International Telecommunication Union

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

H.248.56
Corrigendum 1
(03/2009)

SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

Infrastructure of audiovisual services – Communication procedures

Gateway control protocol: Packages for virtual private network support

Corrigendum 1: VLAN package clarifications

Recommendation ITU-T H.248.56 (2007) – Corrigendum 1

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Recommendation ITU-T H.248.56

Gateway control protocol:
Packages for virtual private network support

Corrigendum 1
VLAN package clarifications

Summary

Recommendation ITU-T H.248.56 defines H.248 packages for virtual private network (VPN) support and focuses on Ethernet-based virtual local area networks, representing a network-based layer 2 VPN type.

Corrigendum 1 provides the following clarifications for the VLAN package version 1:

- value range '0 to 4095' of property *VLAN tags* used for VLAN tagging;

- value '4096' of property *VLAN tags* defines the semantic for "no VLAN tagging"; and

- default values for the two package properties may be defined via configuration management.

FOREWORD

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Recommendation ITU-T H.248.56

Gateway control protocol:
Packages for virtual private network support

Corrigendum 1
VLAN package clarifications

Modifications introduced by this corrigendum are shown in revision marks. Unchanged text is replaced by ellipsis (•••). Some parts of unchanged text (clause numbers, etc.) may be kept to indicate the correct insertion points.

•••

1.1   General

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VPN support for H.248 physical terminations is in principle possible with H.248 (see, e.g., [b-ITU-T ~~Rec.~~ H.248.21]), but out of scope of this Recommendation because, e.g., there is not any explicit VPN-ID on bearer level.

The edge of a VPN could be further distributed in customer edge (CE) and provider edge (PE) VPN network elements, see clause 5.2.1 of [ITU-T Y.1311] (or [ITU-T G.8011.2/Y.1307.2] for Ethernet-based VPNs). The H.248 MG may provide a "customer" edge VPN function, but also a collapsed CE/PE VPN edge function.

Corrigendum 1 provides the following clarifications for the VLAN package version 1:

•   Value range '0 to 4095' of property *VLAN tags* used for VLAN tagging;

•   Value '4096' of property *VLAN tags* defines the semantic for "no VLAN tagging"; and

•   Default values for the two package properties may be defined via configuration management.

•••

1.2.1   Ethernet VLAN

•••

–   Traffic separation for frames belonging to different VLANs across a shared infrastructure is achieved by inserting a tag with a VLAN identifier (VID) into each frame. A VID must be assigned for each VLAN (1 to 409~~5~~6) and must be globally unique within the same physical infrastructure. One of the drawbacks to this approach is that customers also use VLANs within their own network, which introduces VID allocation and limitation issues. To solve this problem, a second IEEE 802.1Q-tag can be appended to customer IEEE 802.1Q-tagged packets that enter the providers' network (Q-in-Q as defined in [IEEE 802.1ad]). This separates the providers' VLAN space from the customers' VLAN space and allows customers to use whatever VIDs they want.

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2   References

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[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 Y.1311]   Recommendation ITU-T Y.1311 (2002), *Network-based VPNs – Generic architecture and service requirements*.

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4   Abbreviations and acronyms

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PPVPN   Provider Provisioned Virtual Private Network

SDL   Specification and Description Language

TCI   Tag Control Information

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6.1   Properties

6.1.1   VLAN tags

• • •

Possible values:	0 to 4096 See clause 6.6.6 for a description of the '4096' value.
Default:	4096 (indicating "off") unless provisioned otherwiseNone (see also clause 6.6.5). A provisioned default value corresponds to one or two VLAN tags, dependent on flat or stacked VLAN usage.
Defined in:	LocalC control
Characteristics:	Read/write

6.1.2   Ethernet priority

• • •

Possible values:	0 to 7
Default:	Provisioned None (see also clause 6.6.5).
Defined in:	LocalC control
Characteristics:	Read/write

• • •

6.6 Procedures

This package can be applied to ephemeral terminations where the MG ~~is use~~sing an Ethernet encapsulation on the interface (compliant to [IEEE 802.1p], [IEEE 802.1Q] and [IEEE 802.1ad]). For terminations where the properties are set, the MG adds the given VLAN tag(s) and priorities to the Ethernet encapsulated media flow prior to sending it out of the context.

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6.6.2 QoS marking

The MGC marks the priority of all egress Ethernet frames of an ephemeral termination by signalling a correspondent *priority* value to the MG.

NOTE – The function of QoS marking is possible for many packet-switched bearer technologies (see also *ds* package in [ITU-T H.248.52]).

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6.6.4 Unsuccessful scenarios

This clause is relevant only when both package properties are used.

The Ethernet is either used as a flat or as a stacked VLAN. The sublist of possible values of both properties has then either one or two list items. The size of both sublists must be the same. Different sublist sizes identify an incorrect signalling of the property values. The MG shall reply with error code #473 "Conflicting Property Values" or code #454 ~~("No such parameter value in this package")~~ in such a case.

