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Gateway control protocol: Priority traffic treatment by ITU-T H.248 gateways

ITU-T H-series Recommendations – Supplement 12



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Supplement 12 to ITU-T H-series Recommendations

Gateway control protocol: Priority traffic treatment by ITU-T H.248 gateways

Summary

Supplement 12 to ITU-T H-series Recommendations provides complementary information on the handling of priority traffic (e.g., international emergency preference scheme (IEPS)/emergency telecommunications service (ETS) traffic) by the ITU-T H.248 entities: Media Gateway Controller (MGC) and Media Gateway (MG).

This supplement illustrates the difficulty, even impossibility, of a generic specification i.e., a generic ITU-T H.248 profile, in justifying concrete, dedicated protocol solutions in the case of an available alternative for "emulation approaches".

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Supplement 12 to ITU-T H-series Recommendations

Gateway control protocol: Priority traffic treatment by ITU-T H.248 gateways

1 Scope

This supplement provides complementary information concerning the handling of priority traffic by the ITU-T H.248 entities: media gateway controller (MGC) and media gateway (MG).

The following aspects are covered within the scope:

- the notion of "priority traffic" from the perspective of the ITU-T H.248 gateway control interface (clause 6);
- a comprehensive traffic model for priority services (as introduced by [ITU-T H.248.81]) with focus on the MG (clause 6.1);
- the specification aspects of ITU-T H.248 profiles with respect to "generic" and "practical" profiles (clause 6.2);
- a status snapshot of some ITU-T H.248 profiles and Context attribute support for priority traffic handling (Appendix I);
- example use cases for different gateway types supporting priority traffic (such as with possible international emergency preference scheme (IEPS) call indicator support) (Appendix II).

This supplement illustrates the difficulty, even impossibility, of a generic specification, i.e., a generic ITU-T H.248 profile, in justifying concrete, dedicated protocol solutions in the case of an available alternative for "emulation approaches".

2 References

- [ITU-T E.106] Recommendation ITU-T E.106 (2003), *International Emergency Preference Scheme (IEPS) for disaster relief operations*.
- [ITU-T E.107] Recommendation ITU-T E.107 (2007), *Emergency Telecommunications Service (ETS) and interconnection framework for national implementations of ETS*.
- [ITU-T H.248.1] Recommendation ITU-T H.248.1 (2005), *Gateway control protocol: Version 3*.
- [ITU-T H.248.52] Recommendation ITU-T H.248.52 (2008), *Gateway control protocol: QoS support packages*.
- [ITU-T H.248.54] Recommendation ITU-T H.248.54 (2007), *Gateway control protocol: MPLS support package*.
- [ITU-T H.248.56] Recommendation ITU-T H.248.56 (2007), *Gateway control protocol: Packages for virtual private network support*.
- [ITU-T H.248.79] Recommendation ITU-T H.248.79 (2012), *Gateway control protocol: Guidelines for packet-based streams*.
- [ITU-T H.248.81] Recommendation ITU-T H.248.81 (2011), *Gateway control protocol: Guidelines on the use of the international emergency preference scheme (IEPS) call indicator and priority indicator in ITU-T H.248 profiles*.

- [ITU-T H.Sup.9] ITU-T H-series Recommendations – Supplement 9 (2008), *Gateway control protocol: Operation of H.248 with H.225.0, SIP, and ISUP in support of emergency telecommunications service (ETS)/International emergency preference scheme (IEPS)*.
- [ITU-T I.130] Recommendation ITU-T I.130 (1988), *Method for the characterization of telecommunication services supported by an ISDN and network capabilities of an ISDN*.
- [ITU-T Q.1950] Recommendation ITU-T Q.1950 (2002), *Bearer independent call bearer control protocol*.
- [ITU-T Y.2111] Recommendation ITU-T Y.2111 (2011), *Resource and admission control functions in next generation networks*.
- [ETSI TS 122 153] ETSI TS 122 153 (2012), *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; Multimedia priority service (3GPP TS 22.153 version 11.1.0 Release 11)*.
- [ETSI TS 129 238] ETSI TS 129 238, *Universal Mobile Telecommunications System (UMTS); LTE; Interconnection Border Control Functions (IBCF) – Transition Gateway (TrGW) interface; Ix interface; Stage 3*.
- [ETSI TS 129 334] ETSI TS 129 334, *Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); LTE; IMS Application Level Gateway (IMS-ALG) – IMS Access Gateway (IMS-AGW); Iq Interface; Stage 3*.
- [ETSI TS 183 018] ETSI TS 183 018, *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*.

