



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.852.2

(03/99)

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

**Digital transmission systems – Digital networks –
Management of transport network**

**Enterprise viewpoint description of transport
network resource model**

ITU-T Recommendation G.852.2

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION G.852.2

**ENTERPRISE VIEWPOINT DESCRIPTION OF TRANSPORT
NETWORK RESOURCE MODEL**

Source

ITU-T Recommendation G.852.2 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

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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.

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Recommendation G.852.2**ENTERPRISE VIEWPOINT DESCRIPTION OF TRANSPORT
NETWORK RESOURCE MODEL***(Geneva, 1999)***1 Scope**

The objective of this Recommendation is to provide a set of definitions of management abstractions of G.805 transport networks architectural components. The resources defined in this community provide a basis for the description of enterprise specifications of transport network-level management services. A resource can be defined as what is to be managed at the network level, something which is used by a transport network-level management service.

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.852.1 (1996), *Enterprise viewpoint for simple subnetwork connection management.*
- [3] ITU-T Recommendation G.852.3 (1999), *Enterprise viewpoint for topology management.*
- [4] ITU-T Recommendation G.852.6 (1999), *Enterprise viewpoint for trail management.*
- [5] ITU-T Recommendation G.852.8 (1999), *Enterprise viewpoint for pre-provisioned adaptation management.*
- [6] ITU-T Recommendation G.852.10 (1999), *Enterprise viewpoint for pre-provisioned link connection management.*
- [7] ITU-T Recommendation G.852.12 (1999), *Enterprise viewpoint for pre-provisioned link management.*
- [8] ITU-T Recommendation G.853.1 (1999), *Common information elements of the information viewpoint for the management of a transport network.*
- [9] ITU-T Recommendation G.853.2 (1996), *Subnetwork connection management information viewpoint.*
- [10] ITU-T Recommendation G.853.3 (1999), *Information viewpoint for topology management.*
- [11] ITU-T Recommendation G.853.6 (1999), *Information viewpoint for trail management.*
- [12] ITU-T Recommendation G.853.8 (1999), *Information viewpoint for pre-provisioned adaptation management.*

- [13] ITU-T Recommendation G.853.10 (1999), *Information viewpoint for pre-provisioned link connection management.*
- [14] ITU-T Recommendation G.853.12 (1999), *Information viewpoint for pre-provisioned link management.*
- [15] ITU-T Recommendation G.854.1 (1996), *Computational interfaces for basic transport network model.*
- [16] ITU-T Recommendation G.854.3 (1999), *Computational viewpoint for topology management.*
- [17] ITU-T Recommendation G.854.6 (1999), *Computational viewpoint for trail management.*
- [18] ITU-T Recommendation G.854.8 (1999), *Computational viewpoint for pre-provisioned adaptation management.*
- [19] ITU-T Recommendation G.854.10 (1999), *Computational viewpoint for pre-provisioned link connection management.*
- [20] ITU-T Recommendation G.854.12 (1999), *Computational viewpoint for pre-provisioned link management.*
- [21] ITU-T Recommendation G.855.1 (1999), *Management information generic network level model.*
- [22] ITU-T Recommendation M.3100/Amd.1 (1999), *Generic Network Information Model – Amendment 1.*

3 Definitions

None.

4 Abbreviations

This Recommendation uses the following abbreviations:

AP	Access Point
CP	Connection point
CTP	Connection Termination Point
LC	Link Connection
SNC	Subnetwork Connection
TCP	Trail Connection point
TTP	Trail Termination Point

5 Conventions

None.

6 Transport network resource model

6.1 Community TEM "transport network enterprise model"

6.1.1 Purpose

The objective of this community is to provide a set of definitions of management abstractions of G.805 transport networks architectural components. The resources defined in this community provide a basis for the description of enterprise specifications of transport network-level management services. A resource can be defined as what is to be managed at the network level, something which is used by a transport network-level management service.

