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SERIES H: AUDIOVISUAL AND MULTIMEDIA SYSTEMS

Infrastructure of audiovisual services – Communication procedures

Gateway control protocol: Shared Risk Group package

ITU-T Recommendation H.248.22

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ITU-T Recommendation H.248.22

Gateway control protocol: Shared Risk Group package

Summary

This Recommendation describes a package to enable the Media Gateway Controller (MGC) to indicate to the Media Gateway (MG) to use or not to use network resources associated with a shared risk group when setting up connections. When network connections are associated with ephemeral terminations in the MG, certain resources are used. A failure in the MG may result in the loss of certain groups of resources, whilst other groups of resources remain unaffected. The resources that share a risk of failure are called a shared risk group. A shared risk group is simply a grouping of the network resources (e.g., IP interfaces) sharing the same risk of failure. Each shared risk group could, for example, contain a number of IP interfaces located on the same piece of hardware. If a resource failure occurs, only terminations in the shared risk group corresponding to the failed resource are affected while other terminations are not.

Source

ITU-T Recommendation H.248.22 was approved by ITU-T Study Group 16 (2001-2004) under the ITU-T Recommendation A.8 procedure on 14 July 2003.

FOREWORD

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The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

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As of the date of approval of this Recommendation, ITU had not received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

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Gateway control protocol: Shared Risk Group package

1 Scope

When network connections are associated with ephemeral terminations in the MG, certain resources are used. A failure in the MG may result in the loss of certain groups of resources, whilst other groups of resources remain unaffected. The resources that share a risk of failure are called a shared risk group. A shared risk group is simply a grouping of the network resources (e.g., IP interfaces) sharing the same risk of failure. Each shared risk group could, for example, contain a number of IP interfaces located on the same piece of hardware. If a resource failure occurs, only terminations in the shared risk group corresponding to the failed resource are affected while other terminations are not.

The MGC may select different shared risk groups when the redundancy of network resources has to be controlled, or when the MGC wishes to specify which group of resources are to be used. With this functionality the MGC is given control of the resources used by ephemeral terminations in the MG. The MGC may order the MG to use resources from a selected Shared Risk Group, or not to use resources from a Shared Risk Group. This gives an advantage over using Termination ID schemes to link resource groups in that the MGC can specify certain resources to avoid in a CHOOSE ($) Termination ID scenario.

The capability to order the MG to use diverse resources for different connections is particularly useful when a pair of connections is used for a primary and secondary link e.g., for signalling transport.

Figure 1 shows an example of a scenario where two shared risk groups have been defined and are used by ephemeral terminations. Context 3 represents a Primary Link and Context 5 is its secondary link.

The Shared Risk Group Package may be used whenever the behaviour described in the procedures section of the package is required.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

– ITU-T Recommendation H.248.1 (2002), *Gateway Control Protocol: Version 2*.