3 Definitions

3.1 Terms defined elsewhere

This supplement uses the following terms defined elsewhere:

3.1.1 emergency telecommunications service (ETS) [ITU-T E.107]: A national service providing priority telecommunications to the ETS authorized users in times of disaster and emergencies.

3.1.2 international emergency preference scheme (IEPS) [ITU-T E.106].

3.2 Terms defined in this supplement

This supplement defines the following terms:

3.2.1 bearer-dependent decision point (BDDP): The media gateway controller (MGC) is the primary decision point with respect to the mapping of call control level information to gateway control signalling and the applicable ITU-T H.248 context, termination and/or stream entity as bearer level elements. The MGC provides all necessary information about bearer plane protocol stack, supported QoS technologies, etc.

NOTE 1 – This is the usual model in the master-slave relationship of ITU-T H.248 gateways.

NOTE 2 – The synonym of *technology-dependent ... / technology-independent ...* originates from the ITU-T resource and admission control function (RACF) architecture (see [ITU-T Y.2111]).

3.2.2 bearer-independent decision point (BIDP): In contrast to clause 3.2.1, definition of BDDP, the media gateway controller (MGC) is still the primary decision point with respect to the mapping of call control level information to gateway control signalling but lacks (partially or fully) bearer-related information. The MGC applies generic signalling and delegates the final mapping to the MG.

NOTE – The notion of *bearer-independent ...* originates from the bearer-independent call control (BICC) architecture (see ITU-T Q.19xx-series of Recommendation); applied, for example, in the ITU-T H.248 profile *bearer-independent call bearer control protocol* according to [ITU-T Q.1950].

3.2.3 mapping function (MF): A function, located in ITU-T H.248 entities (MGC and MG), for mapping protocol objects between two interfaces (MGC: between call control and gateway control signalling; MG: between gateway control signalling and user plane protocols). The mapping function relates to the following, hierarchical information:

MF type (a) – Protocol mapping: e.g., ITU-T H.248, ITU-T H.323, session initiation protocol (SIP), Internet Protocol (IP); protocol type mapping: MGC level mapping: SIP to ITU-T H.248, SIP session description protocol (SDP) to ITU-T H.248 (SDP); and MG level mapping: ITU-T H.248 to IP);

NOTE 1 – The MGC located mapping function (MF MGC) could affect the two protocol levels (a1) application control protocol (e.g., ITU-T H.323, SIP or BICC) and an optional embedded (a2) media description protocol (e.g., SDP).

MF type (b) – Type mapping: Mapping of information element types (e.g., signalling element type or IP header field);

NOTE 2 – At a syntactic level the mapping of information element types usually implies a mapping of the information element value.

MF type (c) – Value mapping: Mapping of information element value.

NOTE 3 – The combination of signalling element/type is also known as codepoint.

The mapping function may affect all three levels in any combination.

NOTE 4 – Appendix III illustrates some examples of different mapping functions.

4 Abbreviations and acronyms

This supplement uses the following abbreviations and acronyms:

BD	Bearer Dependent
BI	Bearer Independent
BDDP	Bearer-dependent Decision Point
BICC	Bearer-Independent Call Control
BIDP	Bearer-Independent Decision Point
DPI	Deep Packet Inspection
DS	Differentiated Services
ETS	Emergency Telecommunications Service
IEPS	International Emergency Preference Scheme
IP	Internet Protocol
IDS	Intrusion Detection System
LxVPN	Layer x Virtual Private Network
MF	Mapping Function