



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

M.3100

Amendment 8
(08/2004)

SERIES M: TMN AND NETWORK MAINTENANCE:
INTERNATIONAL TRANSMISSION SYSTEMS,
TELEPHONE CIRCUITS, TELEGRAPHY, FACSIMILE
AND LEASED CIRCUITS

Telecommunications management network

Generic network information model

Amendment 8

ITU-T Recommendation M.3100 (1995) – Amendment 8

ITU-T M-SERIES RECOMMENDATIONS

TMN AND NETWORK MAINTENANCE: INTERNATIONAL TRANSMISSION SYSTEMS, TELEPHONE
CIRCUITS, TELEGRAPHY, FACSIMILE AND LEASED CIRCUITS

Introduction and general principles of maintenance and maintenance organization	M.10–M.299
International transmission systems	M.300–M.559
International telephone circuits	M.560–M.759
Common channel signalling systems	M.760–M.799
International telegraph systems and phototelegraph transmission	M.800–M.899
International leased group and supergroup links	M.900–M.999
International leased circuits	M.1000–M.1099
Mobile telecommunication systems and services	M.1100–M.1199
International public telephone network	M.1200–M.1299
International data transmission systems	M.1300–M.1399
Designations and information exchange	M.1400–M.1999
International transport network	M.2000–M.2999
Telecommunications management network	M.3000–M.3599
Integrated services digital networks	M.3600–M.3999
Common channel signalling systems	M.4000–M.4999

For further details, please refer to the list of ITU-T Recommendations.

ITU-T Recommendation M.3100

Generic network information model

Amendment 8

Summary

Amendment 8 to ITU-T Rec. M.3100 adds new capability of physical port.

Source

Amendment 8 to ITU-T Recommendation M.3100 (1995) was approved on 22 August 2004 by ITU-T Study Group 4 (2001-2004) under the ITU-T Recommendation A.8 procedure.

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.

Compliance with this Recommendation is voluntary. However, the Recommendation may contain certain mandatory provisions (to ensure e.g. interoperability or applicability) and compliance with the Recommendation is achieved when all of these mandatory provisions are met. The words "shall" or some other obligatory language such as "must" and the negative equivalents are used to express requirements. The use of such words does not suggest that compliance with the Recommendation is required of any party.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

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.

© ITU 2005

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

CONTENTS

	Page
1) New capability – Physical port.....	1
2) Clause 10.2 ASN.1 module	4

ITU-T Recommendation M.3100

Generic network information model

Amendment 8

1) New capability – Physical port

Add the following to the main body of the Recommendation:

3.6.x Physical Port

physicalPort MANAGED OBJECT CLASS

DERIVED FROM "Recommendation X.721 : 1992":top;

CHARACTERIZED BY

physicalPortPackage PACKAGE

BEHAVIOUR

physicalPortBehaviour BEHAVIOUR

DEFINED AS

"This managed object class represents the characteristics of physical termination of network equipments. This MOC is a collection of common attributes of physical ports, and it is defined for inheritance. The purpose of modelling the physical port as an individual managed object is to provide more detailed information and possibility to show relationships among a port and its supported TTP(s) and (indirectly) CTP(s). When an instance of this class or its derived classes is instantiated under an instance of circuitPackR1, the conditional package circuitPackConfigurationPackage in the circuitPackR1 class should not be instantiated.

A physical port is understood to consist of a physical part and a logical part. The physicalPort MOC is a physical resource that represents the physical part of the physical port while the genericTransportTTP MOC is a logical resource (sometimes called a device interface TP), one or more of which represent the logical part of the physical port. Transmission and mapping capabilities, as represented by the signal rates and mapping lists (and wavelengths) of the physicalPortSignalRateAndMappingList attribute are considered logical properties of a physical port, and so are included in the definition of genericTransportTTP Rev.1.

Since the physical port is split into a physical resource part and a logical resource part, the supportedTTPList attribute is used to reference the logical part from the physical part. Conversely, the physicalPort attribute and the conditional ttpPortID attribute of the genericTransportTTPR1 object serve as references from the (pieces of the) logical part to the physical part.

The associated genericTransportTTPs, i.e., the logical part of the physical port, are considered the lowest-layer server trail termination points (TTPs) supported by the physical port, e.g., vc4TTP or opticalSPITTP or vpTTP or ETYnTTPBidirectional.

The capability to support the directionality for data transfer is represented by the pointDirectionality attribute of the associated genericTransportTTP objects (inherited from networkTerminationPoint)."