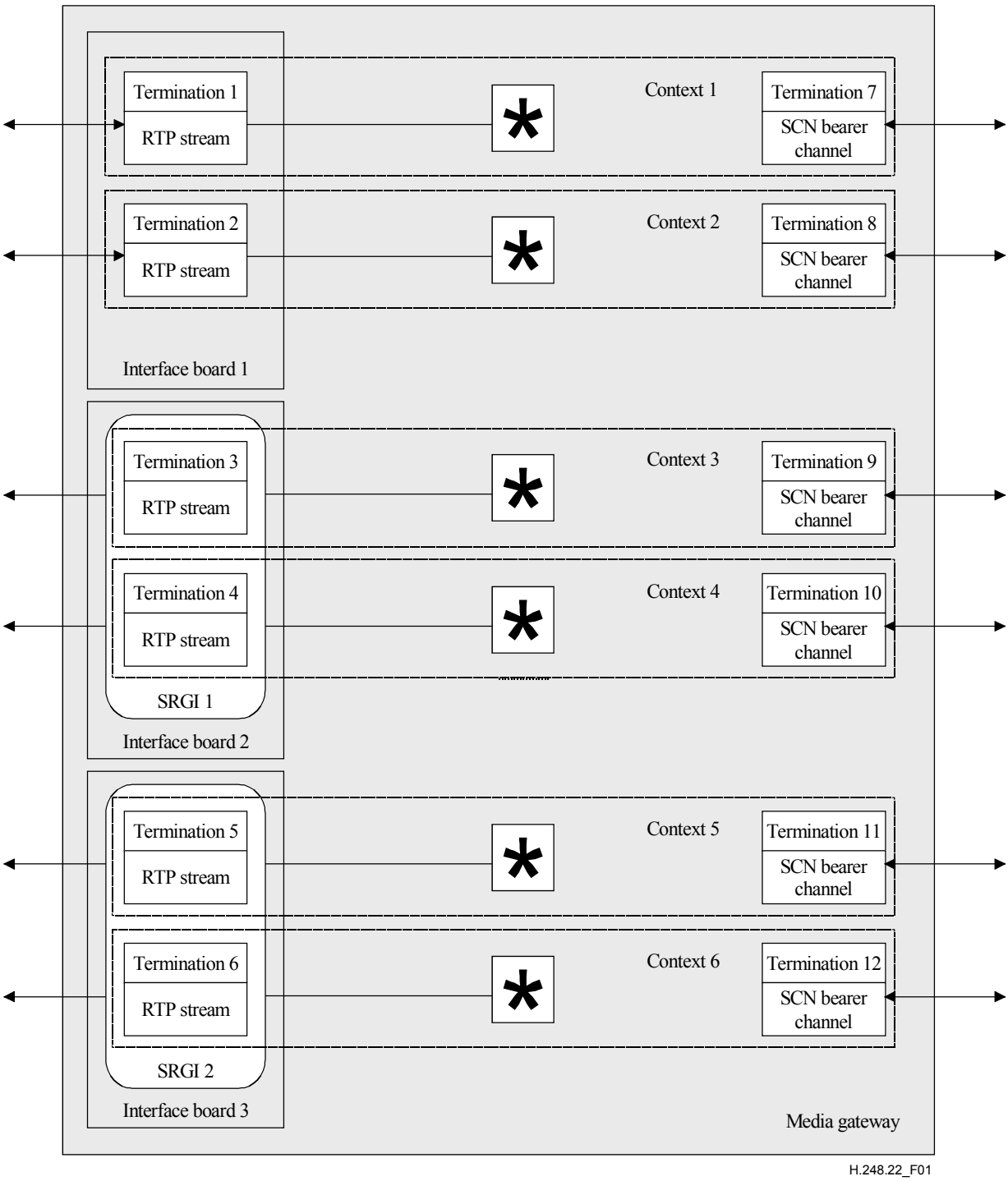

Figure 1/H.248.22 – Example of shared risk group usage

3 Definitions

This Recommendation defines the following term:

3.1 shared risk group: A Shared Risk Group consists of resources or groups of resources that share the same risk of failure. It is the relationship between resources in a MG that defines a shared risk group.

4 Abbreviations

This Recommendation uses the following abbreviations:

DSP	Digital Signal Processor
MG	Media Gateway
MGC	Media Gateway Controller
RTP	Real Time Protocol
SCN	Switched Circuit Network
SRGI	Shared Risk Group Identity

5 Shared risk group package

Package Name: Shared Risk Group Package

PackageID: shrisk, 0x006b

Description:

This package defines properties and procedures that are used to distinguish between different shared risk groups in the MG.

Version: 1

Designed to be extended only: No

Extends: None

5.1 Properties

5.1.1 Property Name: Include shared risk group

PropertyID: incl, 0x0001

Description:

The value of this property indicates if the shared risk group specified is requested to be used or to not be used (see 5.5.1.1 for further details).

Type: Sublist of type Boolean

Possible Values:

"on" (TRUE) Use resources from the specified SRGI only [Default]

"off" (FALSE) Use resources from any but the specified SRGI

Defined in: Termination State Descriptor

Characteristics: Write Only

5.1.2 Property Name: Shared risk group identity request

PropertyID: srgir, 0x0002

Description:

The value of this property specifies the shared risk group identity

Type: Sublist of type Integer

Possible Values:

The values specify the SRGI according to a scheme understood by both MGC and MG (see 5.5.1.3 for further details).

Defined in: Termination State Descriptor

Characteristics: Write Only

5.1.3 Property Name: Assigned shared risk group identity

PropertyID: asrgi, 0x0003

Description:

The value of this property specifies the Shared risk group identity that has been allocated by the MG. This value cannot be directly modified by the MGC.

Type: Integer

Possible Values:

The values specify the SRGI according to a scheme understood by both MGC and MG (see 5.5.1.2 for further details).

Defined in: Termination State Descriptor

Characteristics: Read Only

5.2 Events

NA

5.3 Signals

NA

5.4 Statistics

NA

5.5 Procedures

5.5.1 Establishment/modification of terminations when using shared risk group

When a MGC determines that an ephemeral termination must use resources belonging to (or different to) a specific shared risk group, an Add/Modify/Move command will be sent to the MG specifying the "*Include shared risk group*" property and the "*Shared risk group identity Request*" property.

5.5.1.1 Usage of the "Include shared risk group" property

The "Include shared risk group" property shall be used to indicate to the MG if resources from the specified shared risk group identity (*shrisk/srgir*) must be used for the termination (*shrisk/incl = yes*) or if resources from the specified risk group identity must not be used for the termination (*shrisk/incl = no*). If the MGC is not concerned with which shared risk groups are used then it should not include the *shrisk/incl* nor *shrisk/srgir* properties. The *shrisk/incl* and *shrisk/srgir* properties are valid only for the command that they are contained in. They cannot be read/audited after the execution of the command. Wildcarding values with CHOOSE ($) or ALL (*) shall not be used with *shrisk/incl* and/or *shrisk/srgir.* For example: in the case of a semi-permanent connection and a protective secondary link, by specifying (*shrisk/incl = on, shrisk/srgi = 1*) for the primary link and (*shrisk/incl = off, shrisk/srgi = 1*) for the secondary, the MGC is assured that the primary and secondary links are not sharing the same groups of resources.

The MGC may provide a sublist of *shrisk/incl* and *shrisk/srgir* to the MG to enable the MGC to request that certain shared risk groups shall be used and other shared risk groups shall not be used. The first value of *shrisk/incl* in the sublist corresponds to the first value of *shrisk/srgir* sublist.

5.5.1.2 Usage of the "Assigned shared risk group identity" property

The "Assigned Shared Risk Group Identity (*shrisk/asrgi*)" contains the accumulated shared risk identities of the resources used by the termination. This value cannot be directly written by the MGC. However, it can indirectly be influenced by adding, modifying or subtracting resources from the termination. The MGC can audit this property to determine the shared risk groups used by a termination.

5.5.1.3 Usage of the "Shared risk group identity" property

How the "Shared risk group identity" is associated with MG resources is out of the scope of this Recommendation. The different resources used by a termination may have different "Shared Risk Group Identity" ranges. However, it is assumed that this will be operator configurable and provisioned on both the MGC and MG so that they have a mutual understanding of the Specified Risk Group identity schema. For example, a binary structure of the property can be used. That is, the *shrisk/srgi* decimal integer is treated as a four byte binary number within the MG and MGC. This way different bytes or groups of bits may be used to address different types of resources in the MG. For example: the first two bytes could be used to identify DSP resources while the last two bytes could identify interface boards on the MG. When sent over the GCP link, the binary number is, however, expressed as a decimal number integer.

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