ETSI TS 183 018 V3.5.2 (2010-01)

Technical Specification

Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); Resource and Admission Control: H.248 Profile Version 3 for controlling Border Gateway Functions (BGF) in the Resource and Admission Control Subsystem (RACS); Protocol specification

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Foreword

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

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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.

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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" including its Amendment 1 (2008) "Corrections and clarifications".

[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 (2005): "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 (2008): "Gateway control protocol: IP NAPT 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". Inclusive Corrigendum 1 (2009) "VLAN package clarifications".

[12] ITU-T Recommendation H.248.40 (2007): "Gateway Control Protocol: Application Data Inactivity Detection Package".

[13] ITU-T Recommendation H.248.14 (2009): "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". Inclusive Corrigendum 1 (2008) "Clarifying MG-overload event relationship with ADD commands".

[16] ITU-T Recommendation H.248.41 (2006): "Gateway control protocol: IP domain connection package" including its Amendment 1 (2008) "IP Realm Availability Package".

[17] ITU-T Recommendation H.248.52 (2008): "Gateway control protocol: QoS Support packages" including its Amendment 1 (2009) "Clarifications and updates to the differentiated services package".

[18] ITU-T Recommendation H.248.43 (2008): "Gateway control protocol: Packages for gate management and gate control".

[19] ITU-T Recommendation H.248.53 (2009): "Gateway control protocol: Traffic management packages".

[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 (2008): "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)".

[32] ETSI ES 283 018 (V2.7.1): "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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[33] ITU-T H.Imp248.1 Version 2 (2008): "Implementors' Guide for Recommendation H.248.1 Version 2 (Media Gateway Control Protocol) and its Corrigendum 1 (03/2004)".

NOTE: Available at: http://www.itu.int/rec/T-REC-H.Imp248.1-200805-I/en.

[34] ITU-T Recommendation H.248.58 (2008): "Gateway control protocol: Packages for application level H.248 statistics".

[35] Void.

[36] IETF RFC 4975 (2007): "The Message Session Relay Protocol (MSRP)".

[37] ETSI TS 187 003 (V1.7.1): "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); NGN Security; Security Architecture".

[38] IETF RFC 3551: "RTP Profile for Audio and Video Conferences with Minimal Control".

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 TS 183 025: "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". Inclusive Corrigendum 1 (09/2005) and Corrigendum 2 (05/2006).

[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". Inclusive a) Amendment 1 (2004): 'Extensions to transfer capabilities', b) Amendment 2 (11/2005): 'Further extension to transfer capabilities ', c) Amendment 3 (10/2007): "New Appendix IV - Example methods for determining token-bucket parameters".

[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] Void.

[i.14] Void.

[i.15] Void.

[i.16] Void.

[i.17] Void.

iTeh STANDARD PREVIEW (standards.iteh.ai) Full standard: https://standards.iteh.ai/catalog/standards/sist/26598e75-8321-4c8f-9009-28eed1c0940b/etsi-ts-183-018-v3.5.2-2010-01

[i.18] ETSI TR 183 068 (V0.0.4): "Telecommunications and Internet Converged Services and Protocols for Advanced Networks (TISPAN); Guidelines on using Ia H.248 profile for control of Border Gateway Functions (BGF); Border Gateway Guidelines".

[i.19] ITU-T Recommendation H.248.57 (2008): "Gateway Control Protocol: RTP Control Protocol Package".

[i.20] IETF RFC 3711: "The Secure Real-time Transport Protocol (SRTP)".

[i.21] IETF RFC 4145: "TCP-Based Media Transport in the Session Description Protocol (SDP)".

[i.22] ETSI TR 183 025: "Telecommunications and Internet converged Services and Protocols for Advanced Networking (TISPAN); H.248 Non-call related procedures and management system interaction".

3 Definitions and abbreviations

3.1 Definitions

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

address: term used for "network address" (a.k.a. IP address)

Border Gateway Function (BGF): packet-to-packet gateway for user plane media traffic

NOTE 1: The BGF performs both policy enforcement functions and NA(P)T functions under the control of the SPDF.

NOTE 2: 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 (see also annex G in [i.18]):

(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.

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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].

NOTE 4: See annex A in TR 183 068 [i.18].

NOTE 5: 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.

port: term used for "transport port" (a.k.a. L4 port)

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: translation from one type of encoded media format to another different media format

EXAMPLE 1: G.711 A-law to μ-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 to 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).

transport address: combination of an Address and a Port

3.2 Abbreviations

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

ABNF	Augmented Backus-Naur Form
AC	Admission Control
AF	Application Function
B2BIH	Back-to-Back IP Host (mode)
B2BRE	Back-to-Back RTP Endsystem (mode)
BGF	Border Gateway Function
BGW	Border GateWay
C-BGF	Core-BGF
CBR	Constant BitRate
CNAME	Canonical End-Point Identifier
CoAC	Context Admission Control
DA	Destination Address
DP	Destination Port
DSCP	Differentiated Services Code Point
GCP	Gate Control Protocol

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