018-v2.3.1-2008-06>



---

# 1 Scope

The present document defines a profile of the Gateway Control Protocol (H.248.1) to be used for controlling Border Gateway Functions (BGF), as defined in ES 282 003 [3].

---

# 2 References

References are either specific (identified by date of publication and/or edition number or version number) or non-specific.

- For a specific reference, subsequent revisions do not apply.
- Non-specific reference may be made only to a complete document or a part thereof and only in the following cases:
  - if it is accepted that it will be possible to use all future changes of the referenced document for the purposes of the referring document;
  - for informative references.

Referenced documents which are not found to be publicly available in the expected location might be found at <http://docbox.etsi.org/Reference>.

For online referenced documents, information sufficient to identify and locate the source shall be provided. Preferably, the primary source of the referenced document should be cited, in order to ensure traceability. Furthermore, the reference should, as far as possible, remain valid for the expected life of the document. The reference shall include the method of access to the referenced document and the full network address, with the same punctuation and use of upper case and lower case letters.

NOTE: While any hyperlinks included in this clause were valid at the time of publication ETSI cannot guarantee their long term validity.

## 2.1 Normative references

The following referenced documents are indispensable for the application of the present document. For dated references, only the edition cited applies. For non-specific references, the latest edition of the referenced document (including any amendments) applies.

- [1] ITU-T Recommendation H.248.1 (2005): "Gateway control protocol: Version 3".
- [2] Void.
- [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 H.248.45 (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 5234: "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 (2005): "Gateway control protocol: IP NATP traversal package".

- [10] ITU-T Recommendation H.248.54 (2007): "Gateway control protocol: MPLS support package".
- [11] ITU-T Recommendation H.248.56 (2007): "Gateway control protocol: Packages for virtual private network support".
- [12] ITU-T Recommendation H.248.40 (2007): "Gateway Control Protocol: Application Data Inactivity Detection Package".
- [13] ITU-T Recommendation H.248.14 (2002): "Gateway control protocol: Inactivity timer package".
- [14] ITU-T Recommendation Q.3303.2 (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 (2002): "Gateway control protocol: Media gateway overload control package".
- [16] ITU-T Recommendation H.248.41 (2006): "Gateway control protocol: IP domain connection package".
- [17] Draft ITU-T Recommendation H.248.52 (2007): "Gateway control protocol: QOS Support packages".
- NOTE: Available at [http://ftp3.itu.ch/av-arch/avc-site/2005-2008/0801\\_Seo/TD-29.zip](http://ftp3.itu.ch/av-arch/avc-site/2005-2008/0801_Seo/TD-29.zip).
- [18] Draft ITU-T Recommendation H.248.43 (2007): "Gateway control protocol: Gate Management and Gate Control packages".
- NOTE: Available at [http://ftp3.itu.ch/av-arch/avc-site/2005-2008/0801\\_Seo/TD-66.zip](http://ftp3.itu.ch/av-arch/avc-site/2005-2008/0801_Seo/TD-66.zip).
- [19] Draft ITU-T Recommendation H.248.53 (2007): "Gateway control protocol: Traffic Management packages".
- NOTE: Available at [http://ftp3.itu.ch/av-arch/avc-site/2005-2008/0801\\_Seo/TD-30.zip](http://ftp3.itu.ch/av-arch/avc-site/2005-2008/0801_Seo/TD-30.zip).
- [20] Void.
- [21] Void.
- [22] ETSI ES 283 018 (V1.1.4): "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 (2007): "Gateway control protocol: Session description protocol RFC and capabilities packages".
- [24] ITU-T Recommendation H.248.36 (2005): "Gateway control protocol: Hanging Termination Detection package".
- [25] ITU-T Recommendation H.248.47 (2007): "Gateway control protocol: Statistic conditional reporting package".
- [26] Void.
- [27] Void.
- [28] IETF RFC 4566: "SDP: Session Description Protocol".
- [29] IETF RFC 1123: "Requirements for Internet Hosts - Application and Support".
- [30] ITU-T Recommendation H.248.8: "Gateway control protocol: Error code and service change reason description".
- [31] IETF RFC 3605: "Real Time Control Protocol (RTCP) attribute in Session Description Protocol (SDP)".

## 2.2 Informative references

The following referenced documents are not essential to the use of the present document but they assist the user with regard to a particular subject area. For non-specific references, the latest version of the referenced document (including any amendments) applies.

- [i.1] ETSI TS 102 333: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Gate control protocol".
- [i.2] ETSI TR 183 025 (V2.0.0): "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); H.248 Non-call related procedures and management system interaction".
- [i.3] IETF RFC 2327: "SDP: Session Description Protocol".
- [i.4] ETSI ES 282 001: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Functional Architecture".
- [i.5] ITU-T Recommendation V.152: "Procedures for supporting voice-band data over IP networks".
- [i.6] IETF RFC 4301: "Security Architecture for the Internet Protocol".
- [i.7] ITU-T Recommendation H.248.18: "Gateway control protocol: Package for support of multiple profiles".
- [i.8] IETF RFC 3550: "RTP: A Transport Protocol for Real-Time Applications".
- [i.9] IEEE 802.3: "Ethernet Working Group".
- [i.10] ITU-T Recommendation Y.1221 (2002): "Traffic control and congestion control in IP based networks".
- [i.11] ITU-T Recommendation Y.1541 (2006): "Network performance objectives for IP-based services".
- [i.12] ETSI TS 181 005: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Service and Capability Requirements".
- [i.13] ETSI TS 183 048: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Resource & Admission Control System (RACS); Protocol Signalling flows specification; RACS Stage 3".
- [i.14] ETSI TS 183 017: "Telecommunications and Internet Converged Services and Protocols for Advanced Networking (TISPAN); Resource and Admission Control: DIAMETER protocol for session based policy set-up information exchange between the Application Function (AF) and the Service Policy Decision Function (SPDF); Protocol specification".

---

## 3 Definitions and abbreviations

### 3.1 Definitions

For the purposes of the present document, the following terms and definitions apply:

**BGF:** packet-to-packet gateway for user plane media traffic. The BGF performs both policy enforcement functions and NA(P)T functions under the control of the SPDF

NOTE: A Border Gateway Function (BGF) provides the interface between two IP-transport domains. It may reside at the boundary between an access network and a core network or between two core networks, as defined in ES 282 001 [i.4]. The BGF has the "H.248 MG" role in the scope of this Profile.

**GATE:** represents a transport plane function enabling or disabling the unidirectional forwarding of IP packets under specified conditions (e.g. QoS)

NOTE: See TS 102 333 [i.1].

**IP-to-IP Interworking Modes:** available SDP information elements and values in the signalled SDP "media description" (mainly "m=" and "a=" lines) by the SPDF (MGC), may be used to categorize following interworking modes from BGF (MG) perspective:

(1) **"Media-agnostic":**

- The "m=" line values of *media type* (<media>) and *media format* (<fmt>) are not allowing to conclude for the BGF (MG) on the transported "media" information.

(2) **"Media-aware":**

- The "m=" line values of *media type* (<media>), *transport protocol* (<proto>) and *media format* (<fmt>) are unambiguously defining the entire protocol stack of the H.248 IP termination, i.e. the BGF (MG) knows transported "media" information and the underlying transport protocol type.

(3) **"Transport protocol-agnostic" (or briefly "transport-agnostic"):**

- The BGF (MG) may not conclude from signalled SDP information elements on the transported IP payload information (see note).

(4) **"Transport protocol-aware" (or briefly "transport-aware"):**

- The value of the IP *protocol* field is indicated by the signalled SDP information elements, e.g. by the "m=" line value of the *transport protocol* (<proto>) field.

NOTE: The BGF (MG) could principally derive the used transport protocol by analyzing the protocol field (<http://www.iana.org/assignments/protocol-numbers>) in the IP header, but such a function is beyond H.248. The BGF (MG) is still transport protocol-agnostic from H.248 point of view.

**PINHOLE:** configuration of two associated H.248 IP Terminations within the same H.248 Context, which allows/prohibits unidirectional forwarding of IP packets under specified conditions

NOTE 1: A pinhole may also be referred to as a "gate".

NOTE 2: E.g. address tuple.

NOTE 3: See ITU-T Recommendation H.248.37 [9].

**Resource and Admission Control Subsystem (RACS):** provides admission control and gate control functionalities

NOTE: Including the control of NAPT and priority marking.

**Service Policy Decision Function (SPDF):** logical policy decision element for service-based policy control (SBP)

NOTE: The SPDF makes policy decisions using policy rules for Service Based Policy Control (SBP). The SPDF has the "H.248 MGC" role in the scope of this Profile.

**TRANSCODING:** transcoding in general is the translation from one type of encoded media format to another different media format

EXAMPLE 1: G.711 A-law to  $\mu$ -law or vice versa.

EXAMPLE 2: G.711 to G.726-40K.

EXAMPLE 3: G.729 to AMR with 4.75 rate.

EXAMPLE 4: G.711 to a broadband codec that operates at 256 kbps, etc.

NOTE 1: The definition of "transcoding" is according clause 3.10/ITU-T Recommendation V.152 [i.5].

NOTE 2: Transcoding belongs to the category of "media aware" IP-to-IP interworking (see above).

## 3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

ABNF	Augmented Backus-Naur Form
BGF	Border Gateway Function
C-BGF	Core-BGF
CBR	Constant BitRate
CoAC	Context Admission Control
DSCP	Differentiated Services Code Point
GCP	Gate Control Protocol
I-BGF	Interconnect-BGF
IP	Internet Protocol
IPsec	IP Security (RFC 4301 [i.6])
LD	Local Descriptor (H.248)
MG	Media Gateway
MGC	Media Gateway Controller
MID	Message Identifier (H.248)
MPLS	Multi Protocol Label Switching
NA	Not Applicable
NAPT	Network Address and Port Translation
NAPT-PT	NAPT and Protocol Translation
NAT	Network Address Translation
PCI	Protocol Control Information
QoS	Quality of Service
RACS	Resource and Admission Control Subsystem
RD	Remote Descriptor (H.248)
RFC	Request For Comments (IETF)
RTCP	RTP Control Protocol
RTP	Real-time Transport Protocol
SCTP	Stream Control Transport Protocol
SDP	Session Description Protocol
SIP	Session Initiation Protocol
SPDF	Service Policy Decision Function
StAC	Stream Admission Control
TISPAN	Telecommunications and Internet converged Services and Protocols for Advanced Networking
VBR	Variable BitRate
VLAN	Virtual LAN
VPN	Virtual Private Network

NOTE: It has to be noted that there is also a different definition for "pinhole", which is used in the context of H.323 systems (see ITU-T Recommendation H.460.18 [5]). The difference is the fact that the "H.248 pinhole" and "gate" are unidirectional, whereas the "H.323 pinhole" is bidirectional.

---

## 4 Applicability

### 4.1 Architecture

The present document defines an H.248 Profile for the reference point between the Service Policy Decision Function (SPDF) and the Border Gateway Function (BGF), known as the Ia reference point. The SPDF interacts with the BGF to request services. This reference point is used for communication between the SPDF and a Core Border Gateway Function (C-BGF) and between the SPDF and an Interconnect Border Gateway Function (I-BGF).

Specific requirements for this reference point are described in ES 282 003 [3]. Figure 1 illustrates the architecture assumed in the present document.