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

Digital transmission systems – Digital networks – SDH
network characteristics

**Management of the transport network –
Computational interfaces for basic transport
network model**

ITU-T Recommendation G.854.1

(Previously CCITT Recommendation)

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ITU-T RECOMMENDATION G.854.1

MANAGEMENT OF THE TRANSPORT NETWORK – COMPUTATIONAL INTERFACES FOR BASIC TRANSPORT NETWORK MODEL

Summary

This Recommendation contains the computational viewpoint specification for managing a transport network from a network viewpoint. In particular, this Recommendation details the computational viewpoint for subnetwork connection management. This Recommendation was written in accordance with G.851.1 Management of the transport network – Application of the RM-ODP framework.

Source

ITU-T Recommendation G.854.1 was prepared by ITU-T Study Group 15 (1993-1996) and was approved under the WTSC Resolution No. 1 procedure on the 8th of November 1996.

FOREWORD

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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 expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

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As of the date of approval of this Recommendation, the ITU had/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.854.1

MANAGEMENT OF THE TRANSPORT NETWORK – COMPUTATIONAL INTERFACES FOR BASIC TRANSPORT NETWORK MODEL

(Geneva, 1996)

1 Scope

This Recommendation describes the computational viewpoint specification for computational interfaces for basic transport network model.

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 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. A list of the currently valid ITU-T Recommendations is regularly published.

- ITU-T Recommendation G.805 (1995), *Generic functional architecture of transport networks*.
- ITU-T Recommendation G.851.1 (1996), *Management of the transport network – Application of the RM-ODP framework*.
- ITU-T Recommendation G.852.1 (1996), *Management of the transport network – Enterprise viewpoint for simple subnetwork connection management*.
- ITU-T Recommendation G.853.1 (1996), *Common elements of the information viewpoint for the management of a transport network*.
- ITU-T Recommendation G.853.2 (1996), *Subnetwork connection management information viewpoint*.
- ITU-T Recommendation M.3100 (1995), *Generic network information model*.

3 Definitions

None.

4 Abbreviations

This Recommendation uses the following abbreviations.

Ifce Interface

ITU-T International Telecommunication Union – Telecommunication Standardization Sector

RM-ODP Reference Model for Open Distributed Processing

5 Computational interfaces for basic transport network model

Computational interfaces are specified using engineering neutral computational templates, defined in Recommendation G.851.1. These computational interface templates may be translated to templates associated with more than one engineering realization for use in particular communication domains.

A complete computational specification requires the definition of computational objects and the scenarios which describe how the computational objects are used. The specification of computational objects is for further study.

This is not the complete computational viewpoint for transport networks, and these interfaces may be satisfied by a profile or subset of a more comprehensive interface description.

An implementation which claims support of an interface in this Recommendation, as a server, shall implement all of the operations of that interface.

The inheritance structure of the computational viewpoint is not necessarily the same as the inheritance structure of the engineering viewpoint.

ANNEX A

Computational interfaces for simple subnetwork connection configuration

A.0 Computational interfaces to satisfy simple subnetwork connection configuration community enterprise requirements

The simple subnetwork connection community enterprise requirements are met by the interfaces specified in this Annex.

A reference to a snTP interface type is equivalent to a reference to a nTP interface type.

A.1 Label references

The following information relationships, static schema, and ASN.1 productions are referenced in this Annex:

Fully-qualified label reference	Local reference used
< "Rec. G.853.1", INFORMATION_RELATIONSHIP:subnetworkIsDelimitedBy >	<subnetworkIsDelimitedBy>
< "Rec. G.853.1", INFORMATION_RELATIONSHIP:subnetworkHasSubnetworkConnections>	<subnetworkHasSubnetworkConnections>
< "Rec. G.853.1", INFORMATION_RELATIONSHIP:extremitiesTerminateTransportEntity>	<extremitiesTerminateTransportEntity>
< "Rec. G.853.1", INFORMATION_RELATIONSHIP:subnetworkTPIsRelatedToExtremity>	<subnetworkTPIsRelatedToExtremity>
< "Rec. G.853.2", INFORMATION_RELATIONSHIP:subnetworkConnectionHasTSC >	<subnetworkConnectionHasTSC>
<"Rec. G.853.2", STATIC_SCHEMA:ssccNotConnected >	<ssccNotConnected>
<"Rec. G.853.2", STATIC_SCHEMA:ssccConnected >	<ssccConnected>
Fully-qualified ASN.1 production reference	Local reference used
"M.3100 : 199x : ASN1DefinedTypesModule::Failed	Failed
"M.3100 : 199x : ASN1DefinedTypesModule::Directionality	Directionality
"M.3100 : 199x : ASN1DefinedTypesModule::UserLabel	UserLabel

A.2 simple SNC performer interface

The simple subnetwork performer manages the set-up and release of subnetwork connections.

The simple SNC performer interface is required to satisfy the enterprise requirements stated in:

```
<"Rec. G.852.1", COMMUNITY:sscc, ACTION:sscc1 > ,
<"Rec. G.852.1", COMMUNITY:sscc, ACTION:sscc2 > .
```

The simple subnetwork connection performer interface provides basic connection set-up functionality. The operation `ssccSetupSubnetworkConnection` sets up a subnetwork connection, and the operation `ssccReleaseSubnetworkConnection` removes the subnetwork connection.

```
COMPUTATIONAL_INTERFACE simpleSncPerformerIfce {
    OPERATION      <ssccSetupSubnetworkConnection>;
                  <ssccReleaseSubnetworkConnection>;
}
```

A.2.1 sscc set-up SNC

This operation sets up a simple subnetwork connection between a single A-End snTP or nTP, and a single Z-End snTP or nTP.

```
OPERATION      ssccSetupSubnetworkConnection {
```

INPUT_PARAMETERS

```
    subnetwork : SubnetworkId ::= (ssccSnIfce);
```

-- The subnetwork parameter is used to indicate the subnetwork across which the performer is setting
 -- up the SNCs. This parameter is used, for example, when a given performer can set up SNCs in
 -- many subnetworks. If the performer is associated with a single subnetwork, the subnetwork
 -- parameter of this operation is redundant, and may be removed as an engineering optimization.

```
    snpa : SnTPId ::= (snTPIfce);
```

```
    snpz : SnTPId ::= (snTPIfce);
```

```
    dir : Directionality;
```

```
    suppliedUserLabel : UserLabel ;
```

-- zero length string implies none supplied

```
    serviceCharacteristics: CharacteristicsId ::= (serviceCharacteristicsIfce) ;
```

-- reference can be used to determine any QOS or routing characteristics;

OUTPUT_PARAMETERS

```
    newSNC : SNCId ::= (sncIfce) ;
```

```
    agreedUserLabel : UserLabel ;
```

RAISED_EXCEPTIONS

```
    invalidTransportServiceCharacteristics: NULL;
```

```
    incorrectSubnetworkTerminationPoints : SEQUENCE OF SnTPId;
```

-- the list contains one element when only point is incorrect.

```
    subnetworkTerminationPointsConnected : SEQUENCE OF SnTPId;
```

-- the list contains one element when only one subnetworkTerminationPoint remains

-- connected

```
    failure : Failed;
```

```
    wrongDirectionality : Directionality;
```

```
    userLabelInUse : UserLabel;
```

BEHAVIOUR

INFORMAL

!

This operation sets up a subnetwork connection between a given A-End snTP or nTP and a given Z-End snTP or nTP. The subnetwork termination points or network termination points to be