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ITU-T G.852.16

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TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

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

Digital networks – Management of transport network

Enterprise viewpoint for pre-provisioned route discovery

ITU-T Recommendation G.852.16

(Formerly CCITT Recommendation)

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ITU-T Recommendation G.852.16

Enterprise viewpoint for pre-provisioned route discovery

Summary

This Recommendation specifies the enterprise viewpoint for the pre-provisioned route discovery of a transport network.

The objective of the community is to identify appropriate routes for setting up, or reserving the route components for (by using other communities), a trail, a tandem connection or a subnetwork connection. It is possible to request conditions that have to be met by the identified route. In addition to proposing routes, information is provided to help in the selection among the candidate routes on the basis of a set of properties. In case of protection, the number of routes corresponds to the protection scheme chosen.

Source

ITU-T Recommendation G.852.16 was prepared by ITU-T Study Group 4 (2001-2004) and approved under the WTSA Resolution 1 procedure on 19 January 2001.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. 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 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.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 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 expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

INTELLECTUAL PROPERTY RIGHTS

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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.

CONTENTS

ITU-T Recommendation G.852.16

Enterprise viewpoint for pre-provisioned route discovery

1 Scope

This Recommendation specifies the enterprise viewpoint for the pre-provisioned route discovery 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; 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 G.851.1 (1996), *Management of the transport network – Application of the RM-ODP framework*.

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

3 Definitions

No new term is defined in this Recommendation.

4 Abbreviations

This Recommendation uses the following abbreviations:

Id	Identifier
ITU-T	International Telecommunication Union – Telecommunication Standardization Sector
prd	pre-provisioned route discovery
RM-ODP	Reference Model for Open Distributed Processing

5 Conventions

None.

6 COMMUNITY pre-provisioned route discovery

6.1 PURPOSE

"The objective of the community is to identify appropriate routes for setting up, or reserving the route components for (by using other communities), a trail, a tandem connection or a subnetwork connection. It is possible to request conditions that have to be met by the identified route. In addition to proposing routes, information is provided to help in the selection among the candidate routes on the basis of a set of properties. In case of protection, the number of routes corresponds to the protection scheme chosen."

6.2 ROLE

prd_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."

prd_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."

individual route component

"This role represents one of the components of an individual route. It is either a link connection resource as defined in ITU-T G.852.2 (in an arc-oriented view) or a connection termination point resource as defined in ITU-T G.852.2 (in a point-oriented view) that has been designated as a component of a route. Zero or more individual route component role occurrences may exist within this 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."

individual route

"This role represents the route for an unprotected scheme or one of the routes in a protected scheme. Zero or more role occurrences may exist within the community."

route end

"This role reflects a resource that lies at the end of a route. This role may represent a link connection resource, trail termination point resource, connection termination point resource, access group resource, link resource, topological link resource, link end resource, topological link end resource or subnetwork resource as defined in ITU-T G.852.2. Zero or more route end role occurrences may exist within the community."

layer network domain

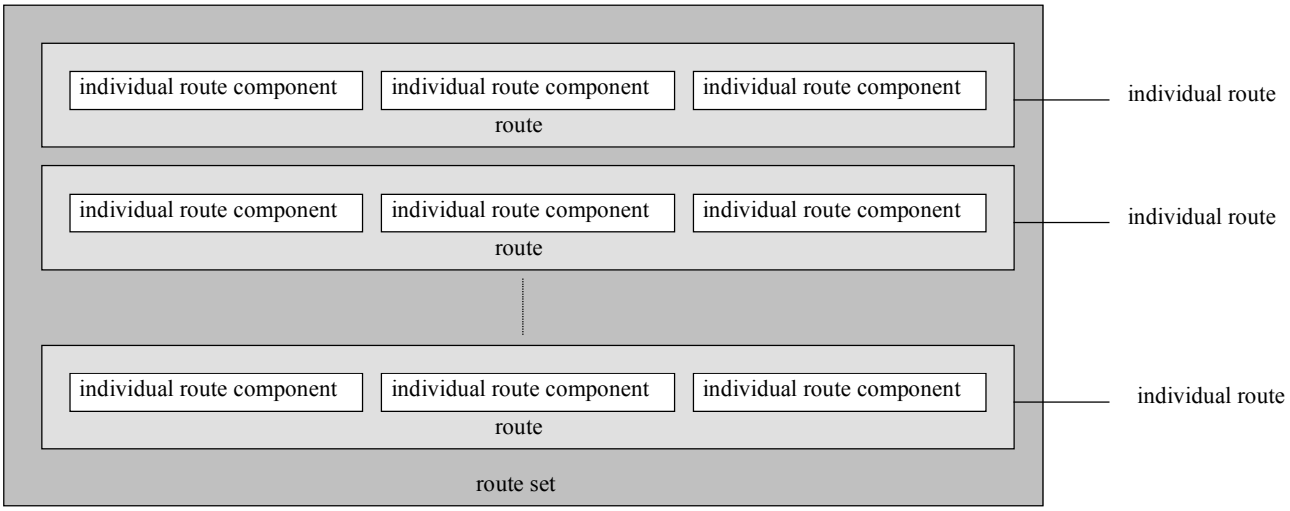
"This role represents the layer network domain resource defined in ITU-T G.852.2. One and only one role occurrence must exist in the community."

route set

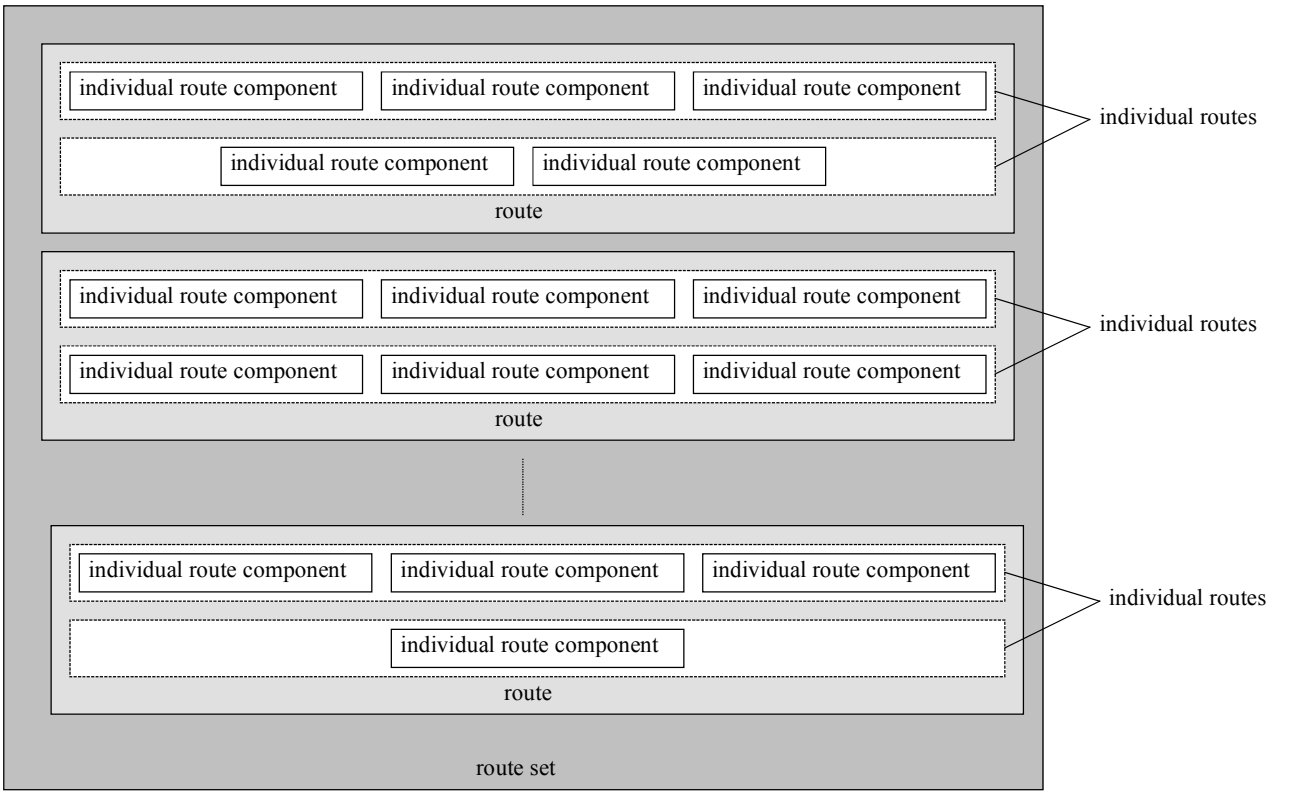
"This role represents the set of routes returned by the provider in response to the route discovery action. Zero or one role occurrence must exist in the community."

route

"This role represents a route returned by the provider in response to the route discovery action. In case of a route for a protection scheme it may contain several individual routes corresponding to the protection scheme requested. One or more role occurrences may exist in the community."



example return information for a route without protection (the route and the individual route are the same in this case)



example return information for a route with 1+1 protection

Figure 1/G.852.16 – Role diagram explaining the notion of "route" and "individual route"

6.3 COMMUNITY_POLICY

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 are not relevant for conformance."

OBLIGATION serviceRejection

"In case of service rejection the 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 the shared knowledge of the infrastructure on which the community is running. For the case where any wrong parameters have been passed to the provider, the return exception shall indicate these parameters."

OBLIGATION signalId

"Each resource in the community shall have the same signal identification."

OBLIGATION viewingCapabilities

"The provider shall support a view 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 architecturalConstraints

"All the modifications performed on the resources in the community shall respect the architectural constraints expressed in ITU-T G.852.2."

6.4 ACTION

6.4.1 discover routes

"This action identifies routes for trails, tandem connections or subnetwork connections expressed as ordered series of either link connections or connection termination points in a layer network. The routes pertain to a certain level of partitioning. This action may be also used for finding routes for various protection schemes. The provider will return a route set that may contain a number of routes based on the service contract with the caller."

ACTION_POLICY

OBLIGATION supplyRouteEnds

"The caller shall identify the route ends of the requested routes."

OBLIGATION noExistingRouteEnds

"This action will fail if any of the supplied route ends does not exist within the layer network domain. In the case of failure, the provider shall return the identifier in error."

PERMISSION supplyRoutingConditions

"The caller may request conditions that has to be met by the returned routes. These conditions could be technology independent or technology dependent.

Examples for technology independent conditions are:

- request topology criteria (The topology criteria consist of a list of topology resources.);
- maximum Number of nodes;
- diversity with respect to one or more routes.

Examples for technology dependent conditions are:

- request a constraint on bandwidth properties of the resources serving the route components (e.g. maximum average spare capacity);
- request routes for a specific protection scheme (The total number of individual routes within each route corresponds to the protection scheme chosen; with no protection each potential returned route contains just one individual route, with 1+1/1:1 two individual routes are returned, with m:n m+n individual routes are returned.)."

OBLIGATION arcVersusPointOrientedRouteComponents

"The caller may request that either arc-oriented (link connections) or point-oriented (connection termination points) route components are returned."

OBLIGATION topologyResourcesListTypes

"If PERMISSION "supplyRoutingConditions" is part of the contracted service and topology criteria are supplied, the topology criteria must be expressed as links or topological links if the caller requests arc-oriented route components (i.e., link connections), or as link ends, topological link ends, or subnetworks if the caller requests point oriented route components (i.e. connection termination points)."

OBLIGATION routingConditionsNotFulfilled

"If PERMISSION "supplyRoutingConditions" is part of the contracted service and the request could not be met, the provider will reject the action and return the condition that could not be fulfilled."

PERMISSION returnedProperties

"The provider may return properties associated with each returned route. The properties may be technology dependent e.g. bandwidth parameters (e.g., average spare capacity of the links/topological links involved), protection scheme, or technology independent (e.g., number of nodes, total length of the physical route)."

OBLIGATION freeRouteComponents

"The provider shall return only those routes where every individual route component is free."

OBLIGATION returnIds

"Upon success of this action, the provider shall return the unique identifiers of the route ends and the route set. The latter shall contain the routes, optionally the properties of each route and the individual route components."

6.4.2 report route discovery

"This action is used by the provider to report to the notification receiver the discovered routes."

ACTION_POLICY

OBLIGATION informRouteDiscovery

"When a route set is created by the provider upon request of the caller the notification receiver shall be informed by the provider of the identifier of the route ends and the route set. The latter shall contain the routes, optionally the properties of each route and the individual route components."

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