6.1.1.1 General policy

Resource Identifier general permission: Each TEM resource has a *Resource Identifier* that needs to be unique, in the domain in which it is used. A user responsible to create a resource, may use a *User Identifier* that may be attached to the resource at creation time and gives the value for the Resource Identifier. This user identifier (if it is defined) has then to be used by the user in all operations attached to the resource as the resource identifier. The User Identifier may change during the life of the resource and all change shall be reported.

User label general permission: As a general policy, user labels may be associated with TEM entities. For a given community, these names are assigned by the caller and may be changed. They are not guaranteed to be unique. They carry no semantic information, but are used to "label" the physical or logic resource for purposes understood by the caller and perhaps by other potential callers who have a common understanding of the semantics carried by the user label. The User Label is an optional string attached to a resource which may be defined at creation time or later. This string (if it is defined) must not be used by the caller to identify the resource in an operation.

6.1.1.2 Relationships between specifications

All resources defined in this Recommendation will be used by the management components described in other specifications (as in Recommendations G.852.3, G.852.4, G.852.5, ...). These resources will be used as roles in each community. That can be explained by the fact that the TEM concept represents the actual resource, independently of all management action. Each resource may play a role in the description of a management component. For example, looking at Figure 1, it can be seen that a TEM connection termination point that represents the managed view of G.805 functions (adaptation and trail termination) will play the role of port in the simple subnetwork connection configuration service (G.852.1) and the role of connection termination point in the adaptation management service. A set of management components will be defined in Recommendations to allow the management of a transport network. Each organization will be able to use the components it wishes, independently from the others. An activity may be defined that relates all these management components in order to construct a management application, but it is not a standardization process to describe this overall activity. The components studied so far are:

- simple subnetwork connection configuration (G.852.1): allows to connect or release a subnetwork connection across a subnetwork;
- trail management: allows to connect or release a trail across a layer network domain;
- topology management: allows to create, delete and modify the topology resources (subnetworks, links, link ends, access groups);
- pre-provisioned link management: allows to manage the capacity of a link by adding or removing link connections;

- pre-provisioned link connection management: allows to assign the link connections inside a link to several users;
- pre-provisioned adaptation management: allows to manage the adaptation between a client layer network and a server layer network by creating the link connections served by a trail.

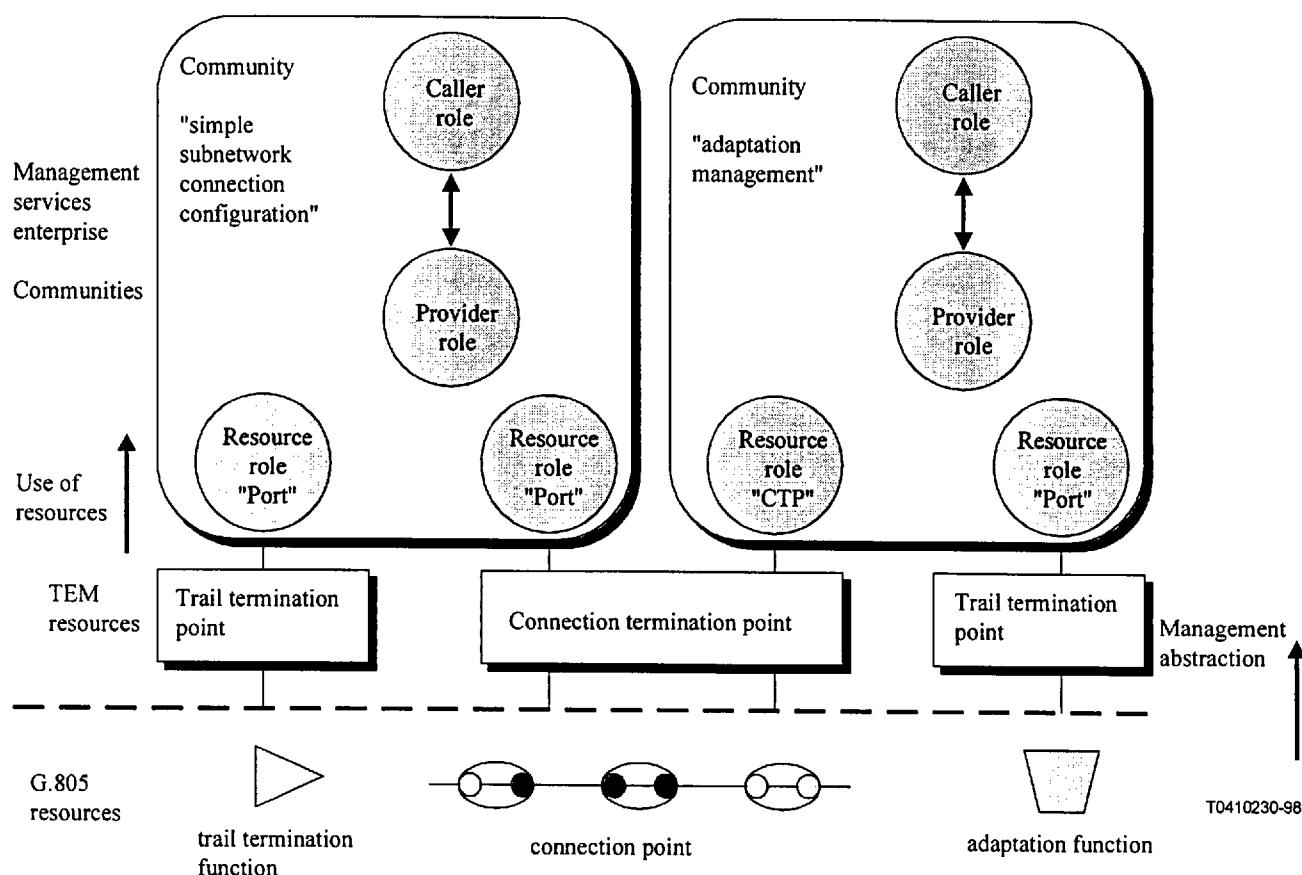


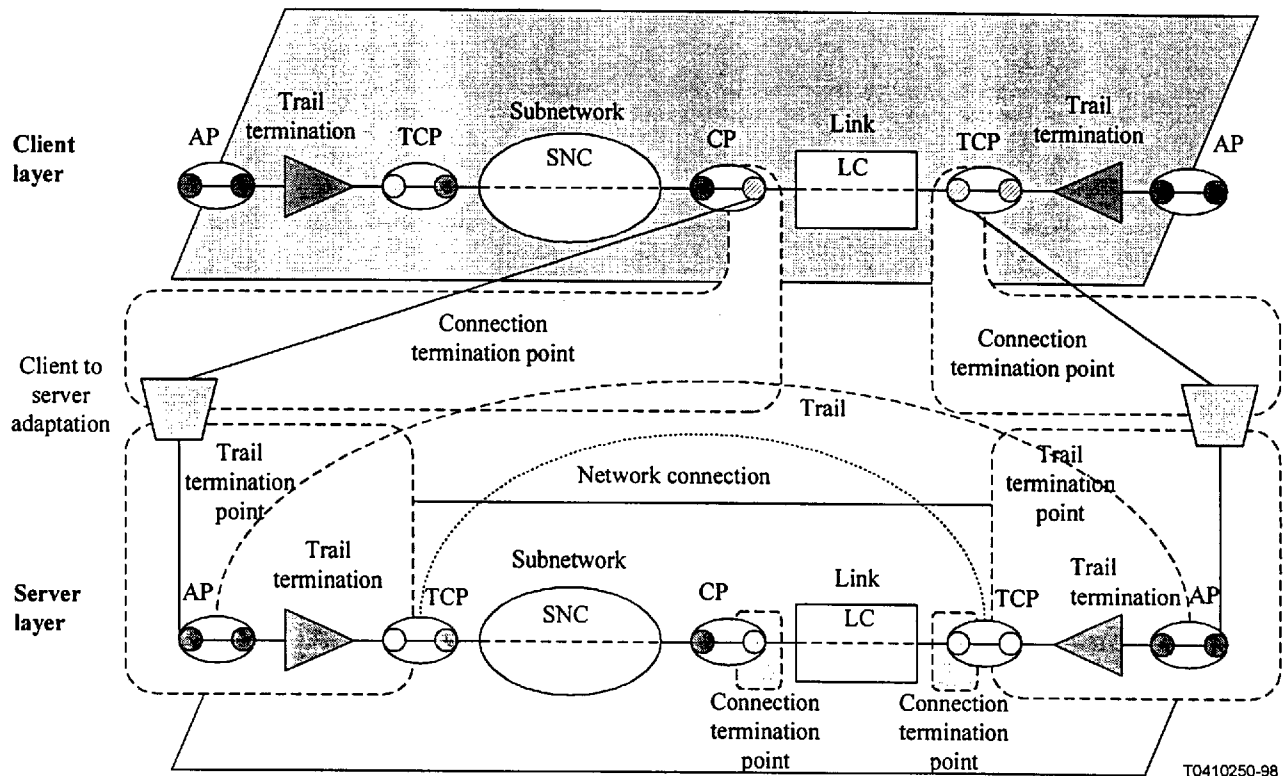
Figure 1/G.852.2

The resources are:

- access group;
- administrative domain;
- connection termination point;
- equipment;
- layer network domain;
- link;
- link connection;
- link end;
- node;
- physical port;
- subnetwork;
- subnetwork connection;

- tandem connection;
- topological link;
- topological link end;
- trail;
- trail termination point.

They appear in Figure 2:



○ Port defined in Recommendation G.805

Figure 2/G.852.2

6.2 Resources

6.2.1 Access group

An access group represents a group of co-located trail termination points that are bound to one subnetwork or link.

Properties

SIGNAL_IDENTIFICATION: An access group has a signal identification which represents the specific signal format that the resource carries. The specific format values will be defined in the technology specific extensions.

GROUPING: An access group is a set (possibly empty) of trail termination points.

GROUPING_CONSTRAINT: The trail termination points of a given access group have all the same signal identification as the access group.

GROUPING_CRITERIA: Criterion to group trail termination points in an access group may be multiple, including: same client subnetwork or link, same routing, etc. As a consequence, a given trail termination point may be part of zero, one or more access groups.

For example, an access group may contain a number of trail termination points that are equivalent for routing purposes, i.e. from this access group originates a unique link towards a unique subnetwork in the same layer network. Or the group may be made according to the client layer network: all trail termination points of this access group serve connection termination points at the boundary of an unique subnetwork in the client layer.

TOPOLOGICAL_END_DIRECTION: An access group has a directionality that characterizes its ability to originate or/and terminate the traffic to be carried. It may be source, sink, bidirectional or undefined. An access group sink shall contain trail termination points sink. An access group source shall contain trail termination points source. An access group bidirectional shall contain trail termination points bidirectional. An access group undefined shall contain trail termination points sink, source or/and bidirectional.

6.2.2 Administrative domain

An administrative domain is a domain in which the resources are grouped for a management purpose by an administrator. A transport administrative domain contains only transport network resources, excluding service-level resources.

The administrative domain defines the allocation of responsibility for managing a collection of resources between operators, or between different parts of an operator's organization. A transport network resource may pertain to several transport administrative domains, according to the management function considered. An administrative domain may contain resources belonging to several layer network domains.

Typical applications are the allocation of individual operators' responsibilities in a multi-operator (e.g. international) network context, or regional responsibilities within one operator's organization, or the allocation of access rights (responsibilities) to customers for managing the resources available within e.g. a Virtual Private Network.

6.2.3 Connection termination point

A connection termination point represents the potential extremity of a link connection. It relates to the G.805 port and its associated part of the adaptation function that is in the server layer (Figure 3).