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SERIES G: TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS

Digital transmission systems – Digital networks – Management of transport network

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Enterprise viewpoint for pre-provisioned adaptation management

ITU-T Recommendation G.852.8

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION G.852.8

ENTERPRISE VIEWPOINT FOR PRE-PROVISIONED ADAPTATION MANAGEMENT

Summary

The pre-provisioned adaptation management service allows to assign a server transport entity (trail or trail termination point) to a client linking entity (topological link or topological link end). This service allows for provision/remove client transport entities (link connections or connection termination points) to/from server linking entities (topological link or topological link end). A notification service is also made available for any changes made as consequence of actions in this community.

Source

ITU-T Recommendation G.852.8 was prepared by ITU-T Study Group 4 (1997-2000) and was approved under the WTSC Resolution No. 1 procedure on the 26th of March 1999.

FOREWORD

ITU (International Telecommunication Union) is the United Nations Specialized Agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of the ITU. The ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Conference (WTSC), which meets every four years, establishes the topics for study by the ITU-T Study Groups which, in their turn, produce Recommendations on these topics.

The approval of Recommendations by the Members of the ITU-T is covered by the procedure laid down in WTSC Resolution No. 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation the term *recognized operating agency (ROA)* includes any individual, company, corporation or governmental organization that operates a public correspondence service. The terms *Administration, ROA* and *public correspondence* are defined in the *Constitution of the ITU (Geneva, 1992)*.

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As of the date of approval of this Recommendation, the 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.

CONTENTS

Recommendation G.852.8

ENTERPRISE VIEWPOINT FOR PRE-PROVISIONED ADAPTATION MANAGEMENT

(Geneva, 1999)

1 Scope

This Recommendation specifies the enterprise viewpoint for the pre-provisioned adaptation management of a transport network.

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; all 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.

[1] ITU-T Recommendation G.851.1 (1996), *Management of the transport network – Application of the RM-ODP framework.*

[2] ITU-T Recommendation G.852.2 (1999), *Enterprise viewpoint description of transport network resource model.*

3 Definitions

None.

4 Abbreviations

This Recommendation uses the following abbreviations:

LC Link Connection

pam pre-provisioned adaptation management

SDH Synchronous Digital Hierarchy

TEM Transport Enterprise Model

tu tributary unit

WDM Wavelength Division Multiplexing

5 Conventions

None.

6 Community "pre-provisioned adaptation management"

6.1 Purpose

The objective of this community is to provide link capacity to client-layer(s) from a server layer. This community should be used in the case where client transport entities can be provisioned inside the link during the adaptation management. This capability of having pre-provisioned client transport entities is available in technologies such as SDH or WDM.

The management of compound links and diverse routing is not addressed in this community.

6.2 Role

pam_caller

This role reflects the client of the actions defined within this community. One and only one caller role occurrence must exist in the community.

pam_provider

This role reflects the server of the actions defined within this community. One and only one provider role occurrence must exist in the community.

notification receiver

This role represents a receiver of the reporting actions defined within this community. Zero or more notification receiver role occurrences may exist in the community.

client layer network domain

This role reflects the layer network Domain defined in Recommendation G.852.2 that contains the client linking entities having the same signal identification. One or more occurrences may exist in the community.

server layer network domain

This role reflects the layer network Domain defined in Recommendation G.852.2 that contains the serve linking entities. One and only one occurrence must exist in the community.

client linking entity

This role reflects either the topological link resource or the topological link end resource as defined in Recommendation G.852.2. One client linking entity role occurrence per layer served by the layer of the client transport entity role occurrence may exist in the community.

client transport entity

This role reflects either the link connection resource or the network connection termination point resource as defined in Recommendation G.852.2. Zero or more client transport entity role occurrences may exist in the community.

server transport entity

This role reflects either the trail resource or the network trail termination point resource as defined in Recommendation G.852.2. One or more server transport entity role occurrences may exist in the community.

6.2.1 Community

OBLIGATION resourceConsistency

This community applies for both arc-oriented view and point-oriented view. Roles client linking entity, client transport entity and server transport entity can be played by either an arc-oriented resource or a point-oriented resource, but consistently: those three roles can be played either by arc-oriented resources or by point-oriented resources, but not by a mixture of arc-oriented and point-oriented resources.

OBLIGATION scope

Only properties that are explicitly stated in this community are valid and can be accessed by both caller and provider of this community. Conformance to this service depends only on the explicit specification of this service. Any other modifications outside of this community is not relevant for conformance.

OBLIGATION serviceRejection

In this community, a provider shall identify the obligation or prohibition which is not fulfilled either by the caller or the provider. The provider shall give an indication about any execution infrastructure problem. In this case, the level of detail indicated by the provider shall be dependent on shared the knowledge of the infrastructure on which the community is running. If the rejection is due to incorrect caller behaviour or information, the provider has to give it back enough indication to allow for correction.

OBLIGATION viewingCapabilities

The provider shall support such viewing of the resource properties and relationships that have been identified or permitted in the service contract with the caller.

OBLIGATION belongingConstraints

All resources managed in the community actions shall belong to the community.

OBLIGATION consistentClientAndServerSignalId

The signal identification of the resources playing the roles client linking entity and client transport entity should correspond to a layer which is client of the layer characterized by the signal identification of the resources playing the role server transport entity.

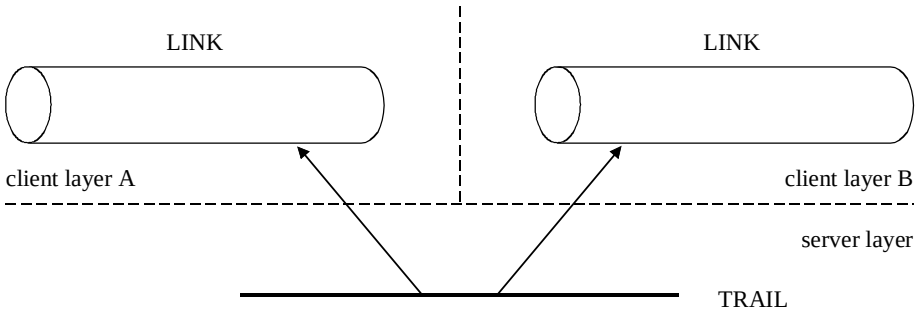
OBLIGATION architecturalConstraints

All the modifications performed on the resources in this community are done in respect with the architectural constraints expressed in Recommendation G.852.2 (TEM).

6.2.2 Action

6.2.2.1 Assign server transport entity to client linking entity

This action is used to assign a server transport entity to a client linking entity. Those two entities are provided by the caller. The provider shall report the potential number of client transport entities of the client linking entity in case of success.



Example of a trail serving 2 links in two different client layers

T0410670-98

ACTION_POLICY

OBLIGATION inputClientLinkingEntityId

The caller shall provide the identifier of the client linking entity that must not be already associated to a server transport entity.

OBLIGATION inputServerTransportEntityId

The caller shall provide the identifier of the server transport entity.

PERMISSION returnClientTransportEntities

The provider may return the identifiers of the client transport entities that are already supported by the server transport entity. This is to cover the case where the adaptation is fixed and all the client transport entities have been already provisioned during the creation of the server transport entity.

OBLIGATION successReturnUnprovisionedCapacity

In case of a successful action, the provider shall return to the caller the number of unprovisioned client transport entities of the client linking entity.

6.2.2.2 Deassign server transport entity from client linking entity

This action is used to deassign the transport entity from a client linking entity. The client linking entity is identified by the caller. The provider shall reject the request if some capacity is still provided by the transport entity to the client linking entity.

ACTION_POLICY

OBLIGATION inputClientLinkingEntityId

The caller shall provide the identifier of the client linking entity.

OBLIGATION inputServerTransportEntityId

The caller shall provide the identifier of the server transport entity.

OBLIGATION noProvidedCapacity

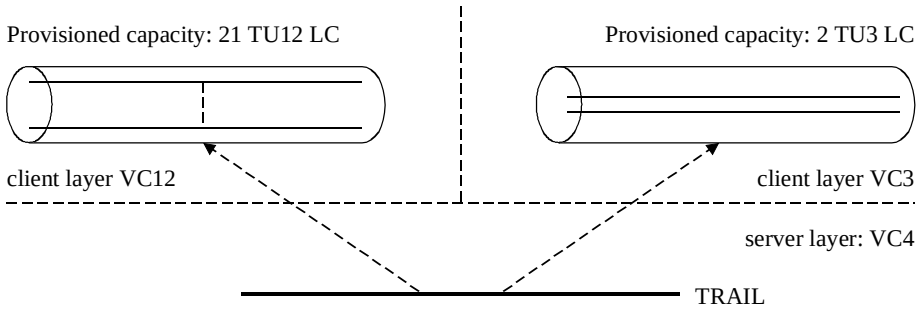
The provider shall reject the request if the server transport entity is still providing capacity to the client linking entity.

OBLIGATION successReturn

In case of a successful action, the provider shall indicate to the caller that the action was successful.

6.2.2.3 Provision capacity to client linking entity

This action is used to provision a capacity in terms of a number of client transport entities from the server transport entity to a client linking entity. In case of a successful action, the capacity requested by the caller is provisioned and added to the previous provisioned number of client transport entities of the client linking entity and the provisioned client transport entities are returned. The caller has the ability to specify the channels (timeslots for SDH) of the client transport entities that shall be provisioned. The provider shall not satisfy the request if the requested capacity is larger than the potential capacity of the client linking entity and it has the responsibility to manage the remaining number of client transport entities so that the whole capacity is made available to all the client linking entities.



Example of a server trail providing 21 TU12 and 2 TU3 to two different links

T0410680-98

ACTION_POLICY

OBLIGATION inputClientLinkingEntityId

The caller shall provide the identifier of the client linking entity.

PERMISSION selectClientTransportEntities

The caller may provide the channels (timeslots for SDH) of the client transport entities that shall be provisioned.

OBLIGATION providerClientTransportEntities

If PERMISSION selectClientTransportEntities is part of the contracted service, then the provider shall provision the client transport entities specified by the caller.

OBLIGATION correctChannels

If PERMISSION selectClientTransportEntities is part of the contracted service and if the channels specified are not correct (e.g. already provisioned or not allowed according to the concerned technology), then the provider shall reject the action.

OBLIGATION inputRequestedCapacity

If PERMISSION selectClientTransportEntities is not part of the service contract, the caller shall provide the requested number of client transport entities.

OBLIGATION consistency

The provider shall reject the request if the number of client transport entities requested for the client linking entity exceeds the potential number of client transport entities. The provider shall inform the caller of the maximum number of client transport entities that could be provisioned.

OBLIGATION multipleClientLinkingEntityProvisioning

The provider shall ensure that the unrequested part of the server transport entity capacity is made available for all the other client linking entities supported. For example in SDH technology, if only 21 tu12 of a vc4 trail are provided to the caller, the provider shall ensure that the remaining capacity is made available to other client linking entities supported by the trail (e.g. in the vc3 link two tu3).

OBLIGATION deduceProvisionedCapacity

In case of a successful action, the provider shall deduce the new provisioned number of client transport entities of the client linking entity as follows: the new provisioned number of client transport entities is equal to the previous provisioned number of client transport entities of the client linking entity plus the capacity newly provisioned by this action.

OBLIGATION successReturnCapacity

In case of a successful action, the provider shall return the new provisioned number of client transport entities of the client linking entity.

OBLIGATION successReturnClientTransportEntitiesId

In case of a successful action, the provider shall return the identifiers of the provisioned client transport entities. There shall be a relationship between those identifiers and the channels (timeslots for SDH) of the provisioned client transport entities.