6.6.5 Default values for properties

The default value of *vlan/tags* or *vlan/pri* will be applied if the appropriate property is missing from the MGC command. In case both properties are absent, Ethernet frames are sent out of the context untagged. ~~There are no default property values defined by this Recommendation. The primary reason is that a single MG could be connected to multiple VLANs, and every individual VLAN may use a different value range for VLAN tags and/or priorities.~~

The MG VLAN tagging behaviour is summarized in Table 2 (and illustrated in Annex A by a formal specification using SDL):

Table 2 – VLAN marking using *vlan* version 1 package

H.248 property usage		Semantic
vlan/pri	*vlan/tags*	**Action**
Sent	Value smaller than '4096' sent	Apply VLAN tagging accordingly
Sent	Not sent (use provisioned default value)	Apply VLAN tagging accordingly
Not sent (use provisioned default value)	Value smaller than '4096' sent	Apply VLAN tagging accordingly
Not sent	Not sent	Do not apply VLAN tagging
Sent or not sent	Value '4096' sent	Do not apply VLAN tagging

6.6.6 Turning off VLAN tagging

The MGC may turn off "VLAN tagging" by signalling a *vlan/tags* value of 4096 (see Figure A.1). The MG shall *not* insert any 802.1Q header in the Ethernet frame. The MG does not consider the vlan/pri property value in this case.

The MG and MGC shall not include the value 4096 as part of a stacked VLAN value; i.e., both the following *vlan/tags* values are illegal:

```
vlan/tags = [4096, 100]  ; illegal – stacked VLAN with "off"
vlan/tags = [100, 4096]  ; illegal – stacked VLAN with "off"
```

Annex A

SDL specification for processing of *vlan* properties

(This annex forms an integral part of this Recommendation)

This annex provides an example SDL specification for the processing of the *vlan* properties by the MG. The SDL chart in Figure A.1 illustrates an example logic for unstacked VLANs.
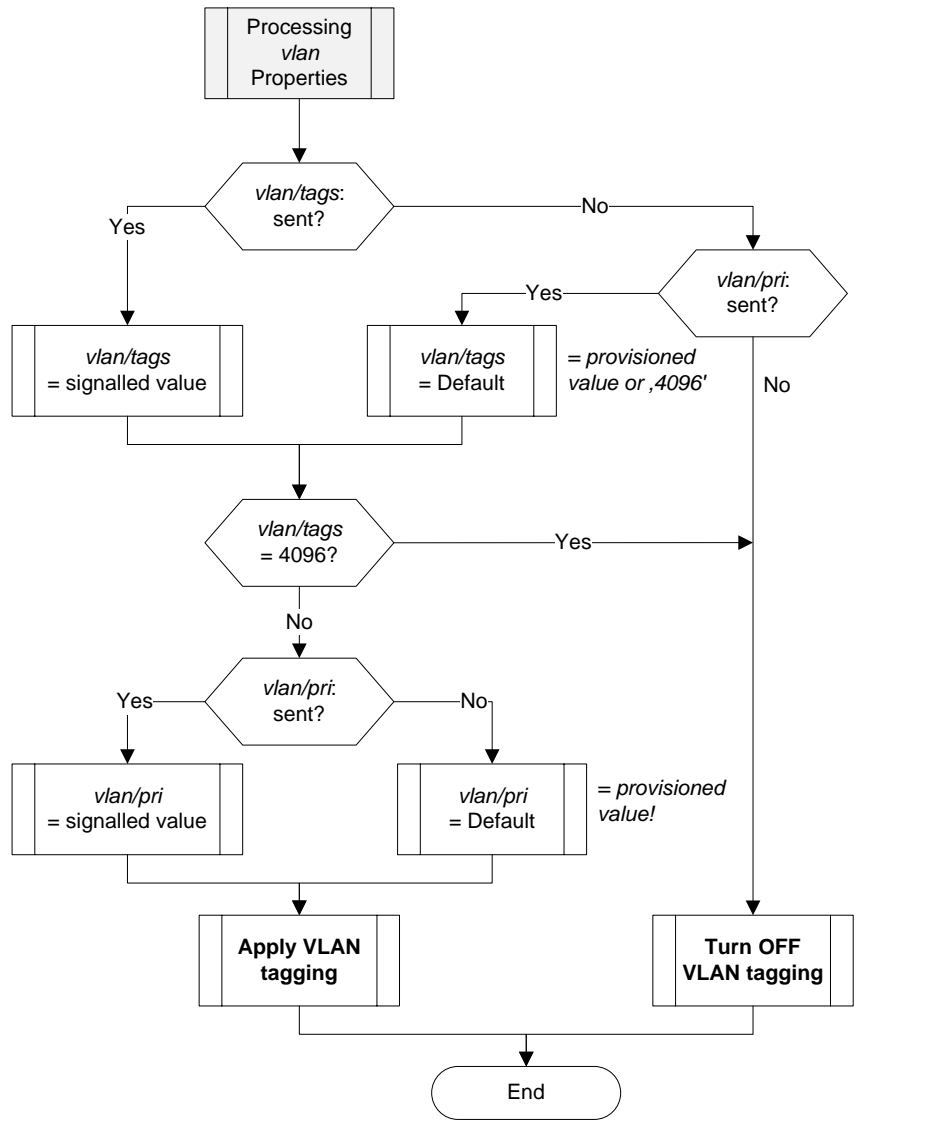

Figure A.1 – Processing of *vlan* properties – Example logic using SDL for unstacked VLANs

Bibliography

[b-ITU-T H.248.21]   Recommendation ITU-T H.248.21 (2004), *Gateway control protocol: Semi-permanent connection handling package.*

[b-IETF RFC 2764]   IETF RFC 2764 (2000), *A Framework for IP Based Virtual Private Networks.*

[b-ETSI TS 102 333] ETSI TS 102 333 (2004), *Gate control protocol.*

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