;;

ATTRIBUTES

physicalPortId GET SET-BY-CREATE,

"ITU-T Rec. X.721 | ISO/IEC 10165-2 : 1992" : **administrativeState** GET-REPLACE,

connectorType GET,

reach GET,

supportedTTPList GET

;;;

CONDITIONAL PACKAGES

objectManagementNotificationsPackage PRESENT IF "an instance supports it",

stateChangeNotificationPackage PRESENT IF "an instance supports it",

userLabelPackage PRESENT IF "an instance supports it";

REGISTERED AS {m3100ObjectClass 79};

3.6.x Generic transport TTP with physical port SignalRateAndMapping list

```
genericTransportTTPR1 MANAGED OBJECT CLASS
  DERIVED FROM          genericTransportTTP;
  CHARACTERIZED BY
    genericTransportTTPR1Package PACKAGE
    BEHAVIOUR genericTransportTTPR1Behaviour BEHAVIOUR DEFINED AS
      "The GenericTransportTTPR1 object is used to represent a GenericTransportTTP which has an
      associated physical port object and hosts the SignalRateAndMapping list of this physical port.

      The physicalPort attribute and the inherited conditional ttpPortID attribute store references to
      the Physical Port that supports this generic transport TTP."

  ;;
  ATTRIBUTES
    physicalPort          GET,
    physicalPortSignalRateAndMappingList GET-REPLACE ADD-REMOVE
  ;;
  REGISTERED AS {m3100ObjectClass 80};
```

5.x Port Number

```
physicalPortId ATTRIBUTE
  WITH ATTRIBUTE SYNTAX M3100ASN1TypeModule2.PortNumber;
  MATCHES FOR EQUALITY;
  BEHAVIOUR
    physicalPortIdBehaviour BEHAVIOUR
  DEFINED AS
    "This attribute is the value of the port number. The port number may be used in constructing the name of the
    managed entity Physical Port."

  ;;
  REGISTERED AS {m3100Attribute 168};
```

5.x Physical Port SignalRateAndMapping List

```
physicalPortSignalRateAndMappingList ATTRIBUTE
  WITH ATTRIBUTE SYNTAX M3100ASN1TypeModule2.PhysicalPortSignalRateAndMappingList;
  MATCHES FOR EQUALITY, SET-COMPARISON, SET-INTERSECTION;
  BEHAVIOUR
    physicalPortSignalRateAndMappingListBehaviour BEHAVIOUR
  DEFINED AS
    "This attribute identifies the signal rate associated with a supported TTP of a physical port (e.g., rate = stm1)
    and its payload mapping (e.g., au3 or au4). The signal rate and payload mapping is provisionable. For
    example, a port with signal rate stm4 may have a payload mapping of au4-4c. Another possible mapping of
    this rate is a sequence of four individual au4 (i.e., au4, au4, au4, au4) or a sequence of mixed au3 and au4
    (e.g., au3, au3, au3, au4, au4, au3, au3, au3). This attribute supports two choices depending on whether the
    signal may be sent with the same rate in both directions or depends on the direction. It is also possible to
    support only one direction for signal transfer, which is a special case of different rates in the two directions.
    In addition if the port terminates an optical signal, different rates may be supported on different wavelengths.
    The port mapping list shall be consistent with the value of the attribute pointDirectionality. For example, if
    the directionality is source, 'uniform' choice in the port mapping list is not a valid option."

  ;;
  REGISTERED AS {m3100Attribute 169};
```

5.x Connector Type

```
connectorType ATTRIBUTE
  WITH ATTRIBUTE SYNTAX M3100ASN1TypeModule2.ConnectorType;
  MATCHES FOR EQUALITY;
  BEHAVIOUR
```

**connectorTypeBehaviour BEHAVIOUR
DEFINED AS**

"This attribute describes the connector type used for this port. The value of this attribute can be one of the following: FC(Fibre Connector), LC(Lucent Connector), SC(Subscriber Connector), etc."

;;

REGISTERED AS {m3100Attribute 170};

5.x Reach

reach ATTRIBUTE

**WITH ATTRIBUTE SYNTAX M3100ASN1TypeModule2.Reach;
MATCHES FOR EQUALITY;
BEHAVIOUR
reachBehaviour BEHAVIOUR
DEFINED AS**

"This attribute indicates the length a signal may travel before requiring termination or regeneration. This attribute is useful for both planning and operations."

;;

REGISTERED AS {m3100Attribute 171};

5.x Supported TTP List

supportedTTPList ATTRIBUTE

**WITH ATTRIBUTE SYNTAX M3100ASN1TypeModule2.ObjectList;
MATCHES FOR EQUALITY;
BEHAVIOUR
supportedTTPListBehaviour BEHAVIOUR
DEFINED AS**

"This attribute stores references to the lowest-layer Generic Transport Trail Termination Points with Physical Port SignalRateAndMapping List (genericTransportTTPR1) supported by this physical port."

;;

REGISTERED AS {m3100Attribute 172};

5.x Physical Port

physicalPortAttribute ATTRIBUTE

**WITH ATTRIBUTE SYNTAX M3100ASN1TypeModule2.ObjectInstance;
MATCHES FOR EQUALITY;
BEHAVIOUR
physicalPortAttributeBehaviour BEHAVIOUR
DEFINED AS**

"This attribute stores a reference to the Physical Port that supports this generic transport TTP."

;;

REGISTERED AS {m3100Attribute 173};

6.x Name Binding

– **Physical Port is named from either Equipment (including Circuit Pack) or Managed Element**

physicalPort-equipment NAME BINDING

**SUBORDINATE OBJECT CLASS physicalPort AND SUBCLASSES;
NAMED BY
SUPERIOR OBJECT CLASS equipment AND SUBCLASSES;
WITH ATTRIBUTE physicalPortId;
CREATE
WITH-REFERENCE-OBJECT,
WITH-AUTOMATIC-INSTANCE-NAMING;
DELETE;**

REGISTERED AS {m3100NameBinding 95};

```

physicalPort-managedElement NAME BINDING
  SUBORDINATE OBJECT CLASS    physicalPort AND SUBCLASSES;
  NAMED BY
    SUPERIOR OBJECT CLASS    managedElement AND SUBCLASSES;
  WITH ATTRIBUTE    physicalPortId;
  CREATE
    WITH-REFERENCE-OBJECT,
    WITH-AUTOMATIC-INSTANCE-NAMING;
  DELETE;
REGISTERED AS {m3100NameBinding 96};

```

2) Clause 10.2 ASN.1 module

Augment ASN.1 module M3100ASN1TypeModule2 (see M.3100 Amd.1) as follows:

```

ConnectorType ::= INTEGER
-- currently defined values for ConnectorType are:
fcConnectorType    ConnectorType ::= 1    -- Fibre Connector
lcConnectorType    ConnectorType ::= 2    -- Lucent connector
scConnectorType    ConnectorType ::= 3    -- Subscriber Connector

PhysicalPortSignalRateAndMappingList ::= CHOICE {
    diverse    SEQUENCE {
        downstream    SignalRateAndMappingList,
        upStream      SignalRateAndMappingList
    },
    uniform    SignalRateAndMappingList
}

PortNumber ::= INTEGER
SignalRateAndMappingList ::= SET OF SEQUENCE { -- only one member in the case of
TDM
    signalRate        SignalRate,
    mappingList        MappingList OPTIONAL,
    wavelength        WaveLength OPTIONAL -- used for WDM
}
-- the SignalRateAndMappingList is a SET OF to accommodate multiple
wavelengths on a single TTP
Reach ::= INTEGER
WaveLength ::= INTEGER

```


SERIES OF ITU-T RECOMMENDATIONS

Series A	Organization of the work of ITU-T
Series D	General tariff principles
Series E	Overall network operation, telephone service, service operation and human factors
Series F	Non-telephone telecommunication services
Series G	Transmission systems and media, digital systems and networks
Series H	Audiovisual and multimedia systems
Series I	Integrated services digital network
Series J	Cable networks and transmission of television, sound programme and other multimedia signals
Series K	Protection against interference
Series L	Construction, installation and protection of cables and other elements of outside plant
Series M	TMN and network maintenance: international transmission systems, telephone circuits, telegraphy, facsimile and leased circuits
Series N	Maintenance: international sound programme and television transmission circuits
Series O	Specifications of measuring equipment
Series P	Telephone transmission quality, telephone installations, local line networks
Series Q	Switching and signalling
Series R	Telegraph transmission
Series S	Telegraph services terminal equipment
Series T	Terminals for telematic services
Series U	Telegraph switching
Series V	Data communication over the telephone network
Series X	Data networks and open system communications
Series Y	Global information infrastructure, Internet protocol aspects and Next Generation Networks
Series Z	Languages and general software aspects for telecommunication systems