6.2.2.4 Remove capacity from client linking entity

This action is used to remove capacity from a client linking entity. In case of success, the capacity provided by the caller is removed and deduced from the previous available number of client transport entities of the client linking entity and the deleted client transport entities are returned. The provider shall not satisfy the request if the requested number of client linking entities is larger than the available number of client transport entities. The provider has the responsibility to manage the remaining number of client transport entities so that the whole capacity is made available to the client linking entities.

ACTION_POLICY

OBLIGATION inputClientLinkingEntityId

The caller shall provide the identifier of the client linking entity.

PERMISSION selectClientTransportEntities

The caller may provide the channels (timeslots for SDH) of the client transport entities that shall be removed.

OBLIGATION providerClientTransportEntities

If PERMISSION selectClientTransportEntities is part of the contracted service, then the provider shall remove the client transport entities specified by the caller.

OBLIGATION correctChannels

If PERMISSION selectClientTransportEntities is part of the contracted service and if the channels specified are not provisioned, then the provider shall reject the action.

OBLIGATION inputRequestedCapacity

If PERMISSION selectClientTransportEntities is not part of the service contract, the caller shall provide the number of client transport entities to be removed.

OBLIGATION multipleClientLinkingEntityProvisioning

The provider shall ensure that the unrequested part of the server transport entity capacity is made available for all the other client linking entities supported. For example in SDH technology, if only 21 tu12 of a vc4 trail are provided to the caller, the provider shall ensure that the remaining capacity is made available to other client linking entities supported by the trail (e.g. in the vc3 link two tu3).

OBLIGATION availableCapacity

This action shall be rejected if the available number of client transport entities of the client linking entity is lower than the number of client transport entities to be removed.

OBLIGATION deleteExistingClientTransportEntities

In case of a successful action, the provider shall return the identifiers of the deleted client transport entities.

OBLIGATION deduceProvisionedCapacity

In case of a successful action, the provider shall deduce the new provisioned number of client transport entities of the client linking entity as follows: the new provisioned number of client transport entities is equal to the previous provisioned number of client transport entities of the client linking entity minus the capacity newly removed by this action.

OBLIGATION successReturnCapacity

In case of a successful action, the provider shall return the remaining provisioned number of client transport entities of the client linking entity.

6.2.2.5 Report assignment of server transport entity

This action is used to report the assignment of a server transport entity to a client linking entity. The client linking entity and the server transport entity assigned to it shall be notified by the provider.

ACTION_POLICY

OBLIGATION informClientLinkingEntity

The notification receiver shall be informed by the provider of the identifier of the client linking entity.

OBLIGATION informServerTransportEntity

The notification receiver shall be informed by the provider of the identifier of the server transport entity assigned to the client linking entity.

6.2.2.6 Report deassignment of server transport entity

This action is used to report the deassignment of the server transport entity from a client linking entity.

ACTION_POLICY

OBLIGATION informClientLinkingEntity

The notification receiver shall be informed by the provider of the identifier of the client linking entity.

OBLIGATION informServerTransportEntity

The notification receiver shall be informed by the provider of the identifier of the server transport entity deassigned from the client linking entity.

6.2.2.7 Report client linking entity capacity provisioning

This action is used by the provider to report on the provisioning of a number of client transport entities to a client linking entity.

ACTION_POLICY

OBLIGATION informClientLinkingEntity

The notification receiver shall be informed by the provider of the identifier of the client linking entity.

OBLIGATION informCapacityProvided

The notification receiver shall be informed by the provider of the number of client transport entities provided.

OBLIGATION informChannelsProvided

The notification receiver shall be informed by the provider of the provided channels.

6.2.2.8 Report client linking entity capacity removal

This action is used by the provider to report on the removal of a number of client transport entities from a client linking entity.

ACTION_POLICY

OBLIGATION informClientLinkingEntity

The notification receiver shall be informed by the provider of the identifier of the client linking entity.

OBLIGATION informCapacityRemoved

The notification receiver shall be informed by the provider of the number of client transport entities removed.

OBLIGATION informChannelsRemoved

The notification receiver shall be informed by the provider of the removed channels